Office in Clark Building, Room B320
(970) 491-6325
dare.agsci.colostate.edu (http://dare.agsci.colostate.edu)

Professor Hayley Chouinard, Head
Professor Marshall Frasier, Chair of Undergraduate Program
Professor Christopher Goemans, Chair of Graduate Program

Undergraduate
Majors
• Agricultural Business
  • Agricultural Economics Concentration
• Farm and Ranch Management Concentration
• Agricultural Education
  • Teacher Development Concentration
  • Agricultural Literacy Concentration
• Environmental and Natural Resource Economics

Minors
• Agricultural Business
• Agricultural Literacy
• Environmental and Natural Resource Economics
• Food Industry Management Interdisciplinary Minor

Graduate
Graduate Programs in Agricultural and Resource Economics
The department offers graduate programs leading to Master of Science and Doctor of Philosophy degrees. A description of these programs may be found in the Graduate and Professional Bulletin or on the department’s website (http://dare.agsci.colostate.edu).

Certificate
• Teaching in Extension

Master's Programs
• Master of Science in Agricultural and Resource Economics, Plan A
• Master of Science in Agricultural and Resource Economics, Plan B

Ph.D.
• Ph.D. in Agricultural and Resource Economics

Courses
Subjects in this department include: Agricultural and Resource Economics (AREC) and Agricultural Education (AGED).

Agricultural and Resource Economics (AREC)
AREC 202 Agricultural and Resource Economics (GT-SS1) Credits: 3 (3-0-0)
Course Description: Introduction to decision-making by consumers, firms, and government and the resulting allocation of resources through markets.
Prerequisite: MATH 117, may be taken concurrently or MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 159 or MATH 160.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 202 and ECON 202.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

AREC 224 Introduction to Agribusiness Entrepreneurship Credit: 1 (0-0-1)
Course Description: Introductory exposure to entrepreneurship for agribusinesses through presentations by industry professionals.
Prerequisite: AREC 202, may be taken concurrently or ECON 202, may be taken concurrently.
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
A.REC 240  Issues in Environmental Economics (GT-SS1)  Credits: 3 (3-0-0)
Also Offered As: ECON 240.
Course Description: Discussion and economic analysis of current environmental issues with special emphasis on the impact of economic growth.
Prerequisite: None.
Registration Information: Credit not allowed for both AREC 240 and ECON 240.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Social & Behavioral Sciences 3C, Economic or Political Systems (GT-SS1).

A.REC 305 Agricultural and Resource Enterprise Analysis  Credits: 3 (2-2-0)
Course Description: Use of records in agricultural and resource enterprise management; analytical methods, budgets, and planning techniques for improved decision making.
Prerequisite: (CIS 120 or BUS 150 or CS 110) and (AREC 202 or ECON 202).
Registration Information: Sections may be offered: Online. Must register for lecture and laboratory.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

A.REC 310 Agricultural Marketing  Credits: 3 (3-0-0)
Course Description: Market structure, behavior, and performance including futures market and market games theory.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

A.REC 311 Agricultural and Resource Product Marketing  Credits: 3 (3-0-0)
Course Description: Theory and practice of marketing-differentiated agricultural products and natural resource amenities with focus on strategies and market trends.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

A.REC 325 Personnel Management in Agriculture  Credits: 3 (3-0-0)
Course Description: Human resource issues for agribusiness firms. Managing employees, legal issues, negotiation methods, and benefits packages. Workplace professionalism.
Prerequisite: AREC 202 or ECON 202.
Restriction: 
Registration Information: Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

A.REC 328 Small Agribusiness Management  Credits: 3 (3-0-0)
Course Description: Apply business principles to small food enterprises, agribusinesses and cooperatives.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

A.REC 335 Introduction to Econometrics  Credits: 3 (3-0-0)
Also Offered As: ECON 335.
Course Description: Estimating statistical regression models of economic relationships; treatment of special problems that may arise in analysis of economic data.
Prerequisite: (ECON 204) and (STAT 201 or STAT 204 or STAT 301 or STAT 307 or STAT 311 or STAT 315) and (MATH 141 or MATH 155 or MATH 160).
Registration Information: Credit not allowed for both ECON 335 and AREC 335. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

