Faculty Advisors

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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 pursing 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>
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<tr>
<td>EEMB 1101</td>
<td>Foundations in Ecology and Evolutionary Biology and Lab for EEMB 1101</td>
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<td>EEMB 1105</td>
<td>Foundations in Ecological and Evolutionary Genomics and Lab for EEMB 1105</td>
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<td>Genetics and Molecular Biology and Lab for BIOL 2301</td>
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<td>Introduction to Evolution</td>
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<td>Ecology and Lab for EEMB 2302</td>
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<td>Biostatistics and Lab for ENVR 2500</td>
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<td>ENVR 4997 or ENVR 4900</td>
<td>Senior Thesis or Earth and Environmental Science Capstone</td>
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Supporting Courses

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Physics 1

Complete one of the following:

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<tr>
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<td>Physics for Life Sciences 1 and Lab for PHYS 1145</td>
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<td>PHYS 1151 and PHYS 1152</td>
<td>Physics for Engineering 1 and Lab for PHYS 1151</td>
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<td>and PHYS 1153</td>
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Ecology and Evolutionary Biology, BS

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<td>PHYS 1162</td>
<td>Physics 1 and Lab for PHYS 1161</td>
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<td>PHYS 1165</td>
<td>Physics 2 and Lab for PHYS 1165</td>
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**Physics 2**
Complete one of the following:

- PHYS 1147 and PHYS 1148: Physics for Life Sciences 2 and Lab for PHYS 1147
- PHYS 1155 and PHYS 1156 and PHYS 1157: Physics for Engineering 2 and Lab for PHYS 1155 and Interactive Learning Seminar for PHYS 1155
- PHYS 1165 and PHYS 1166: Physics 2 and Lab for PHYS 1165

**Ecology and Evolutionary Biology Topical Requirement**
Complete seven 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 and EEMB 2617: Invertebrate Zoology and Lab for EEMB 2616
- EEMB 2700 and EEMB 2701: Marine Biology and Lab for EEMB 2700
- EEMB 3450: Physiological Adaptations to the Environment
- EEMB 4548: Sociobiology
- EEMB 5504: Biology of Corals
- EEMB 5506: Biology and Ecology of Fishes
- EEMB 5534 and EEMB 5535: Marine Invertebrate Zoology and Botany and Lab for EEMB 5534
- MARS 3210: Marine Mammals
- MARS 3430: Biology of Whales

### Ecology and Conservation Biology
- EEMB 3460: Conservation Biology
- EEMB 3475: Wildlife Ecology
- EEMB 3465: Ecological and Conservation Genomics
- EEMB 3470 and EEMB 3471: Coastal Ecology and Sustainability and Lab for EEMB 3470
- EEMB 4001: Landscape and Restoration Ecology
- EEMB 5536: Ocean and Coastal Sustainability
- EEMB 5512: Tropical Terrestrial Ecology
- EEMB 5518: Ocean and Coastal Processes
- EEMB 5520: Coral Reef Ecology
- EEMB 5528: Marine Conservation Biology
- EEMB 5532: Physiological and Molecular Marine Ecology
- ENVR 3125: Global Oceanic Change
- ENVR 3150: Food Security and Sustainability
- MARS 3315: Wetlands: Ecology and Hydrology

### Analytical Skills
- ENVR 3300 and ENVR 3301: Geographic Information Systems and Lab for ENVR 3300
- ENVR 4563: Advanced Spatial Analysis
- EEMB 3465: Ecological and Conservation Genomics
- 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

**Ecology and Evolutionary Biology Credit Requirement**
Complete 81 semester hours in the major.

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

**Program Requirement**
132 total semester hours required

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

### Year 1
**Fall**
- EEMB 1101 and EEMB 1102: 5 hours
- EEMB 1105 and EEMB 1106: 5 hours
- CHEM 1211 and CHEM 1212: 5 hours
- CHEM 1213 and CHEM 1214: 5 hours
- ENVR 1000 and PHYS 1145: 5 hours
- EESC 2000: 1 hour

**Spring**
- Elective: 4 hours
- Elective: 4 hours

**Summer 1**
- Elective: 4 hours

**Summer 2**
- Elective: 4 hours

### Year 2
**Fall**
- EEMB 2302 and EEMB 2303: 5 hours
- ENVR 2500 and ENVR 2501: 5 hours
- EEMB Elective: 4 hours
- Evolution of Organisms Distribution Requirement: 4 hours
- EESC 2000: 1 hour

**Spring**
- Elective: 4 hours

**Summer 1**
- Elective: 4 hours

**Summer 2**
- Elective: 4 hours

### Year 3
**Fall**
- BIOL 2301 and BIOL 2302: 5 hours
- PHYS 1147 and PHYS 1148: 5 hours
- EEMB 2400: 4 hours
## Year 4

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<th>Spring</th>
<th>Hours</th>
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*Eco Log and Evolution of Organisms*

**Distribution Requirement**

| EESC 2000 | 1     |

Year 3

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<tr>
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Year 4

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**Elective**

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<th>Summer 2</th>
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**Elective 4**

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Total Hours: 131