Environmental Sciences, B.S.

Learning Outcomes

Environmental Sciences Program students will:

• synthesize scientific knowledge and methods across disciplines,
• comprehend and evaluate primary findings in published scientific articles,
• gain experience conducting independent research and/or reviewing scientific areas of interest, and
• effectively communicate scientific findings in written and/or oral form.

Requirements

The Bachelor of Science with a major in environmental sciences requires a minimum of 120 s.h., including 76-80 s.h. of work for the major. Students must maintain a g.p.a. of at least 2.00 in all courses for the major and in all UI courses for the major. They also must complete the College of Liberal Arts and Sciences GE CLAS Core; some courses required for the major in environmental sciences may be used to satisfy GE CLAS Core requirements.

Bachelor of Science students majoring in environmental sciences must complete requirements in three areas: the science and mathematics foundation, the environmental sciences foundation, and one of four environmental sciences tracks. During their third year of study, students are assigned a faculty advisor who specializes in their track.

The science and mathematics foundation develops fundamental skills and comprehension in biology, chemistry, geology, mathematics, and statistics. The environmental sciences foundation includes an introductory course in environmental science and additional courses that focus on remote sensing techniques, design and use of geographic information technologies, the geomorphic and environmental processes that shape the earth's surface, and ecological factors that influence the distribution and abundance of organisms.

Each of the program's four tracks focuses on areas of specialization within environmental sciences:

- biosciences (green) track—biological systems and ecological approaches;
- chemical sciences (yellow) track—environmental systems and chemistry;
- geosciences (brown) track—earth materials and surficial geologic processes; and
- hydrosciences (blue) track—hydrogeology and hydrogeologic systems, and water chemistry.

The tracks aim to prepare scientists who can tackle problems that require particular areas of expertise, and to help students develop the skills needed for future employment or graduate study.

The B.S. with a major in environmental sciences requires the following coursework.

### Science and Mathematics Foundation

Students must complete at least 27 s.h. of coursework, as follows.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL:1411</td>
<td>Foundations of Biology</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:1412</td>
<td>Diversity of Form and Function</td>
<td>4</td>
</tr>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM:1120</td>
<td>Principles of Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>EES:1050</td>
<td>Introduction to Geology</td>
<td>4</td>
</tr>
<tr>
<td>MATH:1850</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>One of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM:2021</td>
<td>Fundamentals of Chemical Measurements (must be taken by chemical sciences track students)</td>
<td>3</td>
</tr>
<tr>
<td>STAT:3510</td>
<td>Biostatistics</td>
<td>3</td>
</tr>
<tr>
<td>STAT:4200</td>
<td>Statistical Methods and Computing</td>
<td>3</td>
</tr>
</tbody>
</table>

### Environmental Sciences Foundation

Students must complete 16 s.h. of coursework, as follows.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVS:1085/ EES:1085</td>
<td>Fundamentals of Environmental Science</td>
<td>4</td>
</tr>
<tr>
<td>ENVS:2010/ EES:2010/ GEOG:2010</td>
<td>Interdisciplinary Environmental Seminar</td>
<td>1</td>
</tr>
<tr>
<td>ENVS:2673/ BIOL:2673</td>
<td>Ecology</td>
<td>3</td>
</tr>
<tr>
<td>ENVS:3010/ EES:3010/ GEOG:3003</td>
<td>Interdisciplinary Environmental Seminar</td>
<td>1</td>
</tr>
<tr>
<td>ENVS:3020/ EES:3020/ GEOG:3020</td>
<td>Earth Surface Processes</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:1050</td>
<td>Foundations of GIS</td>
<td>4</td>
</tr>
</tbody>
</table>

### Environmental Sciences Track Courses

Students majoring in environmental sciences must choose one of the following four tracks. Each track includes required general sciences courses, track foundation courses, field study courses, and elective courses.
**Biosciences (Green) Track**

The biosciences track provides the essential skills for entry-level positions that require a good knowledge of biotic systems and the ability to inventory biologic resources. The track’s aim is to produce scientists who are capable of tackling environmental problems in which links and interactions with life sciences are crucial and in which a substantial knowledge of biological/ecological sciences is required. The track also provides a strong foundation for graduate or professional training in disciplines such as ecology, wildlife management, and natural resource management.

Students must complete at least 33 s.h., including one field study course, as follows.

**Biosciences Track: Foundation**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:2512</td>
<td>Fundamental Genetics</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3172</td>
<td>Evolution</td>
<td>4</td>
</tr>
<tr>
<td>GEOG:2374/BIOL:2374</td>
<td>Biogeography</td>
<td>3</td>
</tr>
</tbody>
</table>

At least 9 s.h. from these:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:2246</td>
<td>Entomology Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:4373/IGPI:4373</td>
<td>Molecular Evolution: Genes, Genomes, and Organisms</td>
<td>3</td>
</tr>
<tr>
<td>EES:3030/ENVS:3030</td>
<td>Conservation Paleobiology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3070</td>
<td>Marine Ecosystems and Conservation</td>
<td>3</td>
</tr>
<tr>
<td>EES:3220</td>
<td>Evolution of the Vertebrates</td>
<td>4</td>
</tr>
<tr>
<td>ENVS:3100/EES:3100</td>
<td>Introduction to Applied Remote Sensing</td>
<td>3-4</td>
</tr>
<tr>
<td>or GEOG:3500/IGPI:3500</td>
<td>Introduction to Environmental Remote Sensing</td>
<td></td>
</tr>
<tr>
<td>GEOG:2950</td>
<td>Environmental Conservation</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3315</td>
<td>Ecosystem Ecology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3350</td>
<td>Urban Ecology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:4470</td>
<td>Ecological Climatology</td>
<td>3</td>
</tr>
</tbody>
</table>

Iowa Lakeside Laboratory courses (prefix IALL) may be approved in consultation with an environmental sciences advisor.

