Environmental Sciences, B.S.

Requirements

The Bachelor of Science with a major in environmental sciences requires a minimum of 120 s.h., including 75-78 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 General Education Program; some courses required for the major in environmental sciences may be used to satisfy General Education Program 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 course work.

| Science and Mathematics Foundation Courses | 27 |
| Environmental Sciences Foundation Courses | 15 |
| Environmental Sciences Track Courses | 33-36 |
| **Total Hours** | **75-78** |

Science and Mathematics Foundation

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

- All of these: BIOL:1411 Foundations of Biology 4
- All of these: CHEM:1110 Principles of Chemistry I 4, CHEM:1120 Principles of Chemistry II 4, EES:1050 Introduction to Geology 4, MATH:1850 Calculus I 4

One of these: CHEM:2021 Fundamentals of Chemical Measurements 3, STAT:3510/IGPI:3510 Biostatistics 3, STAT:4200/IGPI:4200 Statistical Methods and Computing 3

Environmental Sciences Foundation

Students must complete 15 s.h. of course work, as follows.


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.

<table>
<thead>
<tr>
<th>Biosciences Track: Foundation</th>
</tr>
</thead>
<tbody>
<tr>
<td>These three courses: BIOL:2512 Fundamental Genetics 4, BIOL:3172 Evolution 4, GEOG:2374/BIOL:2374 Biogeography 3</td>
</tr>
<tr>
<td>At least 9 s.h. from these: ENVS:3100/EES:3100 Introduction to Applied Remote Sensing 4</td>
</tr>
</tbody>
</table>
Environmental Sciences, B.S.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS:4700/</td>
<td>Evolution of Ecosystems</td>
<td>3</td>
</tr>
<tr>
<td>EES:4700</td>
<td></td>
<td></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>3</td>
</tr>
<tr>
<td>EES:4440</td>
<td>Phylogenetics and Biodiversity</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:2950</td>
<td>Environmental Conservation</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3350</td>
<td>Urban Ecology</td>
<td>3</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>4</td>
</tr>
<tr>
<td>IALL:3163</td>
<td>Conservation Biology</td>
<td>4</td>
</tr>
<tr>
<td>GHS:2150</td>
<td>Natural Environmental Systems</td>
<td>3-4</td>
</tr>
<tr>
<td>CHEM:2220</td>
<td>Organic Chemistry II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:2210</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3080</td>
<td>Introduction to Oceanography</td>
<td>2</td>
</tr>
<tr>
<td>EES: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>GEOG: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</td>
<td>Wetlands: Function, Geography, and Management</td>
<td>3</td>
</tr>
<tr>
<td>STAT:6513/</td>
<td>Intermediate Statistical Methods</td>
<td>4</td>
</tr>
<tr>
<td>PSQF:6243</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Biosciences track students must complete one of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:1260</td>
<td>Plants and Human Affairs</td>
<td>3</td>
</tr>
<tr>
<td>ECON:3625/</td>
<td>Environmental and Natural</td>
<td>3</td>
</tr>
<tr>
<td>URP:3135</td>
<td>Resource Economics</td>
<td>3</td>
</tr>
<tr>
<td>EES:1115/</td>
<td>Big Ideas: The History and Science of Oil</td>
<td>3</td>
</tr>
<tr>
<td>ENVS:1115/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG:1115/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIST:1115</td>
<td></td>
<td></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>
<tr>
<td>GEOG:3750</td>
<td>Environmental Quality: Science, Technology, and Policy</td>
<td>3</td>
</tr>
<tr>
<td>GHS:3780</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GEOG:4750/</td>
<td>Environmental Impact</td>
<td>4</td>
</tr>
<tr>
<td>URP:4750</td>
<td>Analysis</td>
<td>4</td>
</tr>
<tr>
<td>GEOG:4770</td>
<td>Environmental Justice</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 course work, as follows.