A.REC 340 Introduction-Economics of Natural Resources  Credits: 3 (3-0-0)
Also Offered As: ECON 340.
Course Description: Concepts, theories, institutions; analytical methods for economic evaluation of alternative resource use patterns and land use plans.
Prerequisite: AREC 202 or ECON 202.
Registration Information: Sections may be offered: Online. Credit not allowed for both AREC 340 and ECON 340.
Term Offered: Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

A.REC 341 Environmental Economics  Credits: 3 (3-0-0)
Course Description: Economic theories and analytic frameworks are developed and applied to contemporary problems of the use and protection of the natural environment.
Prerequisite: AREC 202 or ECON 202.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

A.REC 342 Water Law, Policy, and Institutions  Credits: 3 (3-0-0)
Course Description: Legal water issues within the context of historical, social and economic development with emphasis on the southwestern United States.
Prerequisite: None.
Registration Information: Sections may be offered: Online.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.
AREC 346  Economics of Outdoor Recreation  Credits: 3 (3-0-0)  
Also Offered As:  ECON 346.  
Course Description:  Benefit cost framework in public planning for outdoor recreation, pricing problems, projecting demand, and regional economic development.  
Prerequisite:  AREC 202 or ECON 202.  
Registration Information:  Credit not allowed for both AREC 346 and ECON 346.  
Term Offered:  Fall.  
Grade Modes:  S/U within Student Option, Trad within Student Option.  
Special Course Fee:  No.  

AREC 375  Agricultural Law  Credits: 3 (3-0-0)  
Course Description:  Laws, regulations, case decisions affecting ranching and farming in the Rocky Mountain area.  
Prerequisite:  None.  
Restriction:  Must be a:  Junior.  
Registration Information:  Junior standing. Sections may be offered:  Online.  
Term Offered:  Fall.  
Grade Modes:  S/U within Student Option, Trad within Student Option.  
Special Course Fee:  No.  

AREC 381  Introduction to Environmental Economics  Credits: 3 (3-0-0)  
Course Description:  Design and measurement of economic values and environmental policy; how the theory can be used to construct solutions to real-world problems.  
Prerequisite:  (AREC 202 or ECON 202) and (MATH 118 or MATH 124 or MATH 125 or MATH 126 or MATH 141 or MATH 155 or MATH 160).  
Term Offered:  Fall.  
Grade Mode:  Traditional.  
Special Course Fee:  No.  

AREC 405  Agricultural Production Management  Credits: 3 (2-2-0)  
Course Description:  Economic principles of agricultural production decisions with linear programming analysis of production choices and farm planning.  
Prerequisite:  AREC 305.  
Registration Information:  Must register for lecture and laboratory.  
Term Offered:  Spring.  
Grade Modes:  S/U within Student Option, Trad within Student Option.  
Special Course Fee:  No.  

AREC 408  Agricultural Finance  Credits: 3 (3-0-0)  
Course Description:  Monetary affairs of agribusiness and agricultural production emphasizing credit institutions and procurement, investment, and management.  
Prerequisite:  AREC 305.  
Registration Information:  Sections may be offered:  Online.  
Term Offered:  Spring.  
Grade Mode:  Traditional.  
Special Course Fee:  No.  

AREC 412  Agricultural Commodities Marketing  Credits: 3 (3-0-0)  
Course Description:  Agricultural marketing and agribusiness principles applied to current marketing problems relating to livestock and field and horticultural crops.  
Prerequisite:  AREC 310.  
Registration Information:  Sections may be offered:  Online.  
Term Offered:  Fall.  
Grade Mode:  Traditional.  
Special Course Fee:  Yes.  

AREC 415  International Agricultural Trade  Credits: 3 (3-0-0)  
Course Description:  Agricultural trade patterns and institutions; trade theory with applications to agriculture. Current issues in agricultural trade.  
Prerequisite:  AREC 310 and ECON 204.  
Registration Information:  Sections may be offered:  Online.  
Term Offered:  Fall.  
Grade Modes:  S/U within Student Option, Trad within Student Option.  
Special Course Fee:  No.  

