Geographic Information Science, Certificate

Geographic information systems (GIS) and the digital spatial data that they contain inform major decisions on how natural resources are managed, how smart cities are built, how communities respond to natural disasters, and how the spread of disease is detected. These same systems and data guide such everyday tasks as deciding one’s driving route, finding family and friends using a phone, or figuring out when the bus arrives. Geographic information science (GIScience) has emerged as a field of study focused on fundamental questions about how to acquire, store, manage, analyze and visualize geographic information using computers.

The Certificate in Geographic Information Science is designed to provide the knowledge and skills needed to work with geographic information and prepare individuals to work in this growing profession. The certificate coursework helps build a knowledgeable geospatial workforce that understands how to use GIScience properly and applies this understanding to improve transportation systems, improve water quality, or make companies more productive.

Requirements

The undergraduate Certificate in Geographic Information Science requires a minimum of 18 s.h. of credit, including at least 12 s.h. earned at the University of Iowa. Students must maintain a g.p.a. of at least 2.00 in work for the certificate. Courses taken pass/nonpass do not count toward the certificate.

The certificate may be earned by any student admitted to the University of Iowa who is not enrolled in a UI graduate or professional degree program. Undergraduate to Graduate (U2G) students may earn the certificate when the undergraduate classification is primary.

Students who major in geography (geographic information science track) or who earn a minor in geographic information science may not earn the Certificate in Geographic Information Science.

Students who are interested in a specialization in geographic information systems, in remote sensing, or those who seek a more general background may want to select certain options when they plan their certificate coursework. For more information, contact the Department of Geographical and Sustainability Sciences.

Students must complete all of a course’s prerequisites before they register for the course.

The Certificate in Geographic Information Science requires the following coursework.

Core Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG:1065</td>
<td>Introduction to Spatial Analysis: Patterns and Processes</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3540/IGPI:3540</td>
<td>Geographic Visualization</td>
<td>3</td>
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</tbody>
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Geographic Analysis Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG:3500/IGPI:3500</td>
<td>Introduction to Environmental Remote Sensing</td>
<td>3</td>
</tr>
<tr>
<td>GEOG:3520/IGPI:3520</td>
<td>GIS for Environmental Studies</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:4580/IGPI:4581</td>
<td>Introduction to Geographic Databases</td>
<td>3</td>
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Capstone Course

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG:4500/IGPI:4500</td>
<td>Advanced Remote Sensing</td>
<td>4</td>
</tr>
<tr>
<td>GEOG:4520/IGPI:4520</td>
<td>GIS for Environmental Studies: Applications</td>
<td>3</td>
</tr>
<tr>
<td>An independent project or internship (consult advisor)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

Academic Plans

Sample Plan 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.

Geographic Information Science, Certificate

Course Title Hours

Academic Career

Any Semester

Students pursuing the Geographic Information Science (GIS) certificate cannot also be Geography majors with the GIS track and cannot also earn the GIS minor.

Hours 0

First Year

Spring

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG:1030 or GEOG:1050</td>
<td>Our Digital Earth or Foundations of GIS</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Hours 3-4
### Second Year

**Fall**
- GEOG:1065  Introduction to Spatial Analysis: Patterns and Processes 3
  
**Hours** 3

**Spring**
- GEOG:3540  Geographic Visualization 3
  
**Hours** 3

### Third Year

**Fall**
- Certificate: geographic analysis elective 3
  
**Hours** 3

**Spring**
- Certificate: geographic analysis elective 3
  
**Hours** 3

### Fourth Year

**Fall**
- Certificate: capstone course a 3
  
**Hours** 3

**Total Hours** 18-19

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a Choose from GEOG:4150, GEOG:4500, GEOG:4520 or an approved independent project or internship.