Twin Cities Campus

Geographic Information Science Minor

Geography, Environment, Society
College of Liberal Arts

- Program Type: Undergraduate free-standing minor
- Requirements for this program are current for Fall 2022
- Required credits in this minor: 16

Students completing the interdisciplinary undergraduate minor develop knowledge and skills in geographic information science (GISc). GISc enhances students marketability in the workplace and provides many opportunities for intellectual and professional development. GISc examines geospatial technologies and their underlying principles, applications, and societal dimensions. These technologies include mapping, in-vehicle navigation systems, imagery taken from airplanes and satellites, analysis and modeling of social and natural processes, and visualization and data mining of complex information. Research using geospatial technologies addresses a diverse array of challenges in areas including water resources, environmental hazards, epidemiology, agriculture, housing, transportation, and more.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Minor Requirements

Students may combine the GIS minor with any other major or minor, except the Geography BS with a sub-plan in Geographic Information Science.

Core Courses
 Take exactly 2 course(s) totaling 7 - 8 credit(s) from the following:
 Foundations
 Take exactly 1 course(s) from the following:
 • FNRM 3131 - Geographical Information Systems (GIS) for Natural Resources [TS] (4.0 cr)
 • GEOG 3561 - Principles of Geographic Information Science (4.0 cr)
  or GEOG 5561 - Principles of Geographic Information Science (4.0 cr)
 • **Advanced**
 Take exactly 1 course(s) from the following:
 • ESPM 3031 - Applied Global Positioning Systems for Geographic Information Systems (3.0 cr)
 • FNRM 3262 - Remote Sensing and Geospatial Analysis of Natural Resources and Environment (3.0 cr)
 • GEOG 3511 - Principles of Cartography (4.0 cr)
 • GEOG 5563 - Advanced Geographic Information Science (3.0 cr)
 • GEOG 5564 - Urban Geographic Information Science and Analysis (3.0 cr)

Electives
 No more than two courses with the same designator may be used to fulfill the Electives requirement.
 Take 3 or more course(s) totaling 9 or more credit(s) from the following:
 CSCI
 Take no more than 2 course(s) from the following:
 • CSCI 4041 - Algorithms and Data Structures (4.0 cr)
 • CSCI 4707 - Practice of Database Systems (3.0 cr)
 • CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
 • CSCI 5715 - From GPS, Google Maps, and Uber to Spatial Data Science (3.0 cr)
 • **ESPM**
 Take no more than 2 course(s) from the following:
 • ESPM 3031 - Applied Global Positioning Systems for Geographic Information Systems (3.0 cr)
 • ESPM 4295W - GIS in Environmental Science and Management [WI] (4.0 cr)
 • **FNRM**
 Take no more than 2 course(s) from the following:
 • FNRM 3262 - Remote Sensing and Geospatial Analysis of Natural Resources and Environment (3.0 cr)
 • FNRM 3362 - Drones: Data, Analysis, and Operations (3.0 cr)
 • FNRM 4515 - Field Resource Survey (1.0 cr)
 • FNRM 5216 *{Inactive}* (1.0 cr)

- FNRM 3462 - Advanced Remote Sensing and Geospatial Analysis (3.0 cr)
  or FNRM 5462 - Advanced Remote Sensing and Geospatial Analysis (3.0 cr)
- **GEOG**
  Take no more than 2 course(s) from the following:
- GEOG 3511 - Principles of Cartography (4.0 cr)
- GEOG 3541 - Principles of Geocomputing (3.0 cr)
- GEOG 5543 - Advanced Geocomputing (3.0 cr)
- GEOG 5564 - Urban Geographic Information Science and Analysis (3.0 cr)
- GEOG 3531 - Numerical Spatial Analysis (4.0 cr)
  or GEOG 5531 - Numerical Spatial Analysis (4.0 cr)
- **GIS**
  Take no more than 2 course(s) from the following:
- GIS 5571 - ArcGIS I (3.0 cr)
- GIS 5572 - ArcGIS II (3.0 cr)
- GIS 5574 - Web GIS and Services (3.0 cr)
- GIS 5576 - Spatial Digital Humanities (3.0 cr)
- GIS 5577 - Spatial Database Design and Administration (3.0 cr)
- GIS 5578 - GIS Programming (3.0 cr)
- **LA**
  Take no more than 1 course(s) from the following:
- LA 3004 *{Inactive}*(4.0 cr)
- **SOIL**
  Take no more than 1 course(s) from the following:
- SOIL 4111 - Introduction to Precision Agriculture (3.0 cr)