ECOLOGY (ECOL)

Department of Integrative Biology, College of Biological Science

This program provides a solid foundation in the principles of ecology, training in both pure and applied aspects of ecology and an introduction to economic, legal and policy issues related to the management of the environment. From the 2nd year on, students increasingly augment the core in ecology and policy with extensive restricted electives choices that allow the student to tailor the program to their interests. The major provides a sound science background for careers in conservation, resource management, ecological consulting, or nature interpretation used in teaching, government, non-government or the private sector; or for further post-graduate training in fundamental ecology, environmental biology and environmental management or policy.

**Major**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>Semester 1</td>
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<tr>
<td>BIOL*1070</td>
<td>Discovering Biodiversity</td>
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<td>CHEM*1040</td>
<td>General Chemistry I</td>
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<tr>
<td>ENVS*1030</td>
<td>Introduction to Environmental Sciences</td>
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<tr>
<td>MATH*1080</td>
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<td>Semester 2</td>
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<tr>
<td>BIOL*1090</td>
<td>Introduction to Molecular and Cellular Biology</td>
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<td>CHEM*1050</td>
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<td>Introduction to Environmental Economics, Law and Policy</td>
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<td>BIOL*2060</td>
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<tr>
<td>PHYS*1080</td>
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<tr>
<td>or PHYS*1300</td>
<td>Fundamentals of Physics</td>
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<tr>
<td>ECON*2100</td>
<td>Economic Growth and Environmental Quality</td>
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<tr>
<td>or FARE*2700</td>
<td>Survey of Natural Resource Economics</td>
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<td>1.00 electives or restricted electives</td>
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<td>Semester 4</td>
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<td>BIOC*2580</td>
<td>Introduction to Biochemistry</td>
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<tr>
<td>BIOL*2400</td>
<td>Evolution</td>
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<tr>
<td>MBG*2040</td>
<td>Foundations in Molecular Biology and Genetics</td>
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<tr>
<td>STAT*2230</td>
<td>Biostatistics for Integrative Biology</td>
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<tr>
<td>Semester 5</td>
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<tr>
<td>BIOL*3010</td>
<td>Laboratory and Field Work in Ecology</td>
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<tr>
<td>or ZOO*2090</td>
<td>Vertebrate Structure and Function</td>
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<td>Semester 6</td>
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<tr>
<td>BIOL*3060</td>
<td>Populations, Communities and Ecosystems</td>
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<td>BIOL*3130</td>
<td>Conservation Biology</td>
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**Semester 7**

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<td>ENVS*4001</td>
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**Semester 8**

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<td>2.00 electives or restricted electives</td>
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1. Students lacking 4U physics or equivalent must take PHYS*1300 Fundamentals of Physics. Students with 4U physics or equivalent must take PHYS*1080 Physics for Life Sciences. PHYS*1130 Physics with Applications may be substituted for PHYS*1080 Physics for Life Sciences.

2. GEOG*2210 Environment and Resources may be substituted for ECON*2100 Economic Growth and Environmental Quality or FARE*2700 Survey of Natural Resource Economics and would be taken in semester 4.

3. ZOO*2700 Invertebrate Morphology & Evolution may be substituted for BOT*3410 Plant Anatomy or ZOO*2090 Vertebrate Structure and Function and would be taken in semester 6.

**Restricted Electives**

Students are required to take 6.00 restricted credits as noted below. Of these, at least 1.00 credits must be at the 4000 level.

1. One from:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BOT*2100</td>
<td>Life Strategies of Plants</td>
<td>0.50</td>
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<tr>
<td>or ZOO*3600</td>
<td>Comparative Animal Physiology I</td>
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2. A minimum of 0.50 credits from:

<table>
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<tr>
<td>BIOL*4150</td>
<td>Wildlife Conservation and Management</td>
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<tr>
<td>CIS*1500</td>
<td>Introduction to Programming</td>
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</tr>
<tr>
<td>GEOR*2420</td>
<td>The Earth From Space</td>
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<tr>
<td>GEOR*2480</td>
<td>Mapping and GIS</td>
<td>0.50</td>
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<tr>
<td>GEOR*3420</td>
<td>Remote Sensing of the Environment</td>
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<tr>
<td>GEOR*3480</td>
<td>GIS and Spatial Analysis</td>
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<tr>
<td>or GEOG*4480</td>
<td>Applied Geomatics</td>
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4. Additional prerequisites are required.