AREC 428  Agricultural Business Management  Credits: 3 (3-0-0)  
Course Description:  Economic analysis, organization, and management practices of agriculture and food industries studied through simulation, case study, computer labs.  
Prerequisite:  (AREC 305) and (AREC 310 or AREC 311).  
Registration Information:  Senior standing. Sections may be offered:  Online.  
Terms Offered:  Fall, Spring.  
Grade Modes:  S/U within Student Option, Trad within Student Option.  
Special Course Fee:  No.  

AREC 440  Advanced Environmental and Resource Economics  Credits: 3 (3-0-0)  
Course Description:  Microeconomic techniques to rigorously explore economic decision-making and policy as they apply to environmental and natural resource problems.  
Prerequisite:  (AREC 340 or ECON 340) and (AREC 341 and ECON 306).  
Term Offered:  Spring.  
Grade Mode:  Traditional.  
Special Course Fee:  No.  

AREC 442  Water Resource Economics  Credits: 3 (3-0-0)  
Course Description:  An in-depth exploration of the role of economics in water resource planning.  
Prerequisite:  AREC 342 and ECON 306, may be taken concurrently.  
Registration Information:  Credit not allowed for both AREC 442 and AREC 542.  
Term Offered:  Spring.  
Grade Mode:  Traditional.  
Special Course Fee:  No.  

AREC 444  Economics of Energy Resources  Credits: 3 (3-0-0)  
Also Offered As:  ECON 444.  
Course Description:  Supply, consumption trends, and projected demand for alternative energy resources in domestic and world perspective; economics of public energy policies.  
Prerequisite:  ECON 306.  
Registration Information:  Junior standing. Written consent of instructor. Credit allowed for only one of the following: AREC 444, ECON 344, or ECON 444.  
Term Offered:  Spring.  
Grade Mode:  Traditional.  
Special Course Fee:  No.  

AREC 454  Real Estate Appraisal  Credits: 3 (3-0-0)  
Also Offered As:  REL 454.  
Course Description:  Theoretical principles that underlie real estate appraisal methods. Procedures and practices used in real estate appraisal.  
Prerequisite:  (AREC 202 or ECON 202) and (AREC 305 or REL 360).  
Registration Information:  Sections may be offered:  Online. Credit allowed for only one of the following: AREC 453, AREC 454, REL 453, or REL 454.  
Term Offered:  Spring.  
Grade Mode:  Traditional.  
Special Course Fee:  No.  

Department of Agricultural and Resource Economics
AREC 460  Ag- and Resource-Based Economic Development  Credits: 3 (3-0-0)
Course Description: Indicators, tools and approaches for agriculture- and natural resource-based economic development in resource dependent countries and communities.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 478 Agricultural Policy  Credits: 3 (3-0-0)
Course Description: Formulation and administration of public policies affecting agricultural industries and rural areas in the United States.
Prerequisite: AREC 202 or ECON 202 or AREC 240 or ECON 240.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 482A Study Abroad-Environmental Economics in Italy: Managing a Sustainable Global Environment  Credits: 3 (0-0-3)
Course Description: The economics of managing environmental assets in a sustainable manner. Presents a theoretical basis for different resource management systems including various methods of cost–benefit analysis, utility theory, property right structures, government institutions, and cultural and ethical aspects. Considers specific policies aimed at sustaining the environment and their impacts on specific natural resource and agricultural products.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 482B Study Abroad-Italian Culture: Economics of Food and the Environment  Credits: 3 (0-0-3)
Course Description: The historical and current economics of agriculture and natural resources in Florence, Tuscany and Italy. Focus on (1) Italian culture in general; (2) the economic and political history of Florence in particular; and (3) the production and regional economic importance of agricultural products of and natural resources used in central Italy.
Prerequisite: None.
Registration Information: Sophomore standing. This is a partial semester course. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 484 Supervised College Teaching  Credits: Var[1-5] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: Maximum of 10 credits allowed in course. A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 487 Internship  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 495 Independent Study  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Registration Information: May be taken for a maximum of 6 credits. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 496 Group Study  Credits: Var[1-18] (0-0-0)
Course Description:
Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 505 Agricultural Production Economics  Credits: 3 (3-0-0)
Course Description: Empirical applications of production economic theory for use of inputs and allocation of resources in agricultural, natural resource sectors.
Prerequisite: (MATH 141) and (AREC 405 or ECON 306).
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 506 Applied Microeconomic Theory  Credits: 3 (3-0-0)
Also Offered As: ECON 506.
Course Description: Introduction to mathematical models in modern microeconomics, including choices and demand, production and supply, and market structures and failures.
Prerequisite: ECON 306.
Registration Information: Credit not allowed for both AREC 506 and ECON 506.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 507 Applied Welfare and Policy Analysis  Credits: 3 (3-0-0)
Course Description: How policies are crafted to effectively address social issues, especially for agriculture and the environment, and how they impact society.
Prerequisite: ECON 306.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 508 Financial Management in Agriculture  Credits: 2 (2-0-0)
Course Description: Systematic approach to understanding and applying financial management in farm businesses.
Prerequisite: (AREC 408 or FIN 305) and (ECON 306).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.
A**RE**C 510  Agricultural Product Marketing  Credits: 3  (3-0-0)  
**Course Description:** Marketing techniques, industrial organization/competition for agricultural products in US domestic, international trade, and developing country markets.  
**Prerequisite:** (AREC 310) and (AREC 335 or ECON 335).  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  

