ENVIRONMENTAL MANAGEMENT MAJOR (EM)

School of Environmental Sciences and Department of Food, Agricultural and Resource Economics, Ontario Agricultural College

The major in Environmental Management focuses on the development of leaders in the areas of environmental science and technology. The program combines a solid background in environmental science and management with business, using a mix of theoretical and applied study. The flexibility provided in semesters 6 through 8 permits students to develop their understanding of specific areas of environmental science and business or take a variety of areas within the discipline. This flexibility also allows students to participate in international exchanges and study abroad opportunities. Students have the opportunity to incorporate a variety of field trips, experiential learning in the workplace and independent research projects into their program.

Students taking the degree may also take a minor in another subject area. A maximum of 2.50 credits required for the BBRM.EM program may be applied to meet the requirements of a minor. Students should note that completion of a minor may require additional credits beyond the 20.00 required for the program. Students intending to acquire a minor should consult with their Program Counsellor.

This major will require the completion of 20.00 credits: 11.50 from required courses, 6.50 from restricted electives, and 2.00 free electives. Of these credits, a minimum of 6.00 credits are required at the 3000 level or higher, of which at least 2.00 credits must be at the 4000 level.

### Code | Title | Credits
--- | --- | ---
**Semester 1**
BIOL*1070 | Discovering Biodiversity | 0.50
CHEM*1040 | General Chemistry I | 0.50
ENVS*1030 | Introduction to Environmental Sciences | 1.00
MGMT*2150 | Introduction to Canadian Business Management | 0.50
**Semester 2**
ACCT*1220 | Introductory Financial Accounting | 0.50
BIOL*1090 | Introduction to Molecular and Cellular Biology | 0.50
FARE*1040 | Introduction to Environmental Economics, Law and Policy | 1.00
HROB*2090 | Individuals and Groups in Organizations | 0.50
**Semester 3**
BIOL*2060 | Ecology | 0.50
ENVS*2060 | Soil Science | 0.50
ENVS*2230 | Communications in Environmental Science | 0.50
FARE*2700 | Survey of Natural Resource Economics | 0.50
GEOG*2480 | Mapping and GIS | 0.50
**Semester 4**
ENVS*2040 | Plant Health and the Environment | 0.50
ENVS*2080 | Introduction to Environmental Microbiology | 0.50
1.50 electives or restricted electives | 1.50
**Semester 5**
GEOG*2420 | The Earth From Space | 0.50
GEOG*2460 | Analysis in Geography or STAT*2060 | 0.50
1.00 electives or restricted electives | 1.50
**Semester 6**
ENVS*3020 | Pesticides and the Environment | 0.50
ENVS*3060 | Groundwater | 0.50
1.50 electives or restricted electives | 1.50
**Semester 7**
2.50 electives or restricted electives | 2.50
**Semester 8**
ENVM*4500 | Environmental Management Integrated Project | 1.00
1.50 electives or restricted electives | 1.50

### Restricted Electives

Students must successfully complete a minimum of 6.00 credits at the 3000 level or higher, of which at least 2.00 credits must be at the 4000 level. Those credits at the 3000 level or above selected to satisfy lists A, B, and C below will be applied to satisfy these minimum credit requirements.

Students should note that some restricted electives require other courses not included among the required courses for the major as prerequisites. Students should consult the most recent undergraduate calendar for specific requirements.

Students should consult with a faculty advisor before Semester 4 in planning their restricted elective choices. Students are advised to pay particular attention to prerequisite requirements when choosing individual courses and seek advice as needed.

1. Students must select a minimum of 6.50 credits from the following lists of restricted electives.

#### List A

Students must select a minimum of 3.50 credits from any of the following courses without regard to group of which at least 1.00 credits must be at the 4000 level:

### Code | Title | Credits
--- | --- | ---
**Aquatic Science**
BIOL*3450 | Introduction to Aquatic Environments | 0.50
CHEM*3360 | Environmental Chemistry and Toxicology | 0.50
EDRD*3450 | Watershed Planning Practice | 0.50
ENVS*3220 | Terrestrial Chemistry | 0.50
ENVS*4030 | Ecosystems and Biogeochemical Cycles | 0.50
ENVS*4370 | Natural and Anthropogenic Compounds in the Environment | 0.50
GEOG*3610 | Environmental Hydrology | 0.50
**Atmospheric Science**
ENVS*2030 | Meteorology and Climatology | 0.50
ENVS*2310 | Introduction to Biogeochemistry | 0.50
ENVS*3340 | Environmental Data Analysis | 0.50
GEOG*2110 | Climate and the Biophysical Environment | 0.50
**Conservation and Biodiversity Science**
BIOL*3060 | Populations, Communities and Ecosystems | 0.50
BIOL*3130 | Conservation Biology | 0.50
ENVS*2110  Apiculture and Honey Bee Biology  0.50
ENVS*2330  Current Issues in Ecosystem Science and Biodiversity  0.50
ENVS*3000  Nature Interpretation  0.50
ENVS*3010  Climate Change Biology  0.50
ENVS*3090  Insect Diversity and Biology  0.50
ENVS*3230  Agroforestry Systems  0.50
ENVS*3250  Forest Health and Disease  0.50
ENVS*3270  Forest Biodiversity  0.50
ENVS*4070  Pollinator Conservation  0.50
ENVS*4230  Biology of Aquatic Insects  0.50
ENVS*4260  Field Entomology  0.50
ENVS*4350  Forest Ecology  0.50
GEOG*3320  Food Systems: Issues in Security and Sustainability  0.50

