ENVIRONMENTAL CONSERVATION AND SUSTAINABILITY MAJOR (B.S.)

https://colsa.unh.edu/natural-resources-environment/program/bs/environmental-conservation-sustainability-major

Description

The ECS major curriculum is comprised of core requirements providing integrative courses in both environmental conservation and sustainability, along with a foundation in biology, ecology, physical and social science, and the basic tools and skills applied to problem solving. These core requirements are typically fulfilled in the first two years. Beginning in their junior year, ECS students, in consultation with their advisers, create a course focus area based on an ecological system or natural resource of their choosing. The focus area provides advanced study in ecology and natural resources; social sciences; tools, skills, and/or natural history and should reflect the student's interests and future goals. Additionally, each ECS student completes a practicum experience and a capstone option.

The ECS major provides the opportunity for students to gain a common foundation of knowledge and skills emphasizing integration and critical thinking, while allowing for sufficient flexibility to pursue their interests and passions within a large and complex field of study. The design of the curriculum will allow each student at least four, and as many as six, free electives, which they may fulfill as they choose. Many students pursue international experiences, such as the UNH EcoQuest program in New Zealand, add a minor or dual degree (such as the dual degree in global studies), and/or pursue research opportunities with our faculty or through another of UNH's undergraduate research opportunity programs.

Requirements

Degree Requirements

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated.
**Major GPA requirements as indicated.*

Major Requirements

A minimum grade of C- is required in coursework for the major.

Code	Title	Credits
Core Requirements		
Foundational Courses:		
NR 435	Contemporary Conservation Issues and Environmental Awareness	4
NR 437	Principles of Sustainability	4
Natural Science:		
Biology:		
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology	
NR 439	Environmental Biology	
Ecological Principles: Select one of the following		4
BIOL 541W	Ecology	
NR 527	Forest Ecology	
AGFS 502	Agroecology	
Physical Science: Select one of the following		4
NR 403	Introduction to Environmental Science	
CHEM 403	General Chemistry I	
CHBE 410	Energy and Environment	
ESCI 409	Geology and the Environment	
CEE 520	Environmental Pollution and Protection: A Global Context	
PHYS 401	Introduction to Physics I	
Social Science:		
Resource Economics:		
NR 411	Environmental and Resource Economics Perspectives	
Environmental Ethics and Values: Select one of the following		4
NR 784	Sustainable Living - Global Perspectives	
SOC 565	Environment and Society	
Natural Resources Policy: Select one of the following		4
NR 602	Natural Resources and Environmental Policy	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
Essential Tools and Skills:		
Field Methods:		
NR 415	Natural Resources Field Methods	
Statistics: Select one of the following		4
BIOL 528	Applied Biostatistics I	
NR 525	Statistical Methods and Applications	
Geospatial Analysis:		
NR 658	Introduction to Geographic Information Systems	
Writing Skills: Select one of the following		4
ENGL 502	Professional and Technical Writing	
ENGL 503	Persuasive Writing	
Presentation Skills: Select one of the following		4
NR 508	Communicating Science	
CMN 500	Public Speaking	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
THDA 583	Introduction to Puppetry	
THDA 624	Theatre for Young Audiences	
Focus Area		
Select seven total courses to create a focus area addressing an environmental issue, ecological system, or natural resource (see below) [1]		28
Ecology and Natural Resources:		
Select one to four courses: no more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.		
ESCI 405	Global Environmental Change	
NR 433	Wildlife Ecology	
NR 501	Studio Soils	
NR 504	Freshwater Resources	
NR 640	Wildlife Population Ecology	
NR 642	Introduction to Biogeography	
NR 650	Principles of Conservation Biology	
NR 660	Ecology and Biogeography of New Zealand	
NR 661	Restoration Ecology and Ecosystem Management in New Zealand	
NR 663	Applied Directed Research in New Zealand	
NR 664	Conservation Genetics and Applied Evolution	
AGFS 671	Agroecology and Sustainable Land Management in Aotearoa New Zealand	
MEFB 628	Marine Invertebrate Evolution and Ecology	
MEFB 674	Ecology and Marine Environment	
AGFS 760W	Integrated Pest Management	
MEFB 702	Sustainable Marine Fisheries	
MEFB 747	Aquatic Plants in Restoration/Management	
MEFB 755	Biological Oceanography	
MEFB 772	Fisheries Biology: Conservation and Management	
NR 706	Soil Ecology	
NR 730	Terrestrial Ecosystems	