A**RE**C 520  Intellectual Property in Food and Agriculture  Credits: 2  (2-0-0)  
**Course Description:** Explores the critical role that intellectual property plays in commercial activities within the knowledge economy. Emphasis on strategic management of technology through patents and other control mechanisms, thereby allowing startups to survive and thrive in the knowledge economy with special attention to property developed in the agricultural and food systems.  
**Prerequisite:** AREC 518 and BUS 660.  
**Restriction:** Must be a: Graduate.  
**Registration Information:** Graduate standing. Sections may be offered: Online.  
**Term Offered:** Summer.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 528  Applied Agribusiness Decision Tools  Credits: 2  (2-0-0)  
**Course Description:** Applications of quantitative tools for managerial decision-making in the context of an agribusiness.  
**Prerequisite:** (AREC 305 or AREC 408 or FIN 305) and (ECON 306).  
**Term Offered:** Fall (even years).  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 530  Agricultural Price Analysis  Credits: 3  (3-0-0)  
**Course Description:** Agricultural commodity prices related to neoclassical economics; current literature emphasizing management problems.  
**Prerequisite:** None.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 535  Applied Econometrics  Credits: 3  (3-0-0)  
**Also Offered As:** ECON 535.  
**Course Description:** Econometric techniques applied to testing and quantification of theoretical economic relationships drawn from both microeconomics, macroeconomics.  
**Prerequisite:** (AREC 335 or ECON 335) and (ECON 304 or ECON 306).  
**Registration Information:** Credit not allowed for both AREC 535 and ECON 535.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 540  Environmental and Natural Resource Economics  Credits: 3  (3-0-0)  
**Also Offered As:** ECON 540.  
**Course Description:** Theory, methods, and policy in environmental and natural resource economics.  
**Prerequisite:** AREC 506 or ECON 506.  
**Registration Information:** Credit not allowed for both AREC 540 and ECON 540.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 541  Environmental Economics  Credits: 3  (3-0-0)  
**Also Offered As:** ECON 541.  
**Course Description:** Economics of environmental policy; partial equilibrium and general equilibrium model; pollution; natural environments; population and economic growth.  
**Prerequisite:** ECON 306.  
**Registration Information:** Credit not allowed for both AREC 541 and ECON 541.  
**Term Offered:** Spring.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  

A**RE**C 542  Applied Advanced Water Resource Economics  Credits: 3  (3-0-0)  
**Course Description:** Theory and application of economics in water resource planning.  
**Prerequisite:** (ECON 306 and AREC 342 and STAT 301) and (MATH 141 or MATH 155 or MATH 160).  
**Registration Information:** Credit not allowed for both AREC 542 and AREC 442.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 547  Public Lands Planning and Management  Credits: 3  (3-0-0)  
**Course Description:** Principles and techniques used by federal land management agencies including Forest Service, Park Service, Fish and Wildlife Service, and BLM.  
**Prerequisite:** AREC 202 or ECON 202.  
**Term Offered:** Spring (odd years).  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 563  Regional Economics-Theory, Methods, and Issues  Credits: 3  (3-0-0)  
**Also Offered As:** ECON 563.  
**Course Description:** Tools and methods of regional economics, including supply, demand, and externality analysis. Applications to current urban and regional policy issues.  
**Prerequisite:** ECON 306 and ECON 501, may be taken concurrently.  
**Registration Information:** Credit not allowed for both AREC 563 and ECON 563.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  

