Twin Cities Campus

Geographic Information Science M.G.I.S.

Geography, Environment, Society

College of Liberal Arts

Link to a list of faculty for this program.

Contact Information:
Department of Geography, 414 Social Sciences Building, 267 19th Avenue South, Minneapolis, MN 55455 (612-624-1498; fax: 612-624-1044)
Email: mgis@umn.edu
Website: http://cla.umn.edu/mgis

- Program Type: Master's
- Requirements for this program are current for Fall 2020
- Length of program in credits: 35
- This program does not require summer semesters for timely completion.
- Degree: Master of Geographic Information Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The professional master of geographic information science (MGIS), administered by the Department of Geography, provides graduate-level work in the theory, applications, and technology of geographic information science (GIS). Courses for the program are divided into three broad categories. Core courses provide the conceptual and theoretical underpinnings for a comprehensive, well-rounded knowledge of GIS; a set of technology courses focuses on specific software and techniques of GIS; and elective courses provide additional breadth to the program by allowing students to take courses related to their area of interest.

Program Delivery

This program is available:

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

Prerequisites for Admission

Other requirements to be completed before admission:
Completion of a college-level course in statistics and computer programming, either through previous coursework or online (subject to approval by the GIS director of graduate studies), prior to or during the first year of the MGIS program.

Special Application Requirements:
Applicants must submit an application form; transcripts; a clearly written personal statement of career interests and goals; and three letters of recommendation from persons familiar with their academic and/or employment background. The GRE is not required. All materials must be submitted by January 30 for fall semester entrance and by September 1 for spring semester entrance.

International applicants must submit score(s) from one of the following tests:

- TOEFL
  - Internet Based - Total Score: 100
  - Internet Based - Writing Score: 24
  - Internet Based - Reading Score: 22
- IELTS
  - Total Score: 7.5
- MELAB
  - Final score: 84

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations(TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan C: Plan C requires 29 major credits and 6 credits outside the major.The is no final exam.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 2 semesters must be completed before filing a Degree Program Form.

Students must complete a professional portfolio, and a set of concluding experiences including a public presentation, an exit survey, and a final meeting with an advisor.

Required Courses (13 credits)

Take the following courses in consultation with the advisor. Courses must be taken A/F, with a minimum grade of B- earned for each.

FNRM 5131 - Geographical Information Systems (GIS) for Natural Resources (4.0 cr)
or GEOG 5561 - Principles of Geographic Information Science (4.0 cr)
GIS 5571 - ArcGIS I (3.0 cr)
GIS 5572 - ArcGIS II (3.0 cr)
GIS 8501 - GIS Project Management and Professional Development (3.0 cr)

Advanced GIS Focus Courses (6 credits)

Select at least 3 credits of 5-level coursework and at least 3 credits of 8-level coursework from the following in consultation with the advisor. If FNRM 8205 is selected, it must be taken for 3 credits. If GIS 8990 is selected, it must be taken for 3 credits. Courses must be taken A/F with a minimum grade of B- earned for each.

CSCI 5715 - From GPS, Google Maps, and Uber to Spatial Data Science (3.0 cr)
ESPM 5295 - GIS in Environmental Science and Management (4.0 cr)
FNRM 5462 - Advanced Remote Sensing and Geospatial Analysis (3.0 cr)
GEOG 5543 - Advanced Geocomputing (3.0 cr)
GEOG 5562 - GIS Development Practicum (3.0 cr)
GEOG 5563 - Advanced Geographic Information Science (3.0 cr)
GEOG 5564 - Urban Geographic Information Science and Analysis (3.0 cr)
GEOG 5588 - Advanced Geovisualization (3.0 cr)
GIS 5574 - Web GIS and Services (3.0 cr)
GIS 5577 - Spatial Database Design and Administration (3.0 cr)
GIS 5578 - GIS Programming (3.0 cr)
CSCI 8715 - Spatial Data Science Research (3.0 cr)
FNRM 8205 - Research Problems: Spatial Data Analysis (1.0 - 5.0 cr)
GEOG 8290 - Seminar in GIS and Cartography (3.0 cr)
GEOG 8291 - Seminar in GIS, Technology, and Society (3.0 cr)
GEOG 8292 - Seminar in GIS: Spatial Analysis and Modeling (3.0 cr)
GEOG 8293 - CyberGIS (3.0 cr)
GEOG 8294 - Spatiotemporal Modeling and Simulation (3.0 cr)
GIS 8990 - Research Problems in GIS (1.0 - 6.0 cr)

Electives (10 credits)

Select at least 10 elective credits from the following in consultation with the advisor. Other courses can be applied to this requirement with advisor approval.