Chemical Sciences Track: Foundation

These three courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</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>
</tbody>
</table>

And 9 s.h. from this list (at least 3 s.h. must be lab hours):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<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:3340</td>
<td>Physical Measurements</td>
<td>3</td>
</tr>
<tr>
<td>CHEM:3530</td>
<td>Inorganic Chemistry Laboratory</td>
<td>3</td>
</tr>
</tbody>
</table>

Chemical Sciences Track: Lab and Field Study

This course:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<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: Electives
Chemical sciences track students must complete at least 9 s.h. of elective courses 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
- **BIOC:3110** Biochemistry 3
- **CEE:4158/ OEH:4920** Solid and Hazardous Wastes 3
- **CHEM:3994** Undergraduate Research 1-4
- **CHEM:4760** Radiochemistry: Energy, Medicine, and the Environment 3
- **CHEM:4873** Atmospheric and Environmental Chemistry 3
- **EES:3100/ ENVS:3100** Introduction to Applied Remote Sensing 4
- **EES:4490** Elements of Geochemistry 3
- **EES:4520** Isotope Geochemistry 3
- **GEOG:2310/ EES:3100** Introduction to Applied Remote Sensing 4
- **GEOG:2950** Environmental Conservation 3
- **GEOG:3500** Introduction to Environmental Remote Sensing 3
- **GEOG:3750** Environmental Policy: Science, Technology, and Policy 3
- **GEOG:4750/ URP:4750** Environmental Impact Analysis 4
- **GEOG:4770** Environmental Justice 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** Contemporary Environmental Issues 3
- **GEOG:2930** Water Resources 3
- **GEOG:3340** Ecosystem Services: Human Dependence on Natural Systems 3
- **GEOG:3750** Environmental Quality: Science, Technology, and Policy 3
- **GEOG:4750/ URP:4750** Environmental Impact Analysis 4
- **GEOG: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 course work, as follows.

**Geosciences Track: General Sciences**

These two courses:

- **MATH:1860** Calculus II 4
- **PHYS:1400** Basic Physics 4

Students are strongly encouraged to take additional course work in physics

**Geosciences Track: Foundation**

These two courses:

- **EES:2410** Mineralogy 4
- **EES:3300** Sedimentary Geology 4

And 7 s.h. from these:

- **EES:3360/ GEOG:3360** Soil Genesis and Geomorphology 3
- **EES:3500** Igneous and Metamorphic Petrology 4
- **EES:3840** Structural Geology 4
- **EES:4790** Engineering Geology 3

**Geosciences Track: Field Study**

One of these:

- **CEE:4103** Water Quality 3
- **EES:2831** Geologic Field Methods 3
- **EES:3360/ GEOG:3360** U.S. Energy Policy in Global Context 3
- **EES:3780/ URP:3328** Environmental Impact Analysis 4
- **EES:3930** Integrated Watershed Analysis 3

**Geosciences Track: Electives**

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

- **ENVS:3100/ EES:3100** Introduction to Applied Remote Sensing 4
- **ENVS:3110/ EES:3110** Chemical Evolution of the Oceans 3
- **CEE:2150/ GHS:2150** Natural Environmental Systems 3
- **CEE:4158/ OEH:4920** Solid and Hazardous Wastes 3
- **EES:1290** Energy and the Environment 3
- **EES:1400** Natural Disasters 3
- **EES:3080** Introduction to Oceanography 2
- **EES:3190** Directed Study arr.
- **EES:3380/CEE:3328** Fluvial Geomorphology 3
- **EES:3390** Integrated Watershed Analysis 3
- **EES:3770** Global Stratigraphy 3
- **EES:4490** Elements of Geochemistry 3
- **EES:4520** Isotope Geochemistry 3
- **EES:4630** Hydrogeology 3
- **EES:4720** Glacial and Pleistocene Geology 3
- **EES:4800** Solid Earth Geophysics 3
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 36 s.h. of course work, as follows.

**Hydrosciences Track: General Sciences**
These three courses:
- MATH:1860 Calculus II 4
- PHYS:1511 College Physics I 4
- PHYS:1512 College Physics II 4

**Hydrosciences Track: Foundation**
These two courses:
- EES:4630 Hydrogeology 3
- EES:4790 Engineering Geology 3

And 6 s.h. from these:
- EES:3380/CEE:3328 Fluvial Geomorphology 3
- EES:3390 Integrated Watershed Analysis 3
- EES:4490 Elements of Geochemistry 3

**Hydrosciences Track: Field Study**

One of these:
- CEE:4103 Water Quality 3
- EES:4680 Field Methods in Hydrologic Science 3

