The Bachelor of Science in Ecology and Evolutionary Biology (EEB) degree is designed to provide a strong foundation in the fundamentals of ecology and evolutionary biology, including focal points in population, community, and ecosystem ecology; evolutionary ecology and biology; conservation biology; population genetics; behavior; and ecological and evolutionary genomics. Our major provides unique experiential learning opportunities for students interested in the fundamentals of evolution; the ecology of terrestrial, marine, and freshwater systems; and the application of both of these in the pursuit of the conservation and restoration of natural systems. Further, students in our major have the opportunity to focus on cutting-edge techniques in the use of molecular tools to answer fundamental questions in ecology and evolution. The interdisciplinary nature of our major fosters critical thinking and creativity in scientific problem solving while instilling skills that will result in scientifically literate global citizens. The curriculum for this major also satisfies premed and prevet requirements. Courses offered by this major fulfill several core competencies required by the university. Engaging with the Natural and Designed World, Exploring Created Expression and Innovation, Conducting Formal and Quantitative Reasoning, Analyzing and Using Data, Employing Ethical Reasoning, writing-intensive courses, and capstone.

Fieldwork is a valued component of training in our programs, and several of our courses use field sites, resources, and facilities of the Marine Science Center and throughout the greater Boston area. Students interested in having a foundational education in ecology and evolutionary biology, and also participating in the Northeastern Three Seas Program, will be able to meet the requirements for both programs. All students will also have the option to complete undergraduate research experiences with faculty members in the Department of Marine and Environmental Sciences and can take advantage of our faculty networks of scientists and practitioners for additional co-op and research opportunities.

Students graduating with an EEB major will be prepared for success in pursuing graduate degrees, for working in multiple areas of science and technology—including data science and biotech sectors—and for positions with consulting companies, nonprofits, and government agencies.

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/).

Due to overlap in course content, double majoring in Ecology and Evolutionary Biology and Marine Biology is not permitted.

---

### Ecology and Evolutionary Biology Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEMB 1101</td>
<td>Foundations in Ecology and Evolutionary Biology</td>
<td>5</td>
</tr>
<tr>
<td>EEMB 1102</td>
<td>and Lab for EEMB 1101</td>
<td></td>
</tr>
</tbody>
</table>

### Ecology and Evolutionary Genomics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEMB 1105</td>
<td>Foundations in Ecological and Evolutionary Genomics</td>
<td>5</td>
</tr>
<tr>
<td>EEMB 1106</td>
<td>and Lab for EEMB 1105</td>
<td></td>
</tr>
</tbody>
</table>

### Genetics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 2301</td>
<td>Genetics and Molecular Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 2302</td>
<td>and Lab for BIOL 2301</td>
<td></td>
</tr>
</tbody>
</table>

### Evolution

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEMB 2400</td>
<td>Introduction to Evolution</td>
<td>4</td>
</tr>
</tbody>
</table>

### Ecology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEMB 2302</td>
<td>Ecology</td>
<td>5</td>
</tr>
<tr>
<td>EEMB 2303</td>
<td>and Lab for EEMB 2302</td>
<td></td>
</tr>
</tbody>
</table>

### Conservation

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEMB 3460</td>
<td>Conservation Biology</td>
<td>4</td>
</tr>
</tbody>
</table>

### Data Skills

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVR 1500</td>
<td>Introduction to Environmental, Social, and Biological</td>
<td>4</td>
</tr>
</tbody>
</table>

### Biostatistics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVR 2500</td>
<td>Biostatistics and Lab for ENVR 2500</td>
<td>5</td>
</tr>
</tbody>
</table>

### Communication

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVR 4000</td>
<td>Science Communication and Professional Development</td>
<td>4</td>
</tr>
</tbody>
</table>

### Capstone

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVR 4997</td>
<td>Senior Thesis</td>
<td>4</td>
</tr>
<tr>
<td>ENVR 4900</td>
<td>Earth and Environmental Science Capstone</td>
<td></td>
</tr>
</tbody>
</table>