**Biosciences Track: Field Study**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS:3095</td>
<td>Field Ecology</td>
<td>4</td>
</tr>
<tr>
<td>ENVS:3096</td>
<td>Winter Ecology</td>
<td>2</td>
</tr>
<tr>
<td>ENVS:3097</td>
<td>Introduction to Bird Study</td>
<td>2</td>
</tr>
<tr>
<td>ENVS:3230</td>
<td>Special Topics (must include field component)</td>
<td>1-4</td>
</tr>
<tr>
<td>IALL:3034</td>
<td>Topics in Ecology and Sustainability</td>
<td>2</td>
</tr>
<tr>
<td>IALL:3103</td>
<td>Aquatic Ecology</td>
<td>4</td>
</tr>
<tr>
<td>IALL:3109</td>
<td>Ecology and Systematics of Algae</td>
<td>4</td>
</tr>
<tr>
<td>IALL:3117</td>
<td>Ecology and Systematics of Diatoms</td>
<td>4</td>
</tr>
<tr>
<td>IALL:3122</td>
<td>Prairie Ecology</td>
<td>4</td>
</tr>
<tr>
<td>IALL:3126</td>
<td>Ornithology</td>
<td>2</td>
</tr>
</tbody>
</table>

Other Iowa Lakeside Laboratory courses (prefix IALL) may be approved in consultation with an environmental sciences advisor.

**Biosciences Track: Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:1261</td>
<td>Introduction to Botany</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:2663</td>
<td>Plant Response to the Environment</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3244</td>
<td>Animal Behavior</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:3676</td>
<td>Evolution Lab</td>
<td>4</td>
</tr>
<tr>
<td>BIOL:3994</td>
<td>Introduction to Research (no more than 6 s.h. of research credit may count toward the major)</td>
<td>2-3</td>
</tr>
<tr>
<td>BIOL:4999</td>
<td>Honors Research in Biology (no more than 6 s.h. of research credit may count toward the major)</td>
<td>arr.</td>
</tr>
<tr>
<td>CEE:5440</td>
<td>Foundations of Environmental Chemistry and Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2210</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3110</td>
<td>Analytical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3120</td>
<td>Analytical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>EES:2200/ENVS:2200</td>
<td>Historical Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3080</td>
<td>Introduction to Oceanography</td>
<td>2</td>
</tr>
<tr>
<td>EES:3110/ENVS:3110</td>
<td>Chemical Evolution of the Oceans</td>
<td>3</td>
</tr>
<tr>
<td>EES:3210</td>
<td>Principles of Paleontology</td>
<td>3</td>
</tr>
<tr>
<td>ENVS:3230</td>
<td>Special Topics</td>
<td>1-4</td>
</tr>
<tr>
<td>GEOG:2310/EES:2310</td>
<td>Introduction to Climatology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3310</td>
<td>Landscape Ecology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3320/ENVS:3260</td>
<td>Wetlands: Function, Geography, and Management</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3570</td>
<td>Light Detection and Ranging (LiDAR): Principles and Applications</td>
<td>3</td>
</tr>
<tr>
<td>STAT:6513/PSQF:6243</td>
<td>Intermediate Statistical Methods</td>
<td>4</td>
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</tbody>
</table>

**Biosciences Track: Policy**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:1260</td>
<td>Plants and Human Affairs</td>
<td>3</td>
</tr>
<tr>
<td>ECON:3625/URP:3135</td>
<td>Environmental and Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:1070</td>
<td>Contemporary Environmental Issues</td>
<td>3</td>
</tr>
</tbody>
</table>
Chemical Sciences (Yellow) Track

The chemical sciences track provides the essential skills for entry-level positions that require a basic understanding of chemical principles and a working knowledge of basic chemical concepts as applied in the environment. The track's aim is to produce scientists who are capable of tackling environmental problems in which chemical and molecular processes play an important role. The track also provides a strong foundation for graduate or professional training in environmental chemistry.

Students must complete at least 33 s.h. of coursework, as follows.

### Chemical Sciences Track: Foundation

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:2210</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3120</td>
<td>Analytical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3250</td>
<td>Inorganic Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CEE:5153</td>
<td>Fundamentals of Environmental Sampling and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2220</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2410</td>
<td>Organic Chemistry Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3110</td>
<td>Analytical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3440</td>
<td>Physical Measurements</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3530</td>
<td>Inorganic Chemistry Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:4430</td>
<td>Principles of Physical Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:4431</td>
<td>Physical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:4432</td>
<td>Physical Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:4450</td>
<td>Synthesis and Measurement</td>
<td>3</td>
</tr>
</tbody>
</table>

### Chemical Sciences Track: Lab and Field Study

This course:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:3430</td>
<td>Analytical Measurements</td>
<td>3</td>
</tr>
</tbody>
</table>

