

# ENVIRONMENTAL CONSERVATION AND SUSTAINABILITY MAJOR (B.S.)

<http://colsa.unh.edu/nren/ecs/environmental-conservation-and-sustainability-bs>

## Description

### ECS Major Curriculum

The ECS major is comprised of 14 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 seven 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 international studies), and/or pursue research opportunities with our faculty or through another of UNH's undergraduate research opportunity programs.

## Requirements

### ECS Major Requirements

#### Degree Core Requirements

##### Foundational Courses:

NR 435	Contemporary Conservation Issues and Environmental Awareness (ETS)	4
NR 437	Principles of Sustainability	4

##### Natural Science:

###### Biology:

BIOL 412	Introductory Biology: Evolution, Biodiversity and Ecology (BS DLAB, INQ)	4
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NR 439	Environmental Biology	4
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Ecological Principles: Select one of the following		4
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BIOL 541	General Ecology (WI)	
NR 527	Forest Ecology	
SAFS 502	Agroecology	

Physical Science: Select one of the following		4
NR 403	Introduction to Environmental Science (INQ)	
NR 458	The Science of Where (Summer, on-line, PS DLAB)	
CHEM 403	General Chemistry I (PS DLAB)	
CHE 410	Energy and Environment (PS)	
ESCI 409	Geology and the Environment ( PS DLAB)	
CEE 520	Environmental Pollution and Protection: A Global Context	
PHYS 401	Introduction to Physics I ( PS DLAB)	

##### Social Science:

###### Resource Economics:

EREC 411	Environmental and Resource Economics Perspectives (SS)	4
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Environmental Ethics and Values: Select one of the following		4
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NR 701	Ecological Sustainability and Values (WI)	
NR 784	Sustainable Living - Global Perspectives	
SOC 565	Environment and Society	

Natural Resources Policy: Select one of the following		4
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NR 602	Natural Resources and Environmental Policy (WI)	
NR 662	Environmental Policy, Planning and Sustainability in New Zealand (WI)	

##### Essential Tools and Skills:

###### Field Methods:

NR 415	Natural Resources Field Methods	2
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Statistics: Select one of the following		4
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BIOL 528	Applied Biostatistics I	
EREC 525	Statistical Methods and Applications	

###### Geospatial Analysis:

NR 658	Introduction to Geographic Information Systems	4
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Writing Skills: Select one of the following		4
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ENGL 502	Professional and Technical Writing (WI)	
ENGL 503	Persuasive Writing (WI)	
ENGL 521	Nature Writers (WI)	

Presentation Skills: Select one of the following		4
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CMN 500	Public Speaking	
THDA 520	Creative Drama	
THDA 583	Introduction to Puppetry	
THDA 522	Storytelling, Story Theatre, and Involvement Dramatics	
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)<sup>1</sup>

##### 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 502	Forest Ecosystems and Environmental Change	
NR 504	Freshwater Resources	
NR 603	Landscape Ecology	

NR 625	Physiological Ecology
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
NR 706	Soil Ecology
NR 711	Wetland Ecology and Management
NR 729	Silviculture
NR 730	Terrestrial Ecosystems
NR 734	Tropical Ecology
NR 744	Biogeochemistry
NR 751	Aquatic Ecosystems
NR 761	Environmental Soil Chemistry
NR 765	Community Ecology
NR 782	Forest Health in a Changing World
NR 783	Forest Communities of New Hampshire
MEFB 717	Lake Ecology
MEFB 725	Marine Ecology
MEFB 747	Aquatic Plants in Restoration/Management
SAFS 760	Insect Pest Management
ZOOL 628	Marine Invertebrate Evolution and Ecology
ESCI 750	Biological Oceanography
ZOOL 772	Fisheries Biology
MEFB #616	Tropical Coastal Plant Ecology
MEFB 674	Ecology and Marine Environment
MEFB 702	Sustainable Marine Fisheries

**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
NR 507	Introduction to our Energy System and Sustainable Energy
NR 606	International Energy Topics
NR 643	Economics of Forestry
NR 662	Environmental Policy, Planning and Sustainability in New Zealand
NR 701	Ecological Sustainability and Values
NR 718	Law of Natural Resources and Environment
NR 720	International Environmental Politics and Policies for the 21st Century
NR 724	Resolving Environmental Conflicts
NR 784	Sustainable Living - Global Perspectives
NR 787	Advanced Topics in Sustainable Energy
ANTH 680	Globalization, Development, and Poverty
ANTH 695	Globalization and Global Population Health
CEP 508	Applied Community Development
CEP 614	Fundamentals of Planning
ECON 605	Intermediate Microeconomic Analysis
ECON 645	International Economics

ECON 668	Economic Development
ECON 669	Women and Economic Development
ECON 706	Economics of Climate Change
EREC 627	Community Economics
EREC 680	Agricultural and Food Policy
EREC 708	Environmental Economics
EREC #711	Marine Resource Economics
EREC 756	Rural and Regional Economic Development
GEOG 673	Political Ecology
HIST 618	American Environmental History
POLT 751	Comparative Environmental Politics and Policy
POLT 780	International Environmental Politics, Policy, and Law
SOC 665	Environmental Sociology
SOC 730	Communities and the Environment

**Advanced Tools & Skills and Natural History**

Select at least one course

NR 425	Field Dendrology
NR 655	Vertebrate Biology
NR 703	Watershed Water Quality Management
NR 707	Environmental Modeling
NR 712	Mammalogy
NR 713	Quantitative Ecology
NR #716	Wetland Delineation
NR #719	Wetlands Restoration and Mitigation
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
SOC 601	Methods of Social Research
MEFB 719	Field Studies in Lake Ecology
MEFB 732	Lake Management
ZOOL 542	Ornithology
BIOL 752	Mycology
ZOOL 745	Biology and Diversity of Insects

**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 Critical Issues in Sustainability: Sustainability as an Abundance Paradigm & NR 754 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)<sup>2</sup>

Option 4:

Directed projects fulfilling one of the following: 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 <sup>3</sup>
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Total Credits	86
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- <sup>1</sup> 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.
- <sup>2</sup> 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.
- <sup>3</sup> 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.