MAJOR IN NATURAL RESOURCES MANAGEMENT

The goal of the Natural Resources Management major is to provide students with a broad-based understanding of the interconnectedness of social, political, and ecological systems. This knowledge will enable students to design sustainable solutions to address natural resource conservation and management problems. Students will learn about natural resource stewardship in both theory and practice, with an eye toward designing systems that are adaptable and resilient in light of the social and ecological complexity and change that characterize today's challenges. Using an integrative approach, students will learn how to develop local solutions that are sustainable and ethical at larger, global scales. Environmental issues such as land-use change and planning, conservation biology, energy use, climate change, renewable resource management, and citizen engagement in place-based conservation will be addressed. Field measurements and field skills are important components of this major, and students are required to attend a four-week summer field course in ecological investigations and resource management.

Specific objectives are to provide each student with:

1. a science-based core curriculum in biological, physical, and social sciences;
2. a broad foundation in natural resources science and environmental management; and
3. specialization in a subject relevant to natural resources management.

The breadth of the major allows students to specialize in a wide range of topics, including conservation biology, geographic information systems, forest management, rangeland ecology, restoration ecology, natural resource policy, recreation resources, watershed management, wildlife management, or other topics related to natural resources management. This specialization is accomplished by coupling the major with a required minor, typically declared by a student's junior year.

Students are encouraged to participate in internships and obtain related work experience. Participating in seasonal and voluntary work, internships, and cooperative education opportunities will enhance your chances for permanent full-time employment. The department offers numerous opportunities to become engaged in these kinds of endeavors. At the completion of the program, students should have the technical and communication skills that are critical to resolving important natural resource management problems.

Learning Outcomes

Students will:

- Demonstrate knowledge of a wide range of natural resource topics spanning ecological, social and physical aspects of wildland ecosystems
- Demonstrate proficiency in an area of specialization through completion of a minor in an area complementary to natural resource management. Some minors that students find well-suited to develop a proficiency are Global Environmental Sustainability, Forestry, Rangeland Ecology, Ecological Restoration, Watershed Science, Conservation Biology, or Environmental Affairs, though there are many additional options
- Be able to apply their broad natural resources knowledge to create sustainable solutions at local, national, and global scales
- Accurately communicate their knowledge of natural resources, both verbally and in written form

Potential Occupations

Opportunities are available with a wide array of local, national, and international organizations and institutions involved in natural resource management. Graduates apply their education in science, technology, social science, and policy to solving today's critical natural resource and environmental problems. Positions are found with federal, state, and local government agencies, industry, and education and advocacy organizations. Some natural resource professionals are employed in environmental consulting firms and corporate environmental departments. The nonprofit sector provides a variety of environmentally-related jobs, ranging from science application to policy development, education, and collaborative conservation.

Examples of available career choices include, but are not limited to: natural resource manager; professional forester; land use planner; geographic information system (GIS) or remote sensing specialist; fishery/wildlife manager; environmental policy analyst; environmental advocate; environmental consultant; resources/environmental lawyer (with continued education); youth agency administrator; natural resource communications specialist; law enforcement officer; natural resources/environmental educator; restoration specialist; multiple resource use planner; regulatory compliance enforcement officer.

Requirements Effective Fall 2023

Freshman

		AUCC	Credits
BZ 110	Principles of Animal Biology (GT-SC2)	3A	3
BZ 120	Principles of Plant Biology (GT-SC1)	3A	4
CHEM 107	Fundamentals of Chemistry (GT-SC2)	3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)	3A	1
CO 150	College Composition (GT-CO2)	1A	3
F 101	Intro to Forest and Rangeland Stewardship		1
MATH 117	College Algebra in Context I (GT-MA1)	1B	1
MATH 118	College Algebra in Context II (GT-MA1)	1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	1B	1

NR 193	FRS First Semester Seminar		1
SPCM 200	Public Speaking		3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	6
	Total Credits		**29**
Sophomore			
ECON 202	Principles of Microeconomics (GT-SS1)	3C	3
F 209	Introduction to Forest and Rangeland Ecology		3
F 310/RS 310	Forest and Rangeland Ecogeography		3
SOCR 240	Introductory Soil Science		4
STAT 301	Introduction to Applied Statistical Methods		3
Select one course from the following:			1-2
F 312	Dendrology		
RS 312	Rangeland Plant Identification Lab		
Select one course from the following:			3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)	3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)	3A	
GEOL 124	Geology of Natural Resources (GT-SC2)	3A	
Minor[1]			3
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)		1C	3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Elective			0-1
	Total Credits		**30**
Summer			
NR 220	Natural Resource Ecology and Measurements		5
	Total Credits		**5**
Junior			
F 322	Economics of the Forest Environment		3
F 325	Silviculture		3
GR 204/WR 204	Sustainable Watersheds (GT-SC2)	3A	3
NR 319	Introduction to Geospatial Science		4
NR 320	Natural Resources History and Policy		3
Select one course from the following:			3
CO 300	Writing Arguments (GT-CO3)	2	
JTC 300	Strategic Writing and Communication (GT-CO3)	2	
Select one course from the following:			3
F 311	Forest Ecology		
RS 351	Wildland Ecosystems in a Changing World		
Minor[1]			6
	Total Credits		**28**
Senior			
F 321	Forest and Natural Resource Biometry		3
F 326	Wildland Fire Behavior and Management		3
NR 400	Public Communication in Natural Resources	4A,4B	3
NR 420	Integrated Ecosystem Management	4C	4
RS 300	Rangeland Conservation and Stewardship		3