### Chemical Sciences Track: Electives

#### Hours

Chemical sciences track students must complete at least 9 s.h. of elective coursework chosen from the following lists; students may petition the chemistry department's environmental sciences advisor to use appropriate Department of Chemistry courses numbered 3000 and above as electives; additional foundation courses may be approved for elective credit:

- ENVS:3110/EES:3110: Chemical Evolution of the Oceans (3)
- ENVS:3230: Special Topics (no more than 6 s.h. may count toward the major) (1-4)
- BIOL:3110: Biochemistry (3)
- CEE:4150/CBE:4420: Environmental Chemistry (3)
- CEE:4158/OEH:4920: Solid and Hazardous Wastes (3)
- CHEM:3994: Undergraduate Research (no more than 6 s.h. of research credit may count toward the major) (1-4)
- CHEM:4760: Radiochemistry: Energy, Medicine, and the Environment (3)
- CHEM:4873: Atmospheric and Environmental Chemistry (3)
- EES:2200/ENVS:2200: Historical Geology (4)
- EES:4490: Elements of Geochemistry (3)
- EES:4520: Isotope Geochemistry (3)
- EES:4640: Contaminant Hydrogeology (3)
- GEOG:2310/EES:2310: Introduction to Climatology (3)
- GEOG:2950: Environmental Conservation (3)
- GEOG:3500: Environmental Remote Sensing (3)

### Chemical Sciences Track: Policy

Chemical sciences track students must complete at least one of the following courses:

- BIOL:1260: Plants and Human Affairs (3)
- ECON:3625/URP:3135: Environmental and Natural Resource Economics (3)
- GEOG:1070: Environmental Issues (3)
- GEOG:2930: Water Resources (3)
- GEOG:3340: Ecosystem Services: Human Dependence on Natural Systems (3)
- GEOG:3400: Iowa Environmental Policy in Practice (3)
Environmental Sciences, B.S.

GEOG:4750/ URP:4750  Environmental Impact Analysis  3
GEOG:4770/ GHS:4770  Environmental Justice  3

Geosciences (Brown) Track

The geosciences track provides the essential skills for entry-level positions that require a basic understanding of geologic principles and a working knowledge of basic geologic concepts applied in the environmental industry. The track’s aim is to produce scientists who are capable of tackling environmental problems in which earth materials and surficial geologic processes are of primary importance. The track also lays a strong foundation for graduate study in environmental geology, engineering geology, and natural hazards assessment.

Students must complete at least 35 s.h. of coursework, as follows.

Geosciences Track: General Sciences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>These two courses:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH:1860</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS:1400</td>
<td>Basic Physics</td>
<td>4</td>
</tr>
<tr>
<td>Students are strongly encouraged to take additional coursework in physics</td>
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</table>

Geosciences Track: Foundation

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>These two courses:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES:2410</td>
<td>Mineralogy</td>
<td>4</td>
</tr>
<tr>
<td>EES:3300</td>
<td>Sedimentary Geology</td>
<td>4</td>
</tr>
<tr>
<td>And 7 s.h. from these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES:2200/ ENVS:2200</td>
<td>Historical Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3360/ GEOG:3360</td>
<td>Soil Genesis and Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>EES:3500</td>
<td>Igneous and Metamorphic Petrology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3840</td>
<td>Structural Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:4630</td>
<td>Hydrogeology</td>
<td>4</td>
</tr>
<tr>
<td>EES:4790</td>
<td>Applied Environmental Geology</td>
<td>3</td>
</tr>
</tbody>
</table>

Geosciences Track: Field Study

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>One of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES:2831</td>
<td>Geologic Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>EES:4680</td>
<td>Field Methods in Hydrologic Science</td>
<td>3</td>
</tr>
<tr>
<td>EES:4832</td>
<td>Geologic Field Analysis</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:4010</td>
<td>Field Methods in Physical Geography</td>
<td>3</td>
</tr>
</tbody>
</table>

Geosciences Track: Electives

Geosciences track students must complete at least 6 s.h. of elective coursework chosen from the following list; additional field study or foundation courses may be approved for elective credit:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS:3100/ EES:3100</td>
<td>Introduction to Applied Remote Sensing</td>
<td>4</td>
</tr>
<tr>
<td>ENVS:3110/ EES:3110</td>
<td>Chemical Evolution of the Oceans</td>
<td>3</td>
</tr>
<tr>
<td>ENVS:3230</td>
<td>Special Topics</td>
<td>1-4</td>
</tr>
<tr>
<td>CEE:4158/ OEH:4920</td>
<td>Solid and Hazardous Wastes</td>
<td>3</td>
</tr>
<tr>
<td>EES:1290</td>
<td>Energy and the Environment</td>
<td>3</td>
</tr>
<tr>
<td>EES:1400</td>
<td>Natural Disasters</td>
<td>3</td>
</tr>
<tr>
<td>EES:3030/ ENVS:3030</td>
<td>Conservation Paleobiology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3070</td>
<td>Marine Ecosystems and Conservation</td>
<td>3</td>
</tr>
<tr>
<td>EES:3080</td>
<td>Introduction to Oceanography</td>
<td>2</td>
</tr>
<tr>
<td>EES:3190</td>
<td>Directed Study (no more than 6 s.h. may count toward the major)</td>
<td>arr.</td>
</tr>
<tr>
<td>EES:3350</td>
<td>Active Tectonics</td>
<td>3</td>
</tr>
<tr>
<td>EES:3380/CEE:3328</td>
<td>Fluvial Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>EES:3390</td>
<td>Integrated Watershed Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EES:3770</td>
<td>Global Stratigraphy</td>
<td>3</td>
</tr>
<tr>
<td>EES:4490</td>
<td>Elements of Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>EES:4520</td>
<td>Isotope Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>EES:4630</td>
<td>Hydrogeology</td>
<td>4</td>
</tr>
<tr>
<td>EES:4640</td>
<td>Contaminant Hydrogeology</td>
<td>3</td>
</tr>
<tr>
<td>EES:4720</td>
<td>Glacial and Pleistocene Geology</td>
<td>3</td>
</tr>
<tr>
<td>EES:4800</td>
<td>Solid Earth Geophysics</td>
<td>3</td>
</tr>
<tr>
<td>EES:4820</td>
<td>Tectonics and Basin Analysis</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:2310/ EES:2310</td>
<td>Introduction to Climatology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:2950</td>
<td>Environmental Conservation</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3570</td>
<td>Light Detection and Ranging (LiDAR): Principles and Applications</td>
<td>3</td>
</tr>
</tbody>
</table>