GEOG 5511 - Principles of Cartography (4.0 cr)
GEOG 5531 - Numerical Spatial Analysis (4.0 cr)
GEOG 5541 - Principles of Geocomputing (3.0 cr)
GEOG 5543 - Advanced Geocomputing (3.0 cr)
GEOG 5562 - GIS Development Practicum (3.0 cr)
GEOG 5563 - Advanced Geographic Information Science (3.0 cr)
GEOG 5564 - Urban Geographic Information Science and Analysis (3.0 cr)
GEOG 5588 - Advanced Geovisualization (3.0 cr)
GEOG 8290 - Seminar in GIS and Cartography (3.0 cr)
GEOG 8291 - Seminar in GIS, Technology, and Society (3.0 cr)
GEOG 8292 - Seminar in GIS: Spatial Analysis and Modeling (3.0 cr)
GEOG 8293 - CyberGIS (3.0 cr)
GEOG 8294 - Spatiotemporal Modeling and Simulation (3.0 cr)
GIS 5530 - GIS Internship (1.0 - 3.0 cr)
GIS 5555 - Basic Spatial Analysis (3.0 cr)
GIS 5573 - Introduction to Digital Mapping: ArcGIS Basics (2.0 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)
GIS 5590 *{Inactive}*(3.0 cr)
GIS 8990 - Research Problems in GIS (1.0 - 6.0 cr)

Outside Coursework (6 credits)

Select at least 6 credits from the following in consultation with the advisor. Digital Archaeology must be taken if Anth 5980 is chosen.

ANTH 5980 - Topics in Anthropology (3.0 cr)
CSCI 4041 - Algorithms and Data Structures (4.0 cr)
CSCI 4131 - Internet Programming (3.0 cr)
CSCI 4707 - Practice of Database Systems (3.0 cr)
CSCI 5521 - Machine Learning Fundamentals (3.0 cr)
CSCI 5523 - Introduction to Data Mining (3.0 cr)
CSCI 5561 - Computer Vision (3.0 cr)
CSCI 5715 - From GPS, Google Maps, and Uber to Spatial Data Science (3.0 cr)
CSCI 8715 - Spatial Data Science Research (3.0 cr)
ESPM 5031 - Applied Global Positioning Systems for Geographic Information Systems (3.0 cr)
ESPM 5295 - GIS in Environmental Science and Management (4.0 cr)
FNRM 5114 - Hydrology and Watershed Management (3.0 cr)
FNRM 5216 *{Inactive}*(1.0 cr)
FNRM 5228 - Advanced Topics in Assessment and Modeling of Forests (3.0 cr)
FNRM 5262 - Remote Sensing and Geospatial Analysis of Natural Resources and Environment (3.0 cr)
FNRM 5362 - Drones: Data, Analysis, and Operations (3.0 cr)
FNRM 5462 - Advanced Remote Sensing and Geospatial Analysis (3.0 cr)
FNRM 8205 - Research Problems: Spatial Data Analysis (1.0 - 5.0 cr)
GDES 5341 - Interaction Design (3.0 cr)
GDES 5342 - Advanced Web Design (3.0 cr)
GDES 5371 - Data & Information Visualization (3.0 cr)
IDSC 4431 *{Inactive}*(2.0 cr)
IDSC 6041 - Information Technology Management (2.0 cr)
IDSC 6423 - Enterprise Systems (2.0 cr)
INET 4061 - Data Science I: Fundamentals (4.0 cr)
INET 4707 - Introduction to Databases (4.0 cr)
INET 4062 - Data Science II: Advanced (4.0 cr)
MOT 5001 - Technological Business Fundamentals (2.0 cr)
MOT 5002 - Creating Technological Innovation (3.0 cr)
MSBA 6311 - Programming for Data Science (3.0 cr)
MSBA 6321 - Data Management, Databases, and Data Warehousing (3.0 cr)
MSBA 6331 - Big Data Analytics (3.0 cr)
MSBA 6411 - Exploratory Data Analytics (3.0 cr)
PA 5231 - Transit Planning and Management (3.0 cr)
PA 5271 - Geographic Information Systems: Applications in Planning and Policy Analysis (3.0 cr)
PA 5928 - Data Management and Visualization with R (1.5 cr)
PA 5929 - Data Visualization: Telling Stories with Numbers (2.0 cr)
VMED 5181 - Spatial Analysis in Infectious Disease Epidemiology (3.0 cr)