Environmental and Sustainability Sciences, BS

Our Bachelor of Science in Environmental and Sustainability Sciences is designed to provide students comprehensive and transdisciplinary skills needed to tackle the pressing environmental problems we face. Our core curriculum is grounded in a solid foundation in Earth systems, ecology, sustainable development, and required skills courses in data management and geographic information systems. Students then diverge into one of four concentrations. For students interested in the interface of social and ecological systems and who want to view environmental problem solving through a social science lens, we have a concentration in environment and society. For students interested in the nexus of food, water, and energy, our concentration in sustainable development and planning might be most appropriate. Is the conservation of organisms and their ecosystems the area you are most interested in? Our concentration in conservation, restoration, and management may be the best choice. Lastly, for students interested in understanding environmental problem solving from an Earth systems perspective, courses in our Earth, oceans, and environmental change concentration will satisfy your curiosity. In the final semester, our students build teams that bring the skills developed across the varied concentrations back together to learn from each other and to work with our partners to solve specific environmental challenges presented by our stakeholders. Combined, this degree seeks to prepare students to work across a wide array of disciplines to help solve the environmental challenges of the future.

There are a number of interdisciplinary opportunities involving Environmental and Sustainability Sciences. Due to curricular overlap, combinations of any Environmental and Sustainability Sciences major, including combined majors, cannot occur with majors or minors in Ecology and Evolutionary Biology or Environmental Studies, or with the minor in Geoscience.

### Program Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

### University-Wide Requirements

All undergraduate students are required to complete the University-Wide Requirements (http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/).

### NUpath Requirements

All undergraduate students are required to complete the NUpath Requirements (http://catalog.northeastern.edu/undergraduate/university-academics/nupath/+).

### Environmental and Sustainability Sciences Major Requirements

**Code** | **Title** | **Hours**
---|---|---
ENVR 1000 | Marine and Environmental Sciences at Northeastern | 1

### Mathematics Requirements

**Code** | **Title** | **Hours**
---|---|---
ENVR 1400 and ENVR 1401 | Foundations in Environmental and Sustainability Sciences and Lab for ENVR 1400 | 5
ENVR 1500 and ENVR 1501 | Introduction to Environmental, Social, and Biological Data and Lab for ENVR 1500 | 5
EEMB 2302 and EEMB 2303 | Ecology and Lab for EEMB 2302 | 5
ENVR 1200 and ENVR 1201 or ENVR 2200 | Dynamic Earth and Lab for ENVR 1200 or Earth’s Changing Cycles | 4
ENVR 2515 | Sustainable Development | 4
ENVR 3000 and ENVR 3301 | Geographic Information Systems and Lab for ENVR 3000 | 5
ENVR 4000 | Science Communication and Professional Development | 4
ENVR 4050 | Solving Emerging Environmental Challenges through Capstone Junior/Senior Honors Project 2 or ENVR 4971 or ENVR 4997 | 4
ENVR 5450 and ENVR 5451 | Biostatistics and Lab for ENVR 5450 | 4
MATH 1241 | Calculus 1 | 4
MATH 1251 or MATH 1341 | Calculus and Differential Equations for Biology 1 or Calculus 1 for Science and Engineering | 4
MATH 2420 | Calculus 2 | 4
MATH 3420 | Calculus 3 | 4

### ENVIROMENTAL AND SUSTAINABILITY SCIENCES CONCENTRATIONS

Complete one of the following concentrations:

### CONCENTRATION IN ENVIRONMENT AND SOCIETY

**Code** | **Title** | **Hours**
---|---|---
ENVR 5450 | Applied Social-Ecological Systems Modeling | 4
POLS 2395 | Environmental Politics and Policy | 4
PPUA 5260 | Ecological Economics | 4
SOCL 1246 | Environment and Society | 4
SOCL 2485 | Environment, Technology, and Society | 4

Environment and Society Electives

Complete five of the following: 20-24

**Code** | **Title**
---|---
CIVE 5275 | Life Cycle Assessment of Materials, Products, and Infrastructure
EEMB 2420 | Fisheries Biology, Policy, and Conservation
EEMB 3460 | Conservation Biology
EEMB 3470 | Coastal Ecology and Sustainability
EEMB 4000 and ENVR 3151 | Applied Conservation Biology and Food Sustainability in the Mediterranean - Abroad
ENVR 3150 | Food Security and Sustainability
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<td>ENVR 5210</td>
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<td>ENVR 5350</td>
<td>Sustainable Energy and Climate Solutions</td>
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**Sustainable Planning and Development Electives**

Complete five of the following: 20-28

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<td>and Coastal Sustainability: The Blue Economy of the Gulf of Maine</td>
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<td>and ENVR 3151</td>
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**CONCENTRATION IN EARTH, OCEANS, AND ENVIRONMENTAL CHANGE**

**Earth Systems**

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**Earth Materials and Landforms**

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**Freshwater**

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**Oceans**

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**Environmental Change**

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**Chemistry**

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<td>Climate and Atmospheric Change</td>
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</table>
**Environmental and Sustainability Sciences, BS**

**Chemistry Courses**
- CHEM 1161 and CHEM 1162 and CHEM 1163: General Chemistry for Science Majors and Lab for CHEM 1161 and Recitation for CHEM 1161
- CHEM 1211 and CHEM 1212 and CHEM 1213: General Chemistry 1 and Lab for CHEM 1211 and Recitation for CHEM 1211

**Physics Courses**
- Complete one of the following: 5
  - PHYS 1145 and PHYS 1146: Physics for Life Sciences 1 and Lab for PHYS 1145
  - PHYS 1151 and PHYS 1152 and PHYS 1153: Physics for Engineering 1 and Lab for PHYS 1151 and Interactive Learning Seminar for PHYS 1151
  - PHYS 1161 and PHYS 1162 and PHYS 1163: Physics 1 and Lab for PHYS 1161 and Recitation for PHYS 1161

**Earth, Oceans, and Environmental Change Electives**
- Complete three of the following: 12-15
  - CIVE 3435: Environmental Pollution Fate and Transport
  - CIVE 5280: Remote Sensing of the Environment
  - ENVR 2310 and ENVR 2311: Earth Materials and Lab for ENVR 2310
  - ENVR 2340 and ENVR 2341: Earth Landforms and Processes and Lab for ENVR 2340
  - ENVR 3125: Global Oceanic Change
  - ENVR 3200: Water Resources
  - ENVR 3410: Environmental Geochemistry
  - ENVR 3418: Geophysics
  - ENVR 3600: Oceanography
  - ENVR 4500 and ENVR 4501: Applied Hydrogeology and Lab for ENVR 4500
  - ENVR 5190: Soil Science
  - ENVR 5201 and ENVR 5202: Geologic Field Seminar and Environmental Science Field Seminar Abroad
  - ENVR 5240 and ENVR 5241: Sedimentary Basin Analysis and Lab for ENVR 5240
  - ENVR 5242 and ENVR 5243: Ancient Marine Life and Lab for ENVR 5242
  - ENVR 5270 and ENVR 5271: Glacial and Quaternary History and Lab for ENVR 5270

**Environmental and Sustainability Sciences Major Credit Requirement**
- Complete 81 semester hours in the major.

**Program Requirement**
- 136 total semester hours required

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**Plan of Study**

**Four Years, One Co-op in Spring/Summer 1**

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### Environmental and Sustainability Sciences, BS

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Total Hours: 136

### Four Years, One Co-op in Summer 2/Fall

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Total Hours: 136

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Total Hours: 136