Geosciences Track: Policy

Geosciences track students must complete at least one of the following courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:1260</td>
<td>Plants and Human Affairs</td>
<td>3</td>
</tr>
<tr>
<td>ECON:3625/ URP:3135</td>
<td>Environmental and Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:1070</td>
<td>Contemporary Environmental Issues</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3340</td>
<td>Ecosystem Services: Human Dependence on Natural Systems</td>
<td>3</td>
</tr>
</tbody>
</table>
Hydrosciences (Blue) Track

The hydrosciences track provides the essential skills for entry-level positions that require a basic understanding of geologic principles and a working knowledge of hydrogeology and hydrogeochemistry. The track's aim is to produce scientists who are capable of tackling environmental problems that emphasize hydrogeologic systems and for which substantial knowledge of hydrogeology and water chemistry are essential. The track also lays a strong foundation for graduate education in hydrogeology, hydrology, geochemistry, and aqueous chemistry.

Students must complete at least 37 s.h. of coursework, as follows.

### Hydrosciences Track: General Sciences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>These three courses:</td>
<td></td>
</tr>
<tr>
<td>MATH:1860</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS:1511</td>
<td>College Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS:1512</td>
<td>College Physics II</td>
<td>4</td>
</tr>
</tbody>
</table>

### Hydrosciences Track: Foundation

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES:4630</td>
<td>Hydrogeology</td>
<td>4</td>
</tr>
<tr>
<td>EES:4790</td>
<td>Applied Environmental Geology</td>
<td>3</td>
</tr>
</tbody>
</table>

And 6 s.h. from these:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS:3110/ EES:3110</td>
<td>Chemical Evolution of the Oceans</td>
<td>3</td>
</tr>
<tr>
<td>EES:3380/CEE:3328</td>
<td>Fluvial Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>EES:3390</td>
<td>Integrated Watershed Analysis</td>
<td>3</td>
</tr>
<tr>
<td>EES:4490</td>
<td>Elements of Geochemistry</td>
<td>3</td>
</tr>
<tr>
<td>EES:4640</td>
<td>Contaminant Hydrogeology</td>
<td>3</td>
</tr>
<tr>
<td>EES:4800</td>
<td>Solid Earth Geophysics</td>
<td>3</td>
</tr>
</tbody>
</table>

### Hydrosciences Track: Field Study

<table>
<thead>
<tr>
<th>Code</th>
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<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES:4680</td>
<td>Field Methods in Hydrologic Science</td>
<td>3</td>
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</table>

### Hydrosciences Track: Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hydrosciences track students must complete at least 6 s.h. of elective coursework chosen from the following list; additional field study and foundation courses may be approved for elective credit:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE:3371</td>
<td>Principles of Hydraulics and Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CEE:4103</td>
<td>Water Quality</td>
<td>3</td>
</tr>
<tr>
<td>CEE:4378</td>
<td>Hydrometeorology</td>
<td>3</td>
</tr>
<tr>
<td>CEE:5153</td>
<td>Fundamentals of Environmental Sampling and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CEE:5440</td>
<td>Foundations of Environmental Chemistry and Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>EES:2200/ ENVS:2200</td>
<td>Historical Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3080</td>
<td>Introduction to Oceanography</td>
<td>2</td>
</tr>
<tr>
<td>EES:3190</td>
<td>Directed Study (no more than 6 s.h. may count toward the major)</td>
<td>arr.</td>
</tr>
<tr>
<td>EES:3300</td>
<td>Sedimentary Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3350</td>
<td>Active Tectonics</td>
<td>3</td>
</tr>
<tr>
<td>EES:3360/ GEOG:3360</td>
<td>Soil Genesis and Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>EES:4660/CEE:4104</td>
<td>Groundwater Modeling</td>
<td>3</td>
</tr>
<tr>
<td>EES:4800</td>
<td>Solid Earth Geophysics</td>
<td>3</td>
</tr>
<tr>
<td>ENSV:3100/ EES:3100</td>
<td>Introduction to Remote Sensing</td>
<td>4</td>
</tr>
<tr>
<td>ENVS:3230</td>
<td>Special Topics</td>
<td>1-4</td>
</tr>
<tr>
<td>GEOG:2310/ EES:2310</td>
<td>Introduction to Climatology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:2950</td>
<td>Environmental Conservation</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3320/ EES:3260</td>
<td>Wetlands: Function, Geography, and Management</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3570</td>
<td>Light Detection and Ranging (LiDAR): Principles and Applications</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:4470</td>
<td>Ecological Climatology</td>
<td>3</td>
</tr>
</tbody>
</table>