**Hydrosciences Track: Electives**

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

- ENSV:3100/ EES:3100 Introduction to Applied Remote Sensing 4
- ENSV:3110/ EES:3110 Chemical Evolution of the Oceans 3
- CEE:2150/ GHS:2150 Natural Environmental Systems 3
- CEE:3371 Principles of Hydraulics and Hydrology 3
- CEE:4103 Water Quality 3
- CEE:4378 Hydrometeorology 3
- CEE:5154 Environmental Microbiology 3
- EES:3080 Introduction to Oceanography 2
- EES:3190 Directed Study arr.
- EES:3300 Sedimentary Geology 4
- EES:3360/ GEOG:3360 Soil Genesis and Geomorphology 3
- EES:4660/CEE:4104 Groundwater Modeling 3
- EES:4800 Solid Earth Geophysics 3
- EES:4870/ GEOG:4870 Applied Geostatistics 3
- GEOG:2310/ EES:2310 Introduction to Climatology 3
- GEOG:2950 Environmental Conservation 3
- GEOG:3320/ EES:3260 Wetlands: Function, Geography, and Management 3

**Hydrosciences Track: Policy**

Hydrosciences 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 Contemporary Environmental Issues 3
- GEOG:2930 Water Resources 3
- GEOG:3340/ EES:3260 Ecosystem Services: Human Dependence on Natural Systems 3
- GEOG:4750/ URP:4750 Environmental Impact Analysis 4
- GEOG:4770 Environmental Justice 3
B.S. with Teacher Licensure

Majors interested in earning licensure to teach in elementary and/or secondary schools must complete the College of Education’s Teacher Education Program (TEP) in addition to the requirements for the major and all requirements for graduation. The TEP requires several College of Education courses and student teaching. Contact the Office of Student Services for details.

Students must satisfy all degree requirements and complete Teacher Education Program licensure before degree conferral.

Students with a strong interest in science teaching may complete a science education major. Students choose one of five emphases—biology, chemistry, earth science, physics, or all-science. They may apply for admission to the Teacher Education Program. See B.S. in Science Education in the Teaching and Learning (College of Education) section of the Catalog.

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.

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 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.

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

Environmental Sciences (B.S.)

B.S. students majoring in environmental sciences must choose one of the four following tracks: biosciences (green) track, chemical sciences (yellow) track, geosciences (brown) track, or hydrosciences (blue) track. Each track includes required general science courses, track foundation courses, field study courses, and elective courses.

Biosciences (Green) Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS:1085</td>
<td>Fundamentals of Environmental Science (major)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I (major)</td>
<td>4</td>
</tr>
<tr>
<td>EES:1050</td>
<td>Introduction to Geology (major)</td>
<td>4</td>
</tr>
<tr>
<td>RHET:1030</td>
<td>Rhetoric (GE: Rhetoric or other General Education course)</td>
<td>4</td>
</tr>
<tr>
<td>CSI:1600</td>
<td>Success at Iowa</td>
<td>2</td>
</tr>
</tbody>
</table>

Total Hours: 18

Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS:3000</td>
<td>Environmental Sciences Seminar (major)</td>
<td>1</td>
</tr>
<tr>
<td>CHEM:1120</td>
<td>Principles of Chemistry II (major)</td>
<td>4</td>
</tr>
<tr>
<td>ENGL:1200</td>
<td>The Interpretation of Literature (GE: Interpretation of Literature)</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Hours: 8
MATH:1850  Calculus I (major)  4
GE: Diversity and Inclusion  3

### Second Year

#### Fall
- ENVS:3020  Earth Surface Processes (major)  3
- BIOL:1411  Foundations of Biology (major)  4
- STAT:3510  Biostatistics (major)  3
  or STAT:4200  or Statistical Methods and Computing
- GE: World Languages or elective course  3-5
- Elective course  2

#### Hours  15

#### Spring
- BIOL:1412  Diversity of Form and Function (major)  4
- GEOG:1050  Foundations of GIS (major)  3
- Major: environmental biosciences foundation elective course  3-5
- GE: World Languages or elective course  3-5
- Elective course  2

#### Hours  15-17

#### Summer
- Major: biosciences field study course  4

#### Third Year

#### Fall
- ENVS:2673  Ecology (major)  3
- BIOL:2512  Fundamental Genetics (major)  4
- GEOG:2374  Biogeography (major)  3
- GE: World Languages or elective course  3-5
- Elective course  2

#### Hours  15-17

#### Spring
- BIOL:3172  Evolution  4
- Major: environmental biosciences elective course  3-4
- GE: Literary, Visual, and Performing Arts  3
- GE: World Languages or elective course  3-5
- Elective course  2