A**RE**C 566  Contemporary Issues in Developing Countries  Credits: 3  (3-0-0)  
**Also Offered As:** SOC 566.  
**Course Description:** Social, economic, and technological factors in developing countries.  
**Prerequisite:** None.  
**Registration Information:** Two or more courses in AREC or ECON or SOC. Credit not allowed for both AREC 566 and SOC 566.  
**Term Offered:** Spring (odd years).  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.
AREC 570 Methodology of Economic Research Credits: 3 (3-0-0)
Also Offered As: ECON 530.
Course Description: Philosophical foundations of science and research. Concepts and skills for planning, performing, reporting, and evaluating economic research.
Prerequisite: ECON 304 and ECON 306.
Registration Information: Credit not allowed for both AREC 570 and ECON 530.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 572 Social Benefit Cost Analysis Credits: 3 (3-0-0)
Course Description: Theory, application of concepts relating to social benefit cost analysis of public projects, policies intended to promote social welfare, economic growth.
Prerequisite: ECON 306.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 605 Agricultural Production and Cost Analysis Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of production and cost issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 606 Microeconomic Analysis I Credits: 3 (3-0-0)
Also Offered As: ECON 606.
Course Description: Advanced price/allocation theory: consumer/producer decisions; uncertainty; market structure; partial/general equilibrium; efficiency/welfare.
Prerequisite: ECON 306 and ECON 501.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 606 and ECON 606.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 610 Agricultural Marketing and Demand Analysis Credits: 2 (2-0-0)
Course Description: Empirical application and analysis of agricultural marketing and demand issues in the agricultural and natural resource sectors.
Prerequisite: (AREC 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 615 Optimization Methods for Applied Economics Credits: 3 (3-0-0)
Course Description: Theory and practice of optimization techniques used in economic applications with emphasis on linear and nonlinear programming.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 635 Econometric Theory I Credits: 3 (3-0-0)
Also Offered As: ECON 635.
Course Description: Theory of mathematical statistics and classical linear regression model in context of economic application.
Prerequisite: (AREC 535 or ECON 535) and (ECON 501, may be taken concurrently).
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both AREC 635 and ECON 635.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 647 Land Use Economics and Spatial Modeling Credits: 3 (3-0-0)
Course Description: Use of spatial data in economic analysis of land use focusing on development patterns, land conservation, spatial externalities and agricultural land.
Prerequisite: (AREC 506 or ECON 506) and (AREC 535 or ECON 535).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AREC 660 Development of Rural Resource-Based Economies Credits: 3 (3-0-0)
Course Description: Economic literature-based exploration of human well-being measures and implications of approaches to agriculture and resource-based economic development.
Prerequisite: AREC 506.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AREC 678 Agricultural and Resource Policy Credits: 3 (3-0-0)
Course Description: Evaluate and analyze economic theory, applications and public incentives related to government policies for agriculture and natural resources.
Prerequisite: ECON 306 and MATH 141.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