### Hydrosciences Track: Policy

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hydrosciences track students must complete at least one of the following courses:</td>
<td></td>
</tr>
<tr>
<td>BIOL:1260</td>
<td>Plants and Human Affairs</td>
<td>3</td>
</tr>
<tr>
<td>ECON:3625/ URP:3135</td>
<td>Environmental and Natural Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:1070</td>
<td>Contemporary Environmental Issues</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:2930</td>
<td>Water Resources</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3340</td>
<td>Ecosystem Services: Human Dependence on Natural Systems</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3400</td>
<td>Iowa Environmental Policy in Practice</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:4750/ URP:4750</td>
<td>Environmental Impact Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>
**Teacher Licensure**

Students interested in teaching in elementary and/or secondary schools should seek admission to the Teacher Education Program (TEP) in the College of Education.

To qualify for licensure in secondary teaching, students in the TEP complete a degree in education as well as a related College of Liberal Arts and Sciences degree. See Teacher Education Program Application and Admission on the College of Education website for details on requirements and deadlines for applying to the College of Education and about TEP choices of majors leading to licensure.

**Honors**

**Honors in the Major**

Students have the opportunity to graduate with honors in the major. Honors study provides students with opportunities to engage in independent research under the guidance of a faculty sponsor chosen from affiliated faculty of the Environmental Sciences Program. The program draws faculty members from the Departments of Anthropology, Biology, Chemistry, Civil and Environmental Engineering, Earth and Environmental Sciences, and Geographical and Sustainability Sciences. Honors students learn how to write the results of their research in the format of a scientific paper, and they have the experience of formally presenting their research as either a short seminar or a poster.

The College of Liberal Arts and Sciences requires that students who earn honors in the major maintain a minimum University of Iowa cumulative g.p.a. of 3.33. Additional grade-point average standards and requirements are set by each department or program.

Students must fulfill the following requirements:

- complete a B.S. with a major in environmental sciences with a g.p.a. of at least 3.33 in all work for the major;
- submit a research proposal to the honors director within two months of the beginning of the semester in which the research is initiated;
- complete a minimum of 6 s.h. of honors research taken over two semesters in BIOL:4999 Honors Research in Biology, CHEM:3994 Undergraduate Research, EES:3190 Directed Study, or GEOG:3992 Undergraduate Research, depending on the departmental affiliation of the faculty sponsor;
- prepare a thesis presenting the research in the format of a scientific paper with abstract, introduction, methods, results, discussion, and conclusions; the thesis must include a title page and an abstract formatted according to the specifications of the honors program and must be submitted to the honors director at least one week before the honors program deadline for submission; and
- present either a short seminar or a poster about the research at a professional meeting and/or at the University of Iowa.

Beginning in their sophomore or junior year, students should identify potential faculty sponsors by conducting a web-based survey of the research interests of the program's affiliated faculty. The student should contact potential sponsors to determine who would be willing to sponsor an honors student and what research projects the student might undertake. Students who choose a sponsor whose faculty appointment is not in the College of Liberal Arts and Sciences (CLAS) must choose a cosponsor who has a faculty appointment in CLAS.

After the student has identified a sponsor and the two have agreed on a project, the sponsor guides the student in the preparation of a research proposal that identifies the background, goals, methods, and significance of the research project. The proposal serves as the foundation of the honors thesis, which the student prepares under the sponsor's supervision upon completion of the research. Once the thesis is nearing completion or is completed, the student presents a short seminar or a poster detailing the purpose of the research.

For examples of honors projects in environmental sciences, see Honors Projects on the Environmental Sciences Program website.

**University of Iowa Honors Program**

In addition to honors in the major, students have opportunities for honors study and activities through membership in the University of Iowa Honors Program. Visit Honors at Iowa to learn about the University's honors program.

Membership in the UI Honors Program is not required to earn honors in the environmental sciences major.

**Career Advancement**

Graduates are prepared for careers in conservation, environmental assessment, hazardous waste management, park inspection and compliance, or pollution control and monitoring.

The undergraduate degree program also prepares students for graduate study in disciplines such as biology, chemistry, ecosystem sciences, environmental engineering, environmental law, environmental science, environmental sustainability, geoscience, hydrologic sciences, natural resource management, remote sensing and landscape modeling, renewable energy, and urban and regional planning.

The Pomerantz Career Center offers multiple resources to help students find internships and jobs.

**Academic Plans**

**Four-Year Graduation Plan**

The Four-Year Graduation Plan is not available for the environmental sciences major. Students work with their advisors on individual graduation plans.

**Sample Plans of Study**

Sample plans represent one way to complete a program of study. Actual course selection and sequence will vary and should be discussed with an academic advisor. For additional sample plans, see MyUI.