#### Hours  15-17

#### Fourth Year

#### Fall
- Major: environmental biosciences foundation elective course  3
- Major: policy course  3
- GE: Historical Perspectives  3
- GE: International and Global Issues  3
- Elective course  3

#### Hours  15-18

#### Spring
- ENVS:3000  Environmental Sciences Seminar (major)  1
- Major: environmental biosciences foundation elective course  3
- Major: environmental biosciences elective course  3-4
- GE: Social Sciences  3
- GE: Values and Culture  3

#### Hours  15

### Elective course  2

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I</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>RHET:1030</td>
<td>Rhetoric (GE: Rhetoric or other General Education course) 1</td>
<td>4</td>
</tr>
<tr>
<td>CSI:1600</td>
<td>Success at Iowa</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Hours  18

### Chemical Sciences (Yellow) Track

#### First Year

#### Fall
- CHEM:1110  Principles of Chemistry I  4
- EES:1050  Introduction to Geology  4
- MATH:1850  Calculus I  4
- RHET:1030  Rhetoric (GE: Rhetoric or other General Education course)  4
- CSI:1600  Success at Iowa  2

#### Hours  18

#### Spring
- ENVS:1085  Fundamentals of Environmental Science  4
- ENVS:3000  Environmental Sciences Seminar  1
- CHEM:1120  Principles of Chemistry II  4
- CHEM:2021  Fundamentals of Chemical Measurements  3
- GE: Diversity and Inclusion  3

#### Hours  15

#### Second Year

#### Fall
- ENVS:3020  Earth Surface Processes  3
- BIOL:1411  Foundations of Biology  4
- CHEM:2210  Organic Chemistry I  3
- ENGL:1200  The Interpretation of Literature (GE: Interpretation of Literature )  3
- GE: World Languages or elective course  3-5

#### Hours  16-18

#### Spring
- BIOL:1412  Diversity of Form and Function  4
- CHEM:3250  Inorganic Chemistry  3
- Major: chemical sciences foundation elective course  3-4
- GE: World Languages or elective course  3-5
- Elective course  2

#### Hours  15-18

#### Third Year

#### Fall
- ENVS:2673  Ecology  3
- Major: chemical sciences elective course  1-4
- Major: chemical sciences elective course  1-4

#### Hours  15-18

1. General Education (GE) 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. For more information, view the General Education Program.
2. Students who have completed four years of a single language in high school have satisfied the College of Liberal Arts and Sciences GE: World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.
3. Students may use their elective courses to complete a double major, minors, or certificates.
Environmental Sciences, B.S.

Major: chemical sciences foundation elective course 3-4
GE: World Languages or elective course 3-5
Elective course 3
Elective course 1

Hours 15-24

Spring
CHEM:3120 Analytical Chemistry II 3
GEOG:1050 Foundations of GIS 3
Major: chemical sciences foundation elective course 3-4
Major: chemical sciences elective course 1-4
GE: World Languages or elective course 3-5
Elective course 3

Hours 15-21

Fourth Year
Fall
Major: chemical sciences elective course 1-4
Elective course 3
Elective course 3
Elective course 3
Elective course 2

Hours 15-18

Spring
ENVS:3000 Environmental Sciences Seminar 1
CHEM:3430 Analytical Measurements 3
Major: chemical sciences elective course 1-4
Elective course 3
Elective course 3
Elective course 3
Elective course 1

Hours 15-18

Total Hours 124-150

1 General Education (GE) 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. For more information, view the General Education Program.

2 Students who have completed four years of a single language in high school have satisfied the College of Liberal Arts and Sciences GE: World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.

3 Students may use their elective courses to complete a double major, minors, or certificates.

Geosciences (Brown) Track

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I</td>
<td>4</td>
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<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>RHET:1030</td>
<td>Rhetoric (GE: Rhetoric or other General Education course)</td>
<td>4</td>
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<td>CSI:1600</td>
<td>Success at Iowa</td>
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<td>ENVS:1085</td>
<td>Fundamentals of Environmental Science</td>
<td>4</td>
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<tr>
<td>ENVS:3000</td>
<td>Environmental Sciences Seminar</td>
<td>1</td>
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<tr>
<td>CHEM:1120</td>
<td>Principles of Chemistry II</td>
<td>4</td>
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<tr>
<td>MATH:1860</td>
<td>Calculus II</td>
<td>4</td>
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<tr>
<td>GE: Diversity and Inclusion</td>
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</tbody>
</table>