---

### Supporting Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1241</td>
<td>Calculus 1</td>
<td>4</td>
</tr>
<tr>
<td>or MATH 1251</td>
<td>Calculus and Differential Equations for Biology 1</td>
<td></td>
</tr>
</tbody>
</table>

### Chemistry

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1161</td>
<td>General Chemistry for Science Majors and Lab for CHEM 1161</td>
<td>5</td>
</tr>
<tr>
<td>and CHEM 1162</td>
<td>and Lab for CHEM 1161</td>
<td></td>
</tr>
<tr>
<td>and CHEM 1163</td>
<td>and Recitation for CHEM 1161</td>
<td></td>
</tr>
</tbody>
</table>

### Organic or Environmental Chemistry

Complete one of the following: 4-5

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 2311</td>
<td>Organic Chemistry 1</td>
<td></td>
</tr>
<tr>
<td>and CHEM 2312</td>
<td>and Lab for CHEM 2311</td>
<td></td>
</tr>
<tr>
<td>ENVR 3410</td>
<td>Environmental Geochemistry</td>
<td></td>
</tr>
</tbody>
</table>

### Physics 1

Complete one of the following: 5

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 1145</td>
<td>Physics for Life Sciences 1</td>
<td>5</td>
</tr>
<tr>
<td>and PHYS 1146</td>
<td>and Lab for PHYS 1145</td>
<td></td>
</tr>
</tbody>
</table>
### Ecology and Evolutionary Biology Credit Requirement
Complete 88 semester hours in the major.

### Ecology and Evolutionary Biology GPA Requirement
Complete all major courses with a cumulative GPA of 2.000.

### Program Requirement
137 total semester hours required

#### Plan of Study
**Five Year, Three Spring Co-ops**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EEMB 1101 and EEMB 1102</td>
<td>5</td>
<td>EEMB 1105 and EEMB 1106</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>ENVR 1000</td>
<td>1</td>
<td>PHYS 1145 and PHYS 1146</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>MATH 1241 or 1251</td>
<td>4</td>
<td>CHEM 1161 and CHEM 1162 and CHEM 1163</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>ENVR 1500 and ENVR 1501</td>
<td>5</td>
<td>Elective</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
<th>Summer 1</th>
<th>Hours</th>
<th>Summer 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ENVR 2500 and ENVR 2501</td>
<td>5</td>
<td>COOP 3945</td>
<td>0</td>
<td>COOP 3945</td>
<td>0</td>
<td>Elective</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>CHEM 2311 or ENVR 3410</td>
<td>4</td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EESC 2000</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BIOL 2301 and BIOL 2302</td>
<td>5</td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
<th>Summer 1</th>
<th>Hours</th>
<th>Summer 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EEMB 2400</td>
<td>4</td>
<td>COOP 3945</td>
<td>0</td>
<td>COOP 3945</td>
<td>0</td>
<td>Elective</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>EEMB 2302 and EEMB 2303</td>
<td>5</td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EEB Elective #1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Ecology and Evolutionary Biology Topical Requirement
Complete six of the following. At least one course must be taken from each list:

#### Evolution of Organisms
- EEMB 2290: Ecology and Evolution of Behavior
- EEMB 2616: Invertebrate Zoology and Lab for EEMB 2616
- EEMB 2618: Vertebrate Zoology
- EEMB 2700 and EEMB 2701: Marine Biology and Lab for EEMB 2700
- EEMB 3120: Physical Biology of Marine Organisms
- EEMB 3450: Physiological Adaptations to the Environment
- EEMB 3465: Ecological and Conservation Genomics
- EEMB 5534 and EEMB 5535: Marine Invertebrate Zoology and Botany and Lab for EEMB 5534
- MARS 3210: Marine Mammals
- MARS 3430: Biology of Whales
- MARS 3425: Biology of Fishes

