Department of Geography
College of Arts & Sciences
Western Michigan University

Geographic Information Science Concentration in Geography

My Strategy to a Career in GISci?

GI Science includes a range of career opportunities. No single program prepares you for all you will need to know in a GIScience career. Even in such a new field as this, there are many parts of GISci that focus on different issues, skills, and clients. For instance, one person might need to program GIS algorithms or scripts. Another might apply GIS to environmental, planning, marketing, or intelligence issues. Although much of GISci's technology was developed for military-strategic purposes, today GISci is very much a "swords into ploughshares" venture. Civil uses are exploding rapidly. *U.S. News & World Report* noted that GISci was one of 25 most promising technologies for the 21st century.

Scott Sandusky, 2003 GISci Geography major, and President of Gamma Theta Upsilon, Geography honorary society.

You will want to create your own "package" of skills and knowledge that make you into an attractive and competitive GISci professional. The package is based on the GISci Major Concentration, a related minor, and cognate courses to start you in your career.

After you have entered a career, you will gain more comprehensive knowledge and more polished skills. The GISci Major is the starting point.

The GISci Major is made up of a core of required courses, and choice of elective courses. (See next page.) The electives you select, depending on your interest and depending on the kind of GIScience you want to pursue.

Your energy, imagination, and drive will define how far you go and in what direction. Good Luck!

SISci Careers

- GIS Education
- GIS Analyst
- Cartographer
- GIS Consultant
- Photogrammetrist
- Applied GIS
- RemoteSensing Analyst
- Environmental Analysis
- Geodemographics
- Economic Development
- Site Analysis
- GIS Database Development
- Tax Mapping
- Surveyor

Starting in Community College?

If you begin at a community college, make sure that you get basic skills you will be able to use in GIScience. This includes office and computer competence in word processing, spreadsheets, Powerpoint, etc. It may include learning a programming language (Visual Basic, or C++) and network operations. Take the general education courses needed for graduation. A public speaking course is important. Some GISci careers are very people-oriented, and good communication skills will be useful. Don't avoid basic math and critical thinking courses. You will need to understand issues using these skills. And you might want to take basic business or politics courses too.

University Degree Requirements

Western Michigan University requires all students to have completed 122 semester credit hours to receive a bachelor's degree. This includes any credit hours that have been officially recognized from other colleges or community colleges.

The specific requirements for graduation that will govern you are found in the Western Michigan University Undergraduate Catalog. Since the University changes over time, the version of the Catalog that governs you is the one that was current when you entered the University.

Dr. Jay Emerson, Geographic Information Sciences Adviser and core GISci faculty member.

Your total credit hours will include those of your GISci Major, your related minor, general education, and elective courses. Please select these in consultation with an adviser or mentor, so that you can make them work together for you effectively.

The GISci Major allows you to arrange a professional internship, to do an independent study project under the guidance of a faculty member, or even study abroad to experience GISci-related issues elsewhere in the world. Please plan ahead to include these study opportunities.

Minors for a Geographic Information Science Major

You should choose a minor as listed in the Undergraduate Catalog. Recommended minors can come from either the Colleges of Arts & Science, Business, or Engineering at Western Michigan University. To minor in the Business you will need a GPA of 2.5 or higher to be admitted.

Arts & Science Minors include Public Administration, Communications, Journalism, Practical Writing (English), Geosciences, Biology, Chemistry, Economics, Anthropology, Sociology, History, Public History, Environmental Studies, Earth Science, Hydrogeology, Political Science, or Statistics.

Business minors include Computer Information Systems, Marketing, Management, Real Estate, and General Business.

In Engineering, a computer science minor is an option.

Internships, Study Abroad, & Research

We recommend that you consider pursuing a professional internship in your GISci curriculum. You will gain useful perspectives on the working world before entering it. Many employers use internships as a means of discovering whether a person would make a good employee. A number of our interns have received job offers at the end of their internship, and they learn about day-to-day GISci issues issues.

We recommend GISci students consider an optional study abroad experience. This is a good way to learn about the world beyond the U.S., and it gives insight about GISci challenges elsewhere.

Dr. Margaret Pearce—core GISci and Adjunct faculty member.

