

GIS & Technology

Are you good with maps? Do you enjoy working with computers? Would you be interested in an area that allows you to work with both geographical data and current technology? NMU's GIS & Technology major might be just what you are looking for.

GIS & Technology program combines the technical and graphical areas of geography to solve everyday problems. By using past and present geographical data, scientists use today's leading computer technology to manipulate spatial data into useful information. It deals with knowledge in several areas including cartography, remote sensing, photogrammetry, computer science, and Global Positioning System (GPS). At NMU, this major provides students with knowledge and skills related to information technology, spatial data management, analysis, and visualization.

Skills and Competencies

As in most other fields, strong interpersonal communication and organizational skills are important for GIS & Technology careers. Some other valuable skills and competencies specific to a profession in the Geomatics area include critical thinking, mapping and remote sensing, leadership abilities, and data analysis.

You should also have skills in the following: software (e.g. ESRI, Leica Geosystems, ArcInfo); hardware (e.g. GPS, digitizer, LIDAR, SAR, camera); data (e.g. Digital Globe, OrbiView, Space Imaging); and application development (e.g. MapQuest, GoogleEarth.)

Course Work

This degree includes the following courses as part of the program requirements, and specific major requirements along with general education and graduation requirements.

Core (42 cr.)

- CS101 Website Construction (4 cr.)
- GC100 Physical Geography (4 cr.) or GC101 Intro to Environmental Science (4 cr.) *or*
- GC164 Human Geography (4 cr.)
- GC205 Intro to Geographic Research (4 cr.)
- GC225 Introduction to Maps (2 cr.)
- GC235 Quantitative Methods (4 cr.)
- GC335 Geographic Information Systems (4 cr.)
- GC337 Computer Cartography (4 cr.)
- GC412 Database Development (4 cr.)
- GC425 Remote Sensing (4 cr.)
- GC428 Spatial Analysis (4 cr.)
- GC489 Human- Environment Capstone (4 cr.) or GC488 Earth and Environmental Science Capstone (4 cr.)

Electives

Choose 8 credits from the following:

- AD118 Graphic Design: Foundations(4 cr.)
- CS120 Computer Science I (4 cr.)
- CS122 Computer Science II (4 cr.)
- CS201 Programming in C++ (3 cr.)
- CS222 Data Structures (4 cr.)
- CS365 Client-Side Web Programming (4 cr.)
- CS465 Server-Side Web Programming (3 cr.)
- DD100 Technical Drafting with Intro to CAD (4 cr.)
- CN254 Construction Survey & Layout (3 cr.)
- GC455 Digital Image Processing (2 cr.)
- GC491 Internship (2-6 cr.)

Detailed course descriptions can be found at www.nmu.edu/bulletin.

Career Development

Excellent analytical, communication, math and computer science and research skills are imperative along with a solid understanding of biological, chemical and physical processes. Gaining laboratory and field experience through internships is important. Although a minor is not required for this major, some minors might be helpful, depending upon the student's career goals. Education beyond the bachelor's degree is often desirable and may be required for some environmental fields.

Additional Considerations

On-the-job-training and work experience may be beneficial, or even necessary, for some of the careers listed here.

Internship opportunities are available for many of the jobs listed, and field experience is beneficial. Minors, while not required, in Computer Science or Data Science may be helpful if pursuing work in GIS & Technology.

Job Outlook

Starting salaries are contingent upon job title, geographic location, and the individual applicant's work experience and initiative. This field is expected to grow fast as average, expanding at a 7% growth rate. Visit www.bls.gov/ooh for more information

Potential Careers

NMU's GIS & Technology Program prepares students for employment in the following careers:

- Cartographer
- Engineer
- Geographer
- Geoscientist
- Landscape Architect
- Mapping Technician/Consultant
- Natural Resources Specialist
- Photogrammetrist
- Planner
- Researcher
- Resource Manager
- Surveyor

Additional Resources and Information

For Career Planning and Opportunities:

Academic & Career Advisement Center
3302 C.B. Hedgcock
906-227-2971
www.nmu.edu/acac

Earth, Environmental, & Geographical Sciences.
3001 Weston Hall
eegs@nmu.edu
906-227-2500
www.nmu.edu/eegs

For Job Search, Resume and Career Information:

Career Services
3502 C.B. Hedgcock
906-227-2800
www.nmu.edu/careers

For Information about NMU Student Organizations Associated with this Major Contact:

Center for Student Enrichment
1206 University Center
906-227-2439
www.nmu.edu/cse

Internet Resource Links:

www.careers.org
www.bls.gov/ooh

For Career Information from National Organizations:

www.urisa.org -Urban and Regional Information Systems Assoc.
www.gita.org -Geospatial Information & Tech Assoc.
www.acsm.net -Am. Congress on Surveying and Mapping
www.gis.com -Your Internet Guide to GIS
www.aag.org -American Assoc. of Geographers
www.gjc.org -GIS Jobs Clearinghouse
giscareers.com
<https://gammathetaupsilon.org/>



**NORTHERN MICHIGAN
UNIVERSITY**

MARQUETTE, MICHIGAN

The Academic & Career Advisement Center
2022



What to do with
a major in...

GIS & Technology