NR 734	Tropical Ecology	
NR 743	Addressing Arctic Challenges	
NR 744	Biogeochemistry	
NR 751	Aquatic Ecosystems	
NR 761	Environmental Soil Chemistry	
NR 765	Community Ecology	
NR 782	Forest Health in a Changing World	
ZOOL 708	Stream Ecology	
ZOOL 726	Conservation Behavior	
Social Sciences		
Select two to five courses: no more than one course may be at the 400 or 500 level. Additional courses must be at the 600 or 700 levels.		
CEP 415	Community Development Perspectives	
TOUR 400	Introduction to Tourism	
CEP 508	Applied Community Development	
NR 507	Introduction to our Energy System and Sustainable Energy	
NR 572	Introduction to Natural Resource Economics	
AGFS 672	Pathways to Sustainable Agriculture and Food Systems in Aotearoa New Zealand	
AGFS 673	Agricultural Production and Business Practice in Aotearoa New Zealand	
AGFS 690	Agricultural and Food Policy	
CEP 614	Fundamentals of Planning	
CEP 627	Community Economics	
CEP 673	Green Real Estate	
ECON 605	Intermediate Microeconomic Analysis	
ECON 645	International Economics	
HIST 618	American Environmental History	
GEOG 673	Political Ecology	
NR 606	International Energy Topics	
NR 607	Land Economics Perspectives: Uses, Policies, and Taxes	
NR 608	Economics of Sustainability	
NR 643	Economics of Forestry	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand	
SOC 665	Environmental Sociology	
ECON 706	Economics of Climate Change	
MARI 705	Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy	
NR 708W	Environmental Economics	
NR 724	Resolving Environmental Conflicts	
NR 756W	Rural and Regional Economic Development	
NR 720	International Environmental Politics and Policies for the 21st Century	
NR 784	Sustainable Living - Global Perspectives	
NR 787	Advanced Topics in Sustainable Energy	
SOC 730	Communities and the Environment	
Advanced Tools & Skills and Natural History		
Select at least one course		
AGFS 670	Systems Thinking: Land Use Capability and Sustainability in Aotearoa New Zealand	
BIOL 752	New England Mushrooms: a Field and Lab Exploration	
CEP 777	Topics in Community Planning	
NR 425	Field Dendrology	
NR 703	Watershed Water Quality Management	
NR 707	Environmental Modeling	
NR 712	Mammalogy	
NR 713	Quantitative Ecology	
NR 729	Silviculture	
NR 745	Forest Management	
NR 749	Forest Inventory and Modeling	
NR 757	Remote Sensing of the Environment	
NR 759	Digital Image Processing for Natural Resources	
NR 760	Geographic Information Systems in Natural Resources	
NR 785	Systems Thinking for Sustainable Solutions	
NR 767W	Social Impact Assessment	
SOC 601	Methods of Social Research	
ZOOL 542	Ornithology	
Senior Capstone Options		
The ECS major capstone experience may be filled by any one (1) of the following options:		4
Option 1:		
NR 786	Leadership for Sustainability	
Option 2: Both seminars must be scheduled. At least one must be taken in the senior year.		
NR 753 & NR 754	Critical Issues in Sustainability: Sustainability as an Abundance Paradigm and Critical Issues in Sustainability: Sense of Place	
Option 3:		
NR 663	Applied Directed Research in New Zealand (NZ Directed projects, if taken in the senior year) [2]	
Option 4:		
Directed projects fulfilling one of the following: NR 799, McNair Research Theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, etc.) may be applied in consultation with the adviser and ECS program coordinator.		
Work Experience		
NR 600	Work Experience [3]	0

1 The focus area is based upon at least one course in the ecology and natural resources category, along with a combination of courses in the social sciences; tools, skills, and natural history categories; and any additional courses from the ecology and natural resources category reflecting the student's interests and future direction. Focus areas should be designed in close consultation with the adviser. Courses used to fulfill core requirements may not be used in the focus area.