AREC 695 Independent Study Credits: Var[1-6] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AREC 699 Thesis Credits: Var[1-18] (0-0-0)
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisite</th>
<th>Restriction</th>
<th>Term Offered</th>
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<tbody>
<tr>
<td>AREC 705</td>
<td>Advanced Production and Technological Change</td>
<td>2 (2-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Spring</td>
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<td>Course Description: Production theory is applied</td>
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<td>to real-world issues including risk, innovation, and environment, through</td>
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<td>lectures and readings of current literature.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 706</td>
<td>Microeconomic Analysis II</td>
<td>3 (3-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall</td>
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<td>Course Description: Advanced topics in microtheory:</td>
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<td>game theory; market imperfections; adverse selection; principal-agent problems; social choice theory; incentives, etc.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Registration Information: Credit not allowed for</td>
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<td>both AREC 706 and ECON 706.</td>
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<td>Term Offered: Fall.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 710</td>
<td>Advanced Agricultural Marketing Issues</td>
<td>2 (2-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall</td>
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<td>Course Description: Theoretical and modeling issues</td>
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<td>of consumer demand, market structure, product differentiation and market behavior.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Registration Information: Credit not allowed for</td>
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<td>both AREC 706 and ECON 706.</td>
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<td>Term Offered: Fall.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 735</td>
<td>Econometric Theory II</td>
<td>2 (2-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Spring</td>
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<td></td>
<td>Course Description: Econometrics models and estimators in econometrics, from fully parametric to semiparametric and nonparametric approaches.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td></td>
<td>Registration Information: Credit not allowed for</td>
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<td>both AREC 735 and ECON 735.</td>
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<td>Term Offered: Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 736A</td>
<td>Advanced Econometric Methods: Discrete Choice</td>
<td>1 (1-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Spring</td>
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<td>Course Description: Econometrics analysis of: Discrete Choice Models.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Registration Information: Credit not allowed for</td>
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<td>both AREC 736A-C and ECON 736A-C.</td>
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<td>Term Offered: Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 736B</td>
<td>Advanced Econometric Methods: Panel Data Models</td>
<td>1 (1-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Spring</td>
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<td></td>
<td>Course Description: Econometrics analysis of: Panel Data Models.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td></td>
<td>Registration Information: Credit not allowed for</td>
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<td>both AREC 736A-C and ECON 736A-C.</td>
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<td>Term Offered: Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 736C</td>
<td>Advanced Econometric Methods: Time Series Models</td>
<td>1 (1-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Spring</td>
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<td>Course Description: Econometrics analysis of: Time Series Models.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Registration Information: Credit not allowed for</td>
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<td>both AREC 736A-C and ECON 736A-C.</td>
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<td>Term Offered: Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 740</td>
<td>Advanced Natural Resource Economics</td>
<td>3 (3-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Spring</td>
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<td></td>
<td>Course Description: Advanced theory, methods, and literature in natural resource economics, including dynamic programming and optimal control.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Registration Information: Credit not allowed for</td>
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<td>both AREC 740 and ECON 740.</td>
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<td>Term Offered: Fall.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<td>AREC 741</td>
<td>Advanced Environmental Economics</td>
<td>3 (3-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Spring</td>
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<td></td>
<td>Course Description: Advanced theory, methods, and literature in environmental economics.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Term Offered: Spring.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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<tr>
<td>AREC 770</td>
<td>Advanced Methods in Applied Economics</td>
<td>3 (3-0-0)</td>
<td>(AREC 605) and (AREC 706, may be taken concurrently or ECON 706, may be taken concurrently) and (AREC 735 or ECON 735).</td>
<td>Must be a: Graduate, Professional.</td>
<td>Fall</td>
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<td></td>
<td>Course Description: Advanced research methods in</td>
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<td>applied economics: lab and field experiments, non-market valuation and discrete choice experiments.</td>
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<td>Restrictions: Must be a: Graduate, Professional.</td>
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<td>Term Offered: Fall.</td>
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<td>Grade Mode: Traditional.</td>
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<td>Special Course Fee: No.</td>
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Agricultural Education (AGED)

