ENVIRONMENTAL CONSERVATION AND SUSTAINABILITY MAJOR (B.S.)

https://colisa.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.

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

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<td></td>
<td><strong>Core Requirements</strong></td>
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<tr>
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<td>Foundational Courses:</td>
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<tr>
<td>NR 435</td>
<td>Contemporary Conservation Issues and Environmental Awareness</td>
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<td>NR 437</td>
<td>Principles of Sustainability</td>
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<td>Natural Science:</td>
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<td>Biology</td>
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<td><strong>Ecological Principles:</strong></td>
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<td>BOL 412</td>
<td>Introductory Biology: Evolution, Biodiversity and Ecology</td>
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<td>NR 439</td>
<td>Environmental Biology</td>
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<td>EREC 411</td>
<td>Environmental and Resource Economics Perspectives</td>
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<td>EREC 525</td>
<td>Statistical Methods and Applications</td>
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<td><strong>Focus Area:</strong></td>
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<td>Select seven total courses to create a focus area addressing an</td>
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<td>environmental issue, ecological system, or natural resource (see</td>
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<td><strong>Ecology and Natural Resources:</strong></td>
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<td>Select one to four courses: no more than one course may be at the</td>
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<td>400 or 500 level. Additional courses must be at the 600 or 700</td>
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NR 782  Forest Health in a Changing World
ESCI 405  Global Environmental Change
MEFB 628  Marine Invertebrate Evolution and Ecology
MEFB 674  Ecology and Marine Environment
MEFB 702  Sustainable Marine Fisheries
MEFB 725  Marine Ecology
MEFB 772  Fisheries Biology: Conservation and Management
MEFB 747  Aquatic Plants in Restoration/Management
MEFB 755  Biological Oceanography
SAFS 671  Agroecology and Sustainable Land Management in Aotearoa New Zealand
SAFS 760  Insect Pest Management
ZOOI 708  Stream Ecology
ZOOI 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
CEP 508  Applied Community Development
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 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 665  Globalization and Global Population Health
CEP 614  Fundamentals of Planning
CEP 673  Green Real Estate
ECON 665  Intermediate Microeconomic Analysis
ECON 645  International Economics
ECON H668  Economic Development
ECON 706  Economics of Climate Change
EREC 572  Introduction to Natural Resource Economics
EREC 606  Land Economics Perspectives: Uses, Policies, and Taxes
EREC 627  Community Economics
EREC 680  Agricultural and Food Policy
EREC 708  Environmental Economics
EREC 756  Rural and Regional Economic Development
GEOS 673  Political Ecology
HIST 618  American Environmental History
MARI 705  Introduction to Marine Policy: Understanding US Ocean, Coastal and Great Lakes Policy
POLT 751  Comparative Environmental Politics and Policy
SAFS 672  Pathways to Sustainable Agriculture and Food Systems in Aotearoa New Zealand
SAFS 673  Agricultural Production and Business Practice in Aotearoa New Zealand
SOC 665  Environmental Sociology
SOC 730  Communities and the Environment
TOUR 400  Introduction to Tourism

Advanced Tools & Skills and Natural History

Select at least one course

NR 425  Field Dendrology
NR 465  Vertebrate Biology
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
BIOL 752  New England Mushrooms: a Field and Lab Exploration
CEP 777  Topics in Community Planning
SAFS 670  Systems Thinking: Land Use Capability and Sustainability in Aotearoa New Zealand
SOC 601  Methods of Social Research

TOUR 767  Social Impact Assessment
ZOOI 542  Ornithology

Senior Capstone Options

The ECS major capstone experience may be fulfilled by any one (1) of the following options:

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)  

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 660  Work Experience  

Total Credits 60

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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.

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Degree Plan

Sample Course Sequence

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
EREC 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
EREC 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 |

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1. All choices for the Ecological Principles requirement except for SAFS 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

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.