**Environmental Sciences, B.S.**

- Biosciences (Green) Track [p. 7]
- Chemical Sciences (Yellow) Track [p. 7]
### Biosciences (Green) Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENV:1085</td>
<td>Fundamentals of Environmental Science</td>
<td>4</td>
</tr>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>EN:1050</td>
<td>Introduction to Geology</td>
<td>4</td>
</tr>
<tr>
<td>EN:1200</td>
<td>The Interpretation of Literature</td>
<td>3 - 4</td>
</tr>
<tr>
<td>EN:1030 or RHET:1030</td>
<td>Rhetoric</td>
<td></td>
</tr>
<tr>
<td>CSI:1600</td>
<td>Success at Iowa</td>
<td>2</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN:2010</td>
<td>Interdisciplinary Environmental Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CHEM:1120</td>
<td>Principles of Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>EN:1200 or RHET:1030</td>
<td>The Interpretation of Literature</td>
<td></td>
</tr>
<tr>
<td>MATH:1850</td>
<td>Calculus I b, c</td>
<td>4</td>
</tr>
<tr>
<td>GE CLAS Core: Values and Culture</td>
<td>d</td>
<td>3</td>
</tr>
<tr>
<td><strong>Second Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENV:2010</td>
<td>Earth Surface Processes</td>
<td>3</td>
</tr>
<tr>
<td>BIOL:1411</td>
<td>Foundations of Biology</td>
<td>4</td>
</tr>
<tr>
<td>GE CLAS Core: World Languages First Level</td>
<td>4 - 5</td>
<td></td>
</tr>
<tr>
<td>GE CLAS Core: Historical Perspectives</td>
<td>d</td>
<td>3</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
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<td></td>
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<tr>
<td>BIOL:1412</td>
<td>Diversity of Form and Function</td>
<td>4</td>
</tr>
<tr>
<td>GEOG:1050</td>
<td>Foundations of GIS</td>
<td>4</td>
</tr>
<tr>
<td>GE CLAS Core: World Languages Second Level</td>
<td>4 - 5</td>
<td></td>
</tr>
<tr>
<td>GE CLAS Core: Social Sciences</td>
<td>d</td>
<td>3</td>
</tr>
<tr>
<td><strong>Summer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major: biosciences field study course</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td><strong>Third Year</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENV:2673</td>
<td>Ecology</td>
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</tr>
<tr>
<td>BIOL:2512</td>
<td>Fundamental Genetics</td>
<td>4</td>
</tr>
<tr>
<td>Major: biosciences policy course</td>
<td>f</td>
<td>3</td>
</tr>
<tr>
<td>GE CLAS Core: World Languages Second Level</td>
<td>4 - 5</td>
<td></td>
</tr>
<tr>
<td>GE CLAS Core: Social Sciences</td>
<td>d</td>
<td>3</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GE CLAS Core: World Languages Fourth Level</td>
<td>4 - 5</td>
<td></td>
</tr>
<tr>
<td>BIOL:3172</td>
<td>Evolution</td>
<td>4</td>
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</table>

### Fourth Year

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Fall</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEO:2374</td>
<td>Biogeography</td>
<td>3</td>
</tr>
<tr>
<td>Major: biosciences &quot;select 9 s.h.&quot; foundation course</td>
<td>f</td>
<td>3</td>
</tr>
<tr>
<td>Major: biosciences &quot;select 9 s.h.&quot; foundation course</td>
<td>f</td>
<td>3</td>
</tr>
<tr>
<td>Major: biosciences elective course</td>
<td>f</td>
<td>3</td>
</tr>
<tr>
<td>GE CLAS Core: Literary, Visual, and Performing Arts</td>
<td>d</td>
<td>3</td>
</tr>
<tr>
<td><strong>Spring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN:3010</td>
<td>Interdisciplinary Environmental Seminar</td>
<td>1</td>
</tr>
<tr>
<td>Major: biosciences &quot;select 9 s.h.&quot; foundation course</td>
<td>f</td>
<td>3</td>
</tr>
<tr>
<td>Major: biosciences elective course</td>
<td>f</td>
<td>3</td>
</tr>
<tr>
<td>GE CLAS Core: International and Global Issues</td>
<td>d</td>
<td>3</td>
</tr>
<tr>
<td>Elective course</td>
<td>g</td>
<td>3</td>
</tr>
<tr>
<td>Elective course</td>
<td>g</td>
<td>1 - 3</td>
</tr>
<tr>
<td>Degree Application: apply on MyUI before deadline</td>
<td>(typically in February for spring, September for fall)</td>
<td></td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td></td>
<td>122-130</td>
</tr>
</tbody>
</table>
a fulfilling a major requirement and may fulfill a GE requirement.
b Enrollment in chemistry courses requires completion of a placement exam.
c Enrollment in math courses requires completion of a placement exam.
d GE CLAS Core courses may be completed in any order unless used as a prerequisite for another course. Students should consult with an advisor about the best sequencing of courses.
e Students who have completed four years of a single language in high school have satisfied the GE CLAS Core World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.
f Refer to the General Catalog for course options.
g Students may use elective courses to earn credit towards the total s.h. required for graduation or to complete a double major, minors, or certificates.
h Please see Academic Calendar, Office of the Registrar website for current degree application deadlines. Students should apply for a degree for the session in which all requirements will be met. For any questions on appropriate timing, contact your academic advisor. For more information visit http://commencement.uiowa.edu. If applicable search for "Early and Late Participation" to find this page (e.g. participate in graduation ceremony in May, degree conferral in August).

