GEOGRAPHIC INFORMATION SCIENCE - M.GISC

College of Arts and Sciences
Department of Geography
413 McGilvrey Hall
Kent Campus
330-672-2045
geography@kent.edu
www.kent.edu/geography

Description
The Master of Geographic Information Science degree, offered fully online, prepares graduates for analytical and managerial positions that utilize geospatial technologies in three professional areas: cyber-infrastructure, environment and health. The program consists of three concentrations:

- The CyberGIS concentration focuses on the challenges of managing, filtering, analyzing and visualizing large volumes of spatiotemporal data from mobile devices, web-based services and supercomputers. This knowledge prepares graduates to work in government and industry and provide the expertise to enable scientists, businesses and policymakers to gain new insights from large spatial datasets.
- The Environmental Geographic Information Science concentration focuses on the use of geographic information science to understand environmental changes and hazards. Practitioners in the fields of emergency management, public safety and homeland security rely on geospatial technologies and mapping for planning, response, mitigation and recovery activities. Geographic information science is a key contributor to obtaining situation awareness in cases of natural and human-technological events. Jobs are available for GISc-skilled professionals at all levels of government and in private-sector consulting.
- The Geographic Information Science and Health concentration focuses on the use of geographic information science and allied geospatial technologies that have become widespread in the study of health and in management of healthcare resources. Geographic information science skills are needed through all levels of health-related agencies in government, and are becoming standard across private industry and non-profits in this area. From understanding and preventing epidemics around the world, to identifying healthy lifestyle resources in a neighborhood, geographic information science has proven invaluable in adding the necessary spatial insight for improved health quality and outcomes. Students who choose this concentration will graduate with the highly-valued technical skillset to advance these goals in health research and management.

FULLY OFFERED AT:
- Online

Admission Requirements
- Official transcript(s)
- Minimum 3.000 undergraduate GPA
- Undergraduate degree in geography or a related field
  - Two letters of recommendation

English Language Proficiency Requirements for International Students: All international students must provide proof of English language proficiency (unless they meet specific exceptions) by earning a minimum 550 TOEFL score (79 on the Internet-based version), minimum 77 MELAB score, minimum 6.5 IELTS score or minimum 58 PTE Academic score. For more information on international admission, visit the Office of Global Education’s admission website. Effective spring 2018.

1 Requirement that undergraduate degree be in geography or related field may be waved with evidence of professional experience using geospatial technologies or alternative evidence of ability to excel in a geographic information science graduate program.

For more information about graduate admission, please visit the Graduate Studies website.

Program Learning Outcomes
Graduates of this program will be able to:

1. Collect, edit, integrate, manage and analyze geospatial data.
2. Demonstrate skills and working knowledge of commercial and open source GIS application suites and utilities.
3. Identify, explain and analyze spatial patterns, relationships and processes.
4. Apply cartographic principles and techniques to create quality maps.
5. Apply critical and spatial thinking to solve geospatial problems with respect to theories, principles and practices of geographic information science and fields in the degree concentration areas.
6. Demonstrate good communication skills and ability to work in a team environment.

Program Requirements

Major Requirements

<table>
<thead>
<tr>
<th>Major Requirements</th>
<th>GEQG 59070</th>
<th>GEOGRAPHIC INFORMATION SCIENCE</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 59080</td>
<td>ADVANCED GEOGRAPHIC INFORMATION SCIENCE</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>GEOG 69164</td>
<td>CARTOGRAPHIC DESIGN</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>GEOG 69392</td>
<td>PRACTICUM IN GEOGRAPHIC INFORMATION SCIENCE</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Major Electives, choose from the following:

- CS 61002 ALGORITHMS AND PROGRAMMING I
- CS 61003 ALGORITHMS AND PROGRAMMING II
- DSCI 64210 DATA SCIENCE
- GEOG 69004 QUANTITATIVE METHODS IN GEOGRAPHY
- GEOG 69007 SPATIOTEMPORAL ANALYTICS
- GEOG 69079 ENVIRONMENTAL GEOGRAPHIC INFORMATION SCIENCE
- GEOG 69082 CYBERGIS
- GEOG 69083 GEDATABASES
- GEOG 69231 ENVIRONMENTAL REMOTE SENSING

Concentrations

Choose from the following:

- CyberGIS Concentration
- Environmental Geographic Information Science Concentration
As the capstone to the program, students will complete a practicum that is designed to provide practical experience in the application of MGISc degree course content in real-world professional settings. Students will select a professional project in consultation with their employer and program faculty and then will design, implement and report on their activities in a culminating professional paper.

Required courses in the student's concentration cannot be also applied toward the major electives.

**Graduation Requirements**

- Minimum 32 credit hours and selection of one concentration. Students are permitted to specialize in maximum two concentrations.

**CyberGIS Concentration**

[AS-MGISC-GIS-GISC]

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 59076</td>
<td>SPATIAL PROGRAMMING</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 69082</td>
<td>CYBERGIS</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 69083</td>
<td>GEODATABASES</td>
<td>3</td>
</tr>
</tbody>
</table>

Minimum Total Credit Hours: 9

**Environmental Geographic Information Science Concentration**

[AS-MGISC-GIS-GISE]

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 59078</td>
<td>GEOGRAPHIC INFORMATION SCIENCE AND ENVIRONMENTAL HAZARDS</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 69079</td>
<td>ENVIRONMENTAL GEOGRAPHIC INFORMATION SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 69231</td>
<td>ENVIRONMENTAL REMOTE SENSING</td>
<td>3</td>
</tr>
</tbody>
</table>

Minimum Total Credit Hours: 9

**Geographic Information Science and Health Concentration**

[AS-MGISC-GIS-GISH]

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOG 59072</td>
<td>GEOGRAPHIC INFORMATION SCIENCE AND HEALTH</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 69073</td>
<td>GEOGRAPHIC INFORMATION SCIENCE: GLOBAL HEALTH</td>
<td>3</td>
</tr>
<tr>
<td>GEOG 69074</td>
<td>GEOGRAPHIC INFORMATION SCIENCE: SPATIAL ANALYSIS FOR HEALTH GEOGRAPHY</td>
<td>3</td>
</tr>
</tbody>
</table>

Minimum Total Credit Hours: 9