2 If NR 663 Applied Directed Research in New Zealand is taken in the junior year or earlier, then one Critical Issues seminar (2cr) or Leadership for Sustainability must be taken in the senior year to fulfill the capstone requirement.

3 Each ECS major will engage in a practical experience reflecting their interests and goals. The choice of the experience will be made in conjunction with the adviser and may occur any time beginning with the sophomore year.

Degree Plan

Sample Degree Plan

This sample degree plan serves as a general guide; students collaborate with their academic advisor to develop a personalized degree plan to meet their academic goals and program requirements.

First Year		
Fall		**Credits**
BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology (Inquiry, Disc BS)	4
NR 435	Contemporary Conservation Issues and Environmental Awareness (Disc ETS)	4
NR 411	Environmental and Resource Economics Perspectives (or Discovery Course, not SS or ETS)	4
ENGL 401 or Discovery Course		4
	Credits	**16**
Spring		
NR 437	Principles of Sustainability	4
NR 439	Environmental Biology	4
NR 411	Environmental and Resource Economics Perspectives (or Discovery Course, not SS or ETS)	4
ENGL 401 or Discovery Course		4
	Credits	**16**
Second Year		
Fall		
NR 415	Natural Resources Field Methods	2
Ecological Principles [1]		4

Physical Science (Disc PS) [2]		4
Presentation Skills (possible Disc FPA) [2]		4
Practicum [3]		0
Elective		4
Credits		**18**
Spring		
Statistics (Disc QR) [2]		4
Writing Skills (Univ. writing req.) [2]		4
NR 658	Introduction to Geographic Information Systems	4
NR 602 or Discovery Course		4
Credits		**16**
Third Year		
Fall		
NR 602 or Discovery Course		4
Ethics/Values Requirement		4
Focus Area Courses		8
OR Electives		
OR any remaining Discovery or WI requirement		
OR Capstone [4]		
Credits		**16**
Spring		
Focus Area Courses [5]		16
OR Electives		
OR any remaining Discovery or WI requirements		
OR Capstone [4]		
Credits		**16**
Fourth Year		
Fall		
Capstone Requirement [5]		2-4
Focus Area Courses		12
OR Electives		
OR any remaining Discovery of WI requirements		
Credits		**14-16**
Spring		
Capstone Requirement [5]		2-4
Focus Area Courses		12
OR Electives		
OR any remaining Discovery of WI requirements		
Credits		**14-16**
Total Credits		**126-130**

1. All choices for the Ecological Principles requirement ***except*** for AGFS 502 are fall courses.
2. The Statistics, Physical Science, Writing Skills and Presentation Skills requirements may be taken in either the Fall or Spring Semester of the second year.
3. Work experience, internship, etc may be scheduled any time beginning in the second year.
4. One of the 2 credit capstone seminars may be taken in either the fall or spring of the junior year.
5. One 2 credit seminar may be taken in each of the Fall and Spring semesters of the Senior Year OR NR 786 may be taken in the Fall semester of the Senior Year.

Student Learning Outcomes

Program Learning Outcomes
Students will be able to:

- Describe and explain the interactions among physical, biological, chemical, and human components of the environment;
- Formulate tests of environmental questions, acquire data, and apply scientific methods to answer these questions;
- Describe and explain the ecological and societal value of biodiversity, sustainability, and environmental stewardship;
- Use principles of ecology, economics, sustainability, and policy science to solve real-world environmental problems;
- Communicate effectively to peers within the environmental community and with audiences outside of the discipline.