### Chemical Sciences (Yellow) Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHET:1030 or EN:1200</td>
<td>Rhetoric or The Interpretation of Literature</td>
<td>3 - 4</td>
</tr>
<tr>
<td>ENV:1085</td>
<td>Fundamentals of Environmental Science</td>
<td>4</td>
</tr>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>EN:1050</td>
<td>Introduction to Geology</td>
<td>4</td>
</tr>
</tbody>
</table>

---

* Numbers in brackets refer to page numbers where information is located.
* Exams are referred to as "placement exam" unless otherwise noted.
* Prerequisites are noted as "f" for fulfills, "p" for prerequisite, and "d" for dual enrollment.
* Grades are specified as "a," "b," or "c."
Environmental Sciences, B.S.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:3430</td>
<td>Analytical Measurements</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:1050</td>
<td>Foundations of GIS</td>
<td>4</td>
</tr>
<tr>
<td>Major: chemical sciences elective course</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>GE CLAS Core: Literary, Visual, and Performing Arts</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>GE CLAS Core: Diversity and Inclusion</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall)

<table>
<thead>
<tr>
<th>Hours</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Hours</td>
<td>119-127</td>
</tr>
</tbody>
</table>

a Fulfills a major requirement and may fulfill a GE requirement.
b Enrollment in chemistry courses requires completion of a placement exam.
c Enrollment in math courses requires completion of a placement exam.
d GE CLAS Core courses may be completed in any order unless used as a prerequisite for another course. Students should consult with an advisor about the best sequencing of courses.
e Students who have completed four years of a single language in high school have satisfied the GE CLAS Core World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.
f This course is required for the statistics requirement in the major for all chemical sciences track students.
g The department recommends taking CHEM:2220.
h The department recommends taking CHEM:3110.
i Refer to the General Catalog for course options.
j Students may use elective courses to earn credit towards the total s.h. required for graduation or to complete a double major, minors, or certificates.
k This course must be a lab course. See the General Catalog for options.
l Please see Academic Calendar, Office of the Registrar website for current degree application deadlines. Students should apply for a degree for the session in which all requirements will be met. For any questions on appropriate timing, contact your academic advisor. For more information visit http:// commencement.uiowa.edu. If applicable search for “Early and Late Participation” to find this page (e.g. participate in graduation ceremony in May, degree conferral in August).

Geosciences (Brown) Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL:1200</td>
<td>The Interpretation of Literature</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:1120</td>
<td>Principles of Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>ENVS:2010</td>
<td>Interdisciplinary Environmental Seminar</td>
<td>1</td>
</tr>
<tr>
<td>MATH:1850</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>GE CLAS Core: Values and Culture</td>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Hours</th>
<th>15-16</th>
</tr>
</thead>
</table>
Second Year

Fall
GE CLAS Core: World Languages First Level 4 - 5
Proficiency or elective course e
BIOL:1411 Foundations of Biology 4
MATH:1860 Calculus II 4
EES:2410 Mineralogy 4

Hours 16-17

Spring
GE CLAS Core: World Languages Second Level 4 - 5
Proficiency or elective course e
BIOL:1412 Diversity of Form and Function 4
GEOG:1050 Foundations of GIS 4
GE CLAS Core: Historical Perspectives d 3

Hours 15-16

Summer
Major: geosciences field study course f 3 - 4

Hours 3-4

Third Year

Fall
GE CLAS Core: World Languages Second Level 4 - 5
Proficiency or elective course e
ENVS:3020 Earth Surface Processes 3
PHYS:1400 Basic Physics 4
EES:3300 Sedimentary Geology 4

Hours 15-16

Spring
GE CLAS Core: World Languages Fourth Level 4 - 5
Proficiency or elective course
STAT:4200 Statistical Methods and Computing 3
or CHEM:2021 or STAT:3510 Fundamentals of Chemical Measurements or Biostatistics

Major: geosciences "select 7 s.h." foundation course g 3 - 4
GE CLAS Core: Diversity and Inclusion d 3

Hours 13-15

Fourth Year

Fall
ENVS:2673 Ecology 3
Major: geosciences "select 7 s.h." foundation course g 3 - 4

Major: geosciences elective course h 3
GE CLAS Core: Literary, Visual, and Performing Arts 3

Hours 12-13

Spring
ENVS:3010 Interdisciplinary Environmental Seminar 1

Major: geosciences policy course h 3
Major: geosciences elective course h 3
GE CLAS Core: International and Global Issues d 3
GE CLAS Core: Social Sciences d 3
Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall) i 3

Hours 13

Total Hours 119-128

Hydrosciences (Blue) Track

First Year

Fall
ENGL:1200 or RHET:1030 The Interpretation of Literature or Rhetoric 3 - 4
ENVS:1085 Fundamentals of Environmental Science a
CHEM:1110 Principles of Chemistry I a, b 4
EEIS:1050 Introduction to Geology 4
CSI:1600 Success at Iowa 2

Hours 17-18

Spring
ENGL:1200 or RHET:1030 The Interpretation of Literature or Rhetoric 3 - 4
ENVS:2010 Interdisciplinary Environmental Seminar 1
CHEM:1120 Principles of Chemistry II 4
MATH:1850 Calculus I a, c 4
GE CLAS Core: Values and Culture d 3

