UNDERGRADUATE MINOR in Geographic Information Science

Geographic Information Science (GIScience) encompasses the theories and methods for understanding spatial patterns and processes.

Because many of our most vexing problems have a spatial component, GIScience underpins our best solutions. Examples of geospatial technologies and research include internet mapping, in-vehicle navigation systems, digital cartography, imagery taken by airplanes and satellites, spatial analysis and modeling of social and natural processes, and visualization and data mining of complex information.

GIScience has become a key approach to an increasingly large number of endeavors, from land use planning and environmental management, to epidemiology through law enforcement. Experts in a diverse range of fields are well-served by knowledge in GIScience.

The undergraduate minor in GIScience allows students to develop depth in spatial analysis that complements their discipline-specific knowledge. Completing this minor will improve marketability and opportunities for intellectual and professional development.

CORE COURSES (7 CREDITS)

- GEOG 3561 Principles of GIS or FNRM 3131: GIS for Natural Resources
- GEOG 5563 Advanced GIS

ELECTIVE COURSES (9–12 CREDITS)

No more than two courses with the same designator may be used to fulfill the requirement. Take 3 or more course(s) totaling 9 or more credit(s) from the following:

- CSCI 4041 Algorithms and Data Structures (4 cr)
- CSCI 4107 Introduction to Computer Graphics Programming (3 cr)
- CSCI 4707 Practice of Database Systems (3 cr)
- CSCI 5115 User Interface Design, Implementation and Evaluation (3 cr)
- HSG 5464 Understanding Housing: Assessment and Analysis (3 cr)
- ESPM 3031 Applied Global Positioning Systems for Geographic Information Systems (3 cr)
- ESPM 4295W GIS in Environmental Science and Management (4 cr)
- FNRM 3262 Remote Sensing of Natural Resources and Environment (3 cr)
- FNRM 5412 Digital Remote Sensing (3 cr)
- GEOG 3511 Principles of Cartography (4 cr)
- GEOG 3521 Digital Planet (3 cr)
- GEOG 3523 Digital Mapping (3 cr)
- GEOG 3531 Numerical Spatial Analysis (4 cr)
- GEOG 5564 Urban Geographic Information Science and Analysis (3 cr)
- GEOG 5565 Geographical Analysis of Human-Environment Systems (3 cr)
- GIS 5571 ArcGIS I (3 cr)
- GIS 5572 ArcGIS II (3 cr)
- SOIL 4111 Introduction to Precision Agriculture (3 cr)

Other restrictions: Several of the courses for the minor have prerequisites that must be satisfied. Admission to the minor does not imply an automatic right to enroll in individual courses.

Students interested in declaring the Undergraduate Minor in GIS should contact the Advisor of Undergraduate Studies in Geography (geogadv@umn.edu) or visit: http://www.geog.umn.edu/ugrad/ for more information.

CFANS students should contact Sheryl Bolstad (sbolstad@umn.edu) and declare the minor at CFANS: http://www.cfans.umn.edu/UndergraduateStudents/CurrentStudents/MajorsandMinors/GeographicInformationScience/index.htm.

Students in CSE may also contact advisor@cs.umn.edu; and students in CDES may also contact Dave Pitt (pittx001@umn.edu) for college specific information.