Hours 16

Second Year
Fall
BIOL:1411 Foundations of Biology 4
EES:2410 Mineralogy 4
STAT:2020 Probability and Statistics for the Engineering and Physical Sciences 3
or STAT:3510
or STAT:4200
or Biostatistics
or Statistical Methods and Computing
GE: World Languages or elective course 3-5
Elective course 3

Hours 15-17

Spring
BIOL:1412 Diversity of Form and Function 4
ENGL:1200 The Interpretation of Literature (GE: Interpretation of Literature) 3
GEOG:1050 Foundations of GIS 3
Major: geological sciences foundation elective course 3-4
GE: World Languages or elective course 3-5

Hours 16-19

Summer
Major: geologic field methods course 3

Hours 3

Third Year
Fall
ENVS:2673 Ecology 3
PHYS:1400 Basic Physics 4
Major: geological sciences foundation elective course 3-4
Major: geological sciences policy course 3
GE: World Languages or elective course 3-5

Hours 16-19

Spring
EES:3300 Sedimentary Geology 4
Major: geological sciences elective course 3-4
Major: geological sciences policy course 3-4
GE: World Languages or elective course 3-5
Elective course 2

Hours 15-19

Fourth Year
Fall
ENVS:3020 Earth Surface Processes 3
Major: geological sciences elective course 3
Elective course 3
Elective course 3

Hours 15
### Environmental Sciences, B.S.

#### Spring

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>ENVS:3000</td>
<td>Environmental Sciences Seminar</td>
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</table>

**Total Hours**: 15

1. General Education (GE) 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. For more information, view the General Education Program.

2. Students who have completed four years of a single language in high school have satisfied the College of Liberal Arts and Sciences GE: World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.

3. Students may use their elective courses to complete a double major, minors, or certificates.

4. Or another environmental geosciences field study course.

#### Hydrosciences (Blue) Track

**Course**

**Title**

**First Year**

**Fall**

- CHEM:1110 Principles of Chemistry I 4
- EES:1050 Introduction to Geology 4
- MATH:1850 Calculus I 4
- RHET:1030 Rhetoric (GE: Rhetoric or other General Education course) 4
- CSI:1600 Success at Iowa 2

**Hours**: 18

**Spring**

- ENVS:1085 Fundamentals of Environmental Science 4
- ENVS:3000 Environmental Sciences Seminar 1
- CHEM:1120 Principles of Chemistry II 4
- MATH:1860 Calculus II 4
- GE: Diversity and Inclusion 3

**Hours**: 16

**Second Year**

**Fall**

- ENVS:3020 Earth Surface Processes 3
- BIOL:1411 Foundations of Biology 4
- PHYS:1511 College Physics I 4
- STAT:2020 Probability and Statistics for the Engineering and Physical Sciences or Biostatistics or Statistical Methods and Computing 3

**Elective course**: 1

**Hours**: 15

**Spring**

- BIOL:1412 Diversity of Form and Function 4
- EES:4680 Field Methods in Hydrologic Science 3

**Total Hours**: 129-141

#### Third Year

**Fall**

- ENVS:2673 Ecology 3
- EES:3390 Integrated Watershed Analysis 3
- EES:4790 Engineering Geology 3
- Major: hydrosciences elective course 3
- GE: World Languages or elective course 3-5

**Hours**: 17

**Spring**

- EES:4630 Hydrogeology 3
- Major: hydrosciences elective course 3
- Major: hydrosciences policy course 3
- GE: World Languages or elective course 3-5
- Elective course 3

**Hours**: 17

#### Fourth Year

**Fall**

- ENVS:3000 Environmental Sciences Seminar 1
- Major: hydrosciences elective course 3
- GE: World Languages or elective course 3-5
- Elective course 3
- Elective course 3
- Elective course **Elective course** 3

**Hours**: 17

**Spring**

- ENVS:3000 Environmental Sciences Seminar 1
- Major: hydrosciences elective course 3
- GE: World Languages or elective course 3-5
- Elective course 3
- Elective course 3
- Elective course 3

**Hours**: 17

**Total Hours**: 126-134

1. General Education (GE) 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. For more information, view the General Education Program.

2. Students may use their elective courses to complete a double major, minors, or certificates.

3. Students who have completed four years of a single language in high school have satisfied the College of Liberal Arts and Sciences GE: World Languages requirement. Enrollment in world languages courses requires a placement exam, unless enrolling in a first-semester-level course.

#### 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.