Hours 15-16

Second Year

Fall
GE CLAS Core: World Languages First Level 4 - 5
Proficiency or elective course e
BIOL:1411 Foundations of Biology 4
MATH:1860 Calculus II 4
GE CLAS Core: Historical Perspectives d 3

Hours 15-16

Spring
GE CLAS Core: World Languages Second Level 4 - 5
Proficiency or elective course e
BIOL:1412 Diversity of Form and Function 4
PHYS:1511 College Physics I 4
Major: hydrosciences elective course f 3 - 4

Hours 15-17

a Fulfills a major requirement and may fulfill a GE requirement.
b Enrollment in chemistry courses requires completion of a placement exam.
c Enrollment in math courses requires completion of a placement exam.
d GE CLAS Core course may be completed in any order unless used as a prerequisite for another course. Students should consult with an advisor about the best sequencing of courses.
e Students who have completed four years of a single language in high school have satisfied the GE CLAS Core World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.
f It is recommended that students take EES:2831 whenever possible.
g Choose from EES:2200, EES:3360, EES:3500, EES:3840, EES:4630, EES:4790.
h Refer to the General Catalog for course options.
i Please see Academic Catalog, Office of the Registrar website for current degree application deadlines. Students should apply for a degree for the session in which all requirements will be met. For any questions on appropriate timing, contact your academic advisor. For more information visit http://commencement.uiowa.edu/. If applicable search for "Early and Late Participation" to find this page (e.g. participate in graduation ceremony in May, degree conferal in August).
**Third Year**

**Fall**

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GE CLAS Core: World Languages Second Level</td>
<td>4 - 5</td>
</tr>
<tr>
<td>PHYS:1512 College Physics II</td>
<td>4</td>
</tr>
<tr>
<td>EES:4790 Applied Environmental Geology</td>
<td>3</td>
</tr>
<tr>
<td>ENVS:3020 Earth Surface Processes</td>
<td>3</td>
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<tr>
<td><strong>Total Hours</strong></td>
<td>14-15</td>
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</table>

**Spring**

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
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<tbody>
<tr>
<td>GE CLAS Core: World Languages Fourth Level</td>
<td>4 - 5</td>
</tr>
<tr>
<td>EES:4630 Hydrogeology</td>
<td>4</td>
</tr>
<tr>
<td>STAT:4200 Statistical Methods and Computing</td>
<td>3</td>
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<tr>
<td>or STAT:3510 Biostatistics</td>
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<tr>
<td>or CHEM:2021 Fundamentals of Chemical Measurements</td>
<td></td>
</tr>
<tr>
<td>GE CLAS Core: International and Global Issues</td>
<td>3</td>
</tr>
<tr>
<td>Elective course</td>
<td>1 - 3</td>
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<td><strong>Total Hours</strong></td>
<td>15-18</td>
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**Summer**

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<tr>
<th>Course Description</th>
<th>Hours</th>
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<tr>
<td>EES:4680 Field Methods in Hydrologic Science</td>
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<tr>
<td><strong>Total Hours</strong></td>
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**Fourth Year**

**Fall**

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
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<tr>
<td>Major: hydrosciences &quot;select 6 s.h.&quot; foundation course</td>
<td>3</td>
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<tr>
<td>Major: hydrosciences elective course</td>
<td>3 - 4</td>
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<tr>
<td>ENVS:2673 Ecology</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:1050 Foundations of GIS</td>
<td>4</td>
</tr>
<tr>
<td>GE CLAS Core: Literary, Visual, and Performing Arts</td>
<td>3</td>
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<tr>
<td><strong>Total Hours</strong></td>
<td>16-17</td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
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<th>Course Description</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Major: hydrosciences &quot;select 6 s.h.&quot; foundation course</td>
<td>3</td>
</tr>
<tr>
<td>Major: hydrosciences policy course</td>
<td>3</td>
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<tr>
<td>ENVS:3010 Interdisciplinary Environmental Seminar</td>
<td>1</td>
</tr>
<tr>
<td>GE CLAS Core: Social Sciences</td>
<td>3</td>
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<tr>
<td>GE CLAS Core: Diversity and Inclusion</td>
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<td>Degree Application: apply on MyUI before deadline (typically in February for spring, September for fall)</td>
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<tr>
<td><strong>Total Hours</strong></td>
<td>13</td>
</tr>
</tbody>
</table>

**Total Hours**

| Total Hours                                                                         | 123-133 |

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**Notes:**

a. Fulfills a major requirement and may fulfill a GE requirement.
b. Enrollment in chemistry courses requires completion of a placement exam.
c. Enrollment in math courses requires completion of a placement exam.
d. GE CLAS Core courses may be completed in any order unless used as a prerequisite for another course. Students should consult with an advisor about the best sequencing of courses.
e. Students who have completed four years of a single language in high school have satisfied the GE CLAS Core World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.
f. Refer to the General Catalog for course options.
g. Students may use elective courses to earn credit towards the total s.h. required for graduation or to complete a double major, minors, or certificates.
h. This course is offered every other summer. Check MyUI for course availability since offerings are subject to change.
j. Please see Academic Calendar, Office of the Registrar website for current degree application deadlines. Students should apply for a degree for the session in which all requirements will be met. For any questions on appropriate timing, contact your academic advisor. For more information visit <http://commencement.uiowa.edu/>. If applicable search for "Early and Late Participation" to find this page (e.g. participate in graduation ceremony in May, degree conferral in August).