Geoscience, B.S.

Requirements

The Bachelor of Science with a major in geoscience requires a minimum of 120 s.h., including at least 76 s.h. of work for the major (at least 45 s.h. in earth and environmental sciences courses and at least 31 s.h. in supporting disciplines). 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. Transfer students must complete a minimum of 15 s.h. of coursework in the Department of Earth and Environmental Sciences.

The department recommends that students fulfill the GE CLAS Core World Languages requirement with French, German, Russian, or Spanish and the Social Sciences requirement with approved coursework in economics, geography, or anthropology.

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

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth and Environmental Sciences Courses</td>
<td>45-50</td>
<td></td>
</tr>
<tr>
<td>Mathematics Courses</td>
<td>11-12</td>
<td></td>
</tr>
<tr>
<td>Chemistry Courses</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Physics Courses</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Biology Course</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Independent Research Option</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Hours</strong></td>
<td>76-82</td>
<td></td>
</tr>
</tbody>
</table>

Earth and Environmental Sciences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES:1030</td>
<td>Introduction to Earth Science</td>
<td>4</td>
</tr>
<tr>
<td>EES:1050</td>
<td>Introduction to Geology (preferred)</td>
<td>4</td>
</tr>
<tr>
<td>All of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES:1040</td>
<td>Evolution and the History of Life</td>
<td>4</td>
</tr>
<tr>
<td>EES:2200</td>
<td>Historical Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:2410</td>
<td>Mineralogy</td>
<td>4</td>
</tr>
<tr>
<td>EES:2831</td>
<td>Geologic Field Methods</td>
<td>3</td>
</tr>
<tr>
<td>EES:3300</td>
<td>Sedimentary Geology</td>
<td>4</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:4832</td>
<td>Geologic Field Analysis</td>
<td>3</td>
</tr>
<tr>
<td>One of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EES:3210</td>
<td>Principles of Paleontology</td>
<td>3</td>
</tr>
<tr>
<td>EES:4490</td>
<td>Elements of Geochemistry</td>
<td>3</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>
<tr>
<td>EES:4800</td>
<td>Global Geophysics</td>
<td>3</td>
</tr>
<tr>
<td>And:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three earth and environmental sciences electives numbered EES:3000 or above, except for the field trip courses EES:3001, EES:3160, or EES:4001; see &quot;Recommended Electives&quot; below</td>
<td>8-12</td>
<td></td>
</tr>
</tbody>
</table>

Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of these:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH:1550</td>
<td>Engineering Mathematics I: Single Variable Calculus</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>MATH:1560</td>
<td>Engineering Mathematics II: Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH:1860</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>And:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An additional mathematics course numbered MATH:2000 or above, or a computer science course numbered CS:1110 or above, or a statistics course numbered STAT:2010 or above, or EES:3100, or EES:4300 (if the EES courses are not used to satisfy the earth and environmental sciences electives requirement)</td>
<td>3-4</td>
<td></td>
</tr>
</tbody>
</table>

Chemistry

Students must complete at least 8 s.h. of college-level chemistry, including the following sequence or equivalent courses or more advanced courses. Chemistry courses numbered below CHEM:1110 Principles of Chemistry I do not count toward this requirement.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:1110 &amp; CHEM:1120</td>
<td>Principles of Chemistry I-II</td>
<td>8</td>
</tr>
</tbody>
</table>

Physics

Students must complete at least 8 s.h. of college-level physics, as follows. Physics courses numbered below PHYS:1511 College Physics I do not count toward this requirement.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of these sequences:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS:1511-PHYS:1512</td>
<td>College Physics I-II</td>
<td>8</td>
</tr>
<tr>
<td>PHYS:1611-PHYS:1612</td>
<td>Introductory Physics I-II</td>
<td>8</td>
</tr>
</tbody>
</table>

Biology

Students must complete at least one biology course that includes a laboratory (4 s.h.). Students with an interest in paleontology are encouraged to take BIOL:1411 Foundations of Biology and BIOL:1412 Diversity of Form and Function.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>One biology course (includes a lab)</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

Recommended Electives

All students should take elective courses from the following groups in order to broaden their undergraduate experience and prepare themselves for graduate study or professional employment. Students who have clear career goals are advised to take three or more elective courses from the group.
that fits their needs most closely. Students also may seek a broad education in geoscience by choosing elective courses from a number of groups.

### Quaternary Geology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES:3020</td>
<td>Earth Surface Processes</td>
<td>3</td>
</tr>
<tr>
<td>EES:3060</td>
<td>Ecology and Natural History of Iowa</td>
<td>3</td>
</tr>
<tr>
<td>EES:3100</td>
<td>Earth and Planetary Remote Sensing</td>
<td>4</td>
</tr>
<tr>
<td>EES:3360</td>
<td>Soil Genesis and Geomorphology</td>
<td>3</td>
</tr>
<tr>
<td>EES:3380</td>
<td>Fluvial Geomorphology</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>Paleoclimatology</td>
<td>3</td>
</tr>
<tr>
<td>EES:4790</td>
<td>Applied Environmental Geology</td>
<td>3</td>
</tr>
</tbody>
</table>

### Sedimentary Geology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES:3080</td>
<td>Introduction to Oceanography</td>
<td>2</td>
</tr>
<tr>
<td>EES:3300</td>
<td>Sedimentary Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3380</td>
<td>Fluvial Geomorphology</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:4750</td>
<td>Mineral and Petroleum Exploration Geology</td>
<td>3</td>
</tr>
<tr>
<td>EES:4820</td>
<td>Tectonics and Basin Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

### Paleobiology

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EES: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:3210</td>
<td>Principles of Paleontology</td>
<td>3</td>
</tr>
<tr>
<td>EES:3220</td>
<td>Evolution of the Vertebrates</td>
<td>4</td>
</tr>
<tr>
<td>EES:3300</td>
<td>Sedimentary Geology</td>
<td>4</td>
</tr>
<tr>
<td>EES:3770</td>
<td>Global Stratigraphy</td>
<td>3</td>
</tr>
<tr>
<td>EES:4420</td>
<td>Vertebrate Osteology and Phylogeny</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:4700</td>
<td>Evolution of Ecosystems</td>
<td>3</td>
</tr>
<tr>
<td>EES:4710</td>
<td>Evolution of Plants</td>
<td>3</td>
</tr>
<tr>
<td>EES:4820</td>
<td>Tectonics and Basin Analysis</td>
<td>3</td>
</tr>
</tbody>
</table>

### Independent Research Option

A junior or senior who is ready to pursue independent research for credit in geoscience may assist a faculty member or graduate student with a current research project EES:2190 Directed Study or may initiate a small-scale project involving a combination of field, laboratory, and library investigation in EES:3190 Directed Study. Independent study is encouraged and may lead to an honors thesis in EES:4999 Honors Thesis in Geoscience or a senior thesis in EES:4990 Senior Thesis in Geoscience that may be published subsequently.

### 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 Apply 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.