3. Students in the Ecology Major are required to take an additional 5.00 restricted elective credits from the following lists. Some courses may require other courses from the list as prerequisites.

<table>
<thead>
<tr>
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<tr>
<td>ANSC*3180</td>
<td>Wildlife Nutrition</td>
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<tr>
<td>BIOL*3450</td>
<td>Introduction to Aquatic Environments</td>
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<tr>
<td>BIOL*3670</td>
<td>Introduction to Wildlife Rehabilitation</td>
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<tr>
<td>BIOL*3680</td>
<td>Wildlife Rehabilitation: Caring for Sick, Injured, and Orphaned Wildlife</td>
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<tr>
<td>BIOL*3050</td>
<td>Plant Functional Ecology</td>
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### Credit Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENVS*2030</td>
<td>Meteorology and Climatology</td>
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<tr>
<td>ENVS*3010</td>
<td>Climate Change Biology</td>
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<tr>
<td>ENVS*3270</td>
<td>Forest Biodiversity</td>
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<tr>
<td>ENVS*3290</td>
<td>Waterborne Disease Ecology</td>
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<td>ENVS*3450</td>
<td>Forest Ecology</td>
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<td>GEOG*2000</td>
<td>Geomorphology</td>
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<td>GEOG*2110</td>
<td>Climate and the Biophysical Environment</td>
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<td>GEOG*3000</td>
<td>Fluvial Processes</td>
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<tr>
<td>GEOG*3610</td>
<td>Environmental Hydrology</td>
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<tr>
<td>NUTR*3210</td>
<td>Fundamentals of Nutrition</td>
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<tr>
<td>ZOO*4570</td>
<td>Marine Ecological Processes</td>
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<tr>
<td>ENVS*3000</td>
<td>Nature Interpretation</td>
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<td>ENVS*3010</td>
<td>Climate Change Biology</td>
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<tr>
<td>GEOG*2480</td>
<td>Mapping and GIS</td>
<td>0.50</td>
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<td>GEOG*3020</td>
<td>Global Environmental Change</td>
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<td>GEOG*3110</td>
<td>Biogeography</td>
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<td>GEOG*3210</td>
<td>Indigenous-Settler Relationships in Environmental Governance</td>
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<td>GEOG*3480</td>
<td>GIS and Spatial Analysis</td>
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<td>GEOG*4110</td>
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<td>GEOG*4230</td>
<td>Environmental Impact Assessment</td>
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<td>GEOG*4480</td>
<td>Applied Geomatics</td>
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<tr>
<td>BIOL*4500</td>
<td>Natural Resource Policy Analysis</td>
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<td>ECON*2100</td>
<td>Economic Growth and Environmental Quality</td>
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<tr>
<td>FARE*2700</td>
<td>Survey of Natural Resource Economics</td>
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<tr>
<td>GEOG*2210</td>
<td>Environment and Resources</td>
<td>0.50</td>
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<tr>
<td>GEOG*4210</td>
<td>Environmental Governance</td>
<td>0.50</td>
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<tr>
<td>GEOG*4220</td>
<td>Local Environmental Management</td>
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<td>PHIL*2070</td>
<td>Philosophy of the Environment</td>
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<td>POLS*3370</td>
<td>Environmental Politics and Governance</td>
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<td>IBIO*4522</td>
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<tr>
<td>ZOO*4300</td>
<td>Marine Biology and Oceanography</td>
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#### Total Credits

- Environmental Sciences core: 7.00
- Required courses: 4.50
- Restricted electives: 6.00
- Free electives: 2.50
- Total Credits: 20

Students are reminded that 6.00 credits of their B.Sc. (Env.) degree must be at the 3000-4000 level.

Students are encouraged to seek advice on their choices from their faculty advisor. With prior approval, students may be able to use courses not on these lists towards their Ecology restrictive electives.