#### Ecology and Conservation Biology
- EEMB 3455: Ecosystems Ecology
- EEMB 2420: Fisheries Biology, Policy, and Conservation
- EEMB 3470 and EEMB 3471: Coastal Ecology and Sustainability and Lab for EEMB 3470
- EEMB 3475: Wildlife Ecology
- EEMB 4001: Landscape and Restoration Ecology
- ENVR 3125: Global Oceanic Change
- ENVR 3150: Food Security and Sustainability
- MARS 3315: Wetlands: Ecology and Hydrology
- ENVR 5242: Ancient Marine Life
- EEMB 3466: Disease Ecology
- EEMB 4000: Applied Conservation Biology

#### Analytical Skills
- ENVR 3300 and ENVR 3301: Geographic Information Systems and Lab for ENVR 3300
- ENVR 5563: Advanced Spatial Analysis
- EEMB 5522: Experimental Design Marine Ecology
- CHEM 2311 and CHEM 2312: Organic Chemistry 1 and Lab for CHEM 2311
- CHEM 2313 and CHEM 2314: Organic Chemistry 2 and Lab for CHEM 2313
- EEMB 5130: Ecological Dynamics
- ENVR 3410: Environmental Geochemistry
- EEMB 3555: Networks and Natural Systems
- BIOL 3611 and BIOL 3612: Biochemistry and Lab for BIOL 3611
<table>
<thead>
<tr>
<th>Year 4</th>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
<th>Summer 1</th>
<th>Hours</th>
<th>Summer 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EEB Elective #2</td>
<td>4</td>
<td>COOP 3945</td>
<td>0</td>
<td>COOP 3945</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EEB Elective #3</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EEMB 3460</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 5</th>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
<th>Summer 1</th>
<th>Hours</th>
<th>Summer 2</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EEB Elective #4</td>
<td>4</td>
<td>EEB Elective #5</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>EEB Elective #5</td>
<td>4</td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Experiential Credit (Capstone/Thesis)</td>
<td>4</td>
<td>ENVR 4000</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Hours: 138**

**Five Year, Three Fall Co-ops**

**Year 1**

| Fall   | Hours | Spring  | Hours | | | | |
|--------|-------|---------|-------| | | | |
| EEMB 1101 and EEMB 1102 | 5 | EEMB 1105 and EEMB 1106 | 5 | | | | |
| ENVR 1000 | 1 | PHYS 1145 and PHYS 1146 | 5 | | | | |
| MATH 1241 or 1251 | 4 | Elective | 4 | | | | |
| Elective | 4 | CHEM 1161 and CHEM 1162 and CHEM 1163 | 5 | | | | |
| ENVR 1500 and ENVR 1501 | 5 | | | | | | |
| | | | 19 | 19 | | | | |

**Year 2**

| Fall   | Hours | Spring  | Hours | | | | |
|--------|-------|---------|-------| | | | |
| ENVR 2500 and ENVR 2501 | 5 | EEMB 2400 | 4 | Elective | 4 | COOP 3945 | 0 | | | |
| BIOL 2301 and BIOL 2302 | 5 | EEMB 2302 and EEMB 2303 | 5 | Elective | 4 | | | |
| EESC 2000 | 1 | EEB Elective #1 | 4 | | | | |
| CHEM 2311 and CHEM 2312 | 5 | Elective | 4 | | | | |
| Elective | 4 | | | | | | |
| | | | 20 | 17 | 8 | 0 | | |

**Year 3**

| Fall   | Hours | Spring  | Hours | | | | |
|--------|-------|---------|-------| | | | |
| COOP 3945 | 0 | EEB Elective #2 | 4 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Year 4**

| Fall   | Hours | Spring  | Hours | | | | |
|--------|-------|---------|-------| | | | |
| COOP 3945 | 0 | EEB Elective #4 | 4 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Year 5**

| Fall   | Hours | Spring  | Hours | | | | |
|--------|-------|---------|-------| | | | |
| COOP 3945 | 0 | EEB Elective #6 | 4 | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Total Hours: 139**