**Ecosystem and Resource Management**

BIOL*4500  Natural Resource Policy Analysis  0.50
ENVS*2120  Introduction to Environmental Stewardship  0.50
ENVS*2240  Fundamentals of Environmental Geology  0.50
ENVS*4000  Toxicological Risk Assessment  0.50
ENVS*4390  Soil Variability and Land Evaluation  1.00
GEOG*4210  Environment and Resources  0.50
GEOG*4302  Global Environmental Change  0.50
GEOG*3120  Indigenous-Settler Relationships in Environmental Governance  0.50
GEOG*3420  Remote Sensing of the Environment  0.50
GEOG*3480  GIS and Spatial Analysis  0.50
GEOG*4110  Environmental Systems Analysis  1.00
GEOG*4220  Local Environmental Management  0.50
GEOG*4230  Environmental Impact Assessment  0.50

**Plant Health**

ENVS*3040  Natural Chemicals in the Environment  0.50
ENVS*3210  Plant Pathology  0.50
ENVS*4100  Integrated Management of Invasive Insect Pests  0.50
ENVS*4180  Insecticide Biological Activity and Resistance  0.50
ENVS*4190  Biological Activity of Herbicides  0.50
PBIO*4530  Plants and Environmental Pollution  0.50

**Soil and Nutrient Management**

ENVS*3080  Soil and Water Conservation  0.50
ENVS*3310  Soil Biodiversity and Ecosystem Function  0.50
ENVS*4090  Soil Management  0.50
ENVS*4160  Soil and Nutrient Management  0.50
ENVS*4320  Laboratory and Field Methods in Soil Biodiversity  1.00
ENVS*4390  Soil Variability and Land Evaluation  1.00

**List B**

Students must select a minimum of 1.50 credits from list B. At least 0.50 credits must be at the 4000 level:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ACCT*2230</td>
<td>Management Accounting</td>
<td>0.50</td>
</tr>
<tr>
<td>ACCT*3230</td>
<td>Intermediate Management Accounting</td>
<td>0.50</td>
</tr>
<tr>
<td>ACCT*1240</td>
<td>Applied Financial Accounting</td>
<td>0.50</td>
</tr>
<tr>
<td>ACCT*4230</td>
<td>Advanced Management Accounting</td>
<td>0.50</td>
</tr>
</tbody>
</table>

**Business and Management**

MGMT*3020  Corporate Social Responsibility  0.50
MGMT*3320  Financial Management  0.50

**Food, Agricultural and Resource Economics**

FARE*2410  Agri-food Markets and Policy  0.50
FARE*3170  Cost-Benefit Analysis  0.50
FARE*3310  Operations Management  0.50
FARE*4290  Land Economics  0.50
FARE*4310  Resource Economics  0.50
FARE*4360  Marketing Research  0.50
FARE*4370  Food & Agri Marketing Management  0.50

**Leadership and Communications**

EDRD*2020  Interpersonal Communication  0.50
EDRD*3140  Organizational Communication  0.50
EDRD*3400  Sustainable Communities  0.50
EDRD*4120  Leadership Development in Small Organizations  0.50
HROB*2010  Foundations of Leadership  0.50
HROB*4010  Leadership Certificate Capstone  0.50

**List C**

Students may also select any of the following courses as restricted electives:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR*3450</td>
<td>Research Methods in Agricultural Science  1</td>
<td>0.50</td>
</tr>
<tr>
<td>AGR*4450</td>
<td>Research Project I  1</td>
<td>1.00</td>
</tr>
<tr>
<td>AGR*4460</td>
<td>Research Project II  1</td>
<td>1.00</td>
</tr>
<tr>
<td>AGR*4600</td>
<td>Agriculture and Food Issues Problem Solving</td>
<td>1.00</td>
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<tr>
<td>BIOC*2580</td>
<td>Introduction to Biochemistry</td>
<td>0.50</td>
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<tr>
<td>CHEM*1050</td>
<td>General Chemistry II</td>
<td>0.50</td>
</tr>
<tr>
<td>ECON*1100</td>
<td>Introductory Macroeconomics</td>
<td>0.50</td>
</tr>
<tr>
<td>ENV*3330</td>
<td>Environmental Flexible Internship</td>
<td>0.50</td>
</tr>
<tr>
<td>ENV*4410</td>
<td>Introduction to Advanced Independent Research  1</td>
<td>0.50</td>
</tr>
<tr>
<td>ENV*4420</td>
<td>Advanced Independent Research  1</td>
<td>0.50</td>
</tr>
<tr>
<td>ENV*4430</td>
<td>Advanced Independent Research  1</td>
<td>1.00</td>
</tr>
<tr>
<td>FARE*4550</td>
<td>Independent Studies I  1</td>
<td>0.50</td>
</tr>
<tr>
<td>FARE*4560</td>
<td>Independent Studies II  1</td>
<td>0.50</td>
</tr>
<tr>
<td>GEOG*1300</td>
<td>Introduction to the Biophysical Environment</td>
<td>0.50</td>
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<tr>
<td>GEOG*1350</td>
<td>Earth: Hazards and Global Change</td>
<td>0.50</td>
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<tr>
<td>IAEF*3500</td>
<td>Experiential Education</td>
<td>0.50</td>
</tr>
</tbody>
</table>

1 Students considering graduate studies are encouraged to take at least 1.00 of these credits.