AGED 110 Agriculture Production Systems Credits: 3 (2-3-0)
Course Description: Broad survey of the diverse aspects of Colorado agriculture.
Prerequisite: None.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 210 History of Agriculture in the United States Credits: 3 (3-0-0)
Course Description: Relationships in agriculture. Historical/Native American/early practices, industrial agriculture, technologies, philosophy, green revolution.
Prerequisite: CO 150.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 220 Understanding Agricultural Education Credit: 1 (1-0-0)
Course Description: Understanding different agricultural education systems. Understanding delivery models of agricultural education programs.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 240 Technical Tool Applications in Ag Education Credits: 2 (1-3-0)
Course Description: Development of safe competencies and applications related to power and technical tools utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 244 Power, Structure, and Tech. Systems in Ag Ed Credits: 3 (2-3-0)
Course Description: Development of competencies and theory related to agricultural power, structure, and technical systems utilized in school-based agricultural education programs.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 320 Technology Lab for Ag Education Credit: 1 (0-3-0)
Course Description: Laboratory applications related to the power, structure, and technical systems pathway utilized in school-based agricultural education programs.
Prerequisite: AGED 240, may be taken concurrently.
Registration Information: May be taken twice for credit.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 330 Program Design and Evaluation in Ag. Literacy Credits: 3 (3-0-0)
Course Description: Design and evaluate programs in agricultural literacy using experiential methods.
Prerequisite: AGED 220.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.
AGED 420 Developing School-Based Ag Education Programs Credits: 3 (3-0-0)
Course Description: Developing knowledge in the approach and delivery of school-based agricultural education programs.
Prerequisite: AGED 220.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 430 Methods of Agricultural Literacy Credits: 3 (3-0-0)
Course Description: Prepare and conduct agricultural literacy instructional units to work with a variety of audiences and instructional topics.
Prerequisite: AGED 330.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 440 Managing Experiences in Ag Ed Laboratories Credit: 1 (0-3-0)
Course Description: Theory, management and pedagogy of delivering safety instruction and experiential curriculum in secondary agricultural education laboratory settings.
Prerequisite: AGED 420.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

AGED 486A Practicum: Agricultural Literacy Credits: Var[1-3] (0-0-0)
Course Description: Experience in the agricultural literacy field.
Prerequisite: (AGED 220) and (AGED 330 or AGED 430).
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 486B Practicum: On-site Experience in Agricultural Outreach Credits: Var[1-2] (0-0-0)
Course Description: Formalized training on conducting non-formal agricultural education at the National Western Stock Show.
Prerequisite: None.
Term Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 486C Practicum: FFA Credits: Var[1-2] (0-0-0)
Course Description: Formalized training on managing FFA experiences, including Career Development Events and Leadership Development Events.
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 487 Internship Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 495 Independent Study Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 496 Group Study Credits: Var[1-12] (0-0-0)
Course Description:
Prerequisite: None.
Term Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

AGED 510 American Agricultural Values and Ideology Credits: 3 (3-0-0)
Course Description: Explore how people have conceptualized agriculture in the United States, how agricultural ideologies have shaped our agricultural values, and how differing agricultural ideologies impact the work in agriculture today and in the future.
Prerequisite: None.
Registration Information: Senior standing. Written consent of instructor. Sections may be offered: Online.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

AGED 525 Agricultural and Extension Teaching Credits: 3 (3-0-0)
Course Description: Use research on effective teaching methods to define and deliver educational programs, courses and presentations in formal and non-formal educational settings in agriculture. Apply organization and instructional methods to evaluate, plan, deliver and assess effective educational programs.
Prerequisite: None.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 540 Ag Ed Laboratory Management and Safety Credits: 2 (2-0-0)
Course Description: Theory, management, and pedagogy of delivering safety instruction and experiential curriculum in secondary agricultural education laboratory settings.
Prerequisite: EDCT 420.
Restriction: .
Term Offered: Fall, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 587 Internship in Extension Credits: Var[1-2] (0-0-0)
Course Description: First-hand experiences in extension programming.
Prerequisite: AGED 547.
Registration Information: Graduate standing. Sections may be offered: Online.
Term Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.
AGED 600  Evaluation and Applied Research in Extension  Credits: 3 (3-0-0)
Course Description: Train extension and other outreach specialists in the basics of program evaluation and research methods. Work with real world scenarios and/or their own field experiences to learn how to strategically design evaluation plans and effectively analyze the data collected. Emphasizing how to improve programming with the collected data.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Sections may be offered: Online. Credit not allowed for both AGED 600 and EDRM 600.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

AGED 692  Agricultural Education Seminar  Credit: 1 (0-0-1)
Course Description: Agricultural education focusing on current trends in Extension.
Prerequisite: AGED 587, may be taken concurrently.
Restriction: Must be a: Graduate, Professional.
Registration Information: Enrolled in the Master of Agriculture Extension Education or the Graduate Certificate of Teaching in Extension. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

AGED 698  Agricultural Education Research  Credits: Var[1-6] (0-0-0)
Course Description:
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Admission to the Master of Agriculture in Agricultural Sciences, Teacher Development Specialization. Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: S/U Sat/Unsat Only.
Special Course Fee: No.