Minor[1]		12
	Total Credits	**28**
	Program Total Credits:	**120**

At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

[1] Students must complete the requirements for a minor in any discipline.

Major Completion Map

At least 200 hours of acceptable professional work experience in the student's field prior to graduation is highly recommended. This can include summer/seasonal/school semester employment in natural resource management through paid summer jobs, an approved internship, volunteer positions, or work study experience. Acceptable work experience includes (but is not limited to) working for federal, state, non-governmental, private, and university organizations that research or manage natural resources, or are responsible for public policy or public relations related to natural resources.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 120	Principles of Plant Biology (GT-SC1)	X		3A	4
CO 150	College Composition (GT-CO2)			1A	3
F 101	Intro to Forest and Rangeland Stewardship				1
MATH 117	College Algebra in Context I (GT-MA1)	X		1B	1
MATH 118	College Algebra in Context II (GT-MA1)	X		1B	1
MATH 125	Numerical Trigonometry (GT-MA1)	X		1B	1
NR 193	FRS First Semester Seminar				1
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
	Total Credits				**15**
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
BZ 110	Principles of Animal Biology (GT-SC2)	X		3A	3
CHEM 107	Fundamentals of Chemistry (GT-SC2)	X		3A	4
CHEM 108	Fundamentals of Chemistry Laboratory (GT-SC1)			3A	1
SPCM 200	Public Speaking				3
Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
CO 150 must be completed by the end of Semester 2.		X			
	Total Credits				**14**

Sophomore

Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
ECON 202	Principles of Microeconomics (GT-SS1)	X		3C	3
F 209	Introduction to Forest and Rangeland Ecology	X			3
F 310/RS 310	Forest and Rangeland Ecogeography				3
SOCR 240	Introductory Soil Science	X			4
Select one course from the following:					1-2
F 312	Dendrology				
RS 312	Rangeland Plant Identification Lab				
Elective					0-1
	Total Credits				**15**
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
STAT 301	Introduction to Applied Statistical Methods	X			3
Select one course from the following:					3
GEOL 120	Exploring Earth - Physical Geology (GT-SC2)			3A	
GEOL 122	The Blue Planet - Geology of Our Environment (GT-SC2)			3A	

GEOL 124	Geology of Natural Resources (GT-SC2)			3A	
Minor Course					3
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)				1C	3
Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)				3D	3
	Total Credits				**15**
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 220	Natural Resource Ecology and Measurements	X			5
	Total Credits				**5**
Junior					
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 319	Introduction to Geospatial Science				4
F 322	Economics of the Forest Environment				3
Select one course from the following:					3
F 311	Forest Ecology				
RS 351	Wildland Ecosystems in a Changing World				
Minor Course					3
Forestry minors take F 325 instead of NR 326.					
	Total Credits				**13**
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
F 325	Silviculture				3
GR 204/WR 204	Sustainable Watersheds (GT-SC2)	X		3A	3
NR 320	Natural Resources History and Policy	X			3
Select one course from the following:					3
CO 300	Writing Arguments (GT-CO3)			2	
JTC 300	Strategic Writing and Communication (GT-CO3)			2	
Minor Course					3
	Total Credits				**15**
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Professional Work Experience					
	Total Credits				**0**
Senior					
Semester 9		**Critical**	**Recommended**	**AUCC**	**Credits**
F 321	Forest and Natural Resource Biometry				3
F 326	Wildland Fire Behavior and Management				3
RS 300	Rangeland Conservation and Stewardship				3
Minor Courses					6
	Total Credits				**15**
Semester 10		**Critical**	**Recommended**	**AUCC**	**Credits**
NR 400	Public Communication in Natural Resources			4A,4B	3
NR 420	Integrated Ecosystem Management	X		4C	4
Minor Courses		X			6
The benchmark courses for the 10th semester are the remaining courses in the entire program of study.		X			
	Total Credits				**13**
	Program Total Credits:				**120**