We also recommend that students consider an optional independent research activity under the supervision of a faculty member. Carrying through an independent research project demonstrates to employers that you can work self-reliantly to generate answers to important questions. These experiences add value to your degree.

Check It Out:

- www.gis.com
- www.gisportal.com

Geographic Information Science Program

Your complete program of study at Western Michigan University, or at other colleges from which you are transferring credit, constitutes the entire Geography—Geographic Information Science Concentration (GISci, pronounced "gee-eye-sigh") curriculum. This Curriculum can be supplemented by adding knowledge and skills from other places also. The more accomplished you are, the more likely you will have a satisfying geographic information science career. For instance, if you want a wider set of opportunities, you should also develop proficiency in a computer language, preferably Visual Basic or C++.

General Education & Liberal Education Curricular Requirements. To complete a college degree at Western Michigan University, each student fulfills "General Education" goals. Each student gains understanding of the natural and social sciences; knowledge of the United States and some international issues/regions; computer, mathematics, and critical reasoning proficiencies, etc. Please see the General Education section of the Undergraduate Catalog for a full description. In addition, students in the College of Arts & Sciences take some additional classes as listed in the Liberal Education Curriculum in the Undergraduate Catalog. These together give students a frame of reference on the world that works for them after graduation. (Believe it or not, students who have studied a foreign language frequently report they have been able to use it effectively in their career.)

Geography Major—Geographic Information Science Concentration. Geographic Information Science (GISci) is a new and rapidly growing career field. It has come out of the computer hardware and software revolution of the late 20th century, in combination with aerospace development of satellite and air-borne imaging and photography. Many business and governments are adopting GISci to target their markets and clients, and monitor and manage their own activities. This is a very exciting computer-intensive field. Students should have completed their computer literacy proficiency before beginning this major of 32 hours. The major has two parts—a required core of 20 hours, and elective courses for the remaining 12 hours (see below).

- *The Core Courses:*

Geography 1050 Physical Geography	4 cr. hrs.
Geography 2050 Human Geography	3 cr. hrs.
Geography 2650 Map, Chart & Air Photo Reading	3 cr. hrs.
Geography 3030 Geographic Inquiry*	4 cr. hrs.
Geography 5010 Introduction to Geographic Information Systems	3 cr. hrs.
Geography 5820 Remote Sensing of the Environment	3 cr. hrs.

  *Prerequisite: a course in statistics (STAT 160, 216, 260, or 366 or equivalent)

- *The Elective Courses:* You should complete at least two of the following: Geog 4120 Professional Experience, Geog 5660 Field Geography, Geog 5670 Geodata Handling & Mapping, Geog 5690 Intermediate GIS, or Geog 5800 Advanced Cartography. Remaining hours are entirely elective, but students should not take more than one Regional Geography course (most commonly Geog 3800 United States & Canada, or Geog 3110 Michigan.).

The Related Minor. All GISci students select a minor to go with their major. These minor serves as an important complement to the major. Properly selected, the major and the minor strengthen a student for subsequent careers. However, it is not necessary to select a minor that you think will "pay off" later—particularly if you have no personal interest in it. It is often better to select a minor that you have some interest (or "passion" for) because that keeps your motivational level high. We find that students who maintain their enthusiasm often find interesting (even unique) uses for their minors. (Note: It is possible for students to have a second major instead of a minor, or to complete a second bachelor's degree. Please see the Undergraduate Catalog for details.)

Department of Geography faculty possess worldwide experience in Geography and Tourism. From left, back row: Kevin Weakley, Jordan Yin, Rolland Fraser, Lisa DeChano, Gregory Veeck,. Middle Row: James Biles, David Lemberg, Margaret Pearce, Jay Emerson. Front Row: Deborah Che, David Dickason (Chair), Elen Cutrim, Joseph Stoltman. Not Pictured: Eldor Quandt, Chansheng He, Jeroen Wagendorp, and part-time faculty.

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GEOGRAPHY—MAKING A DIFFERENCE

WWW.WMICH.EDU/GEOGRAPHY/

Western Michigan University & GISci

Founded in 1903, Western Michigan University has had a strong Geography program from the start. The University has nearly 30,000 students with a comprehensive variety of academic programs. Usually about 2,000 of our students come from outside the United States, representing more than 100 countries. Western is one of the U.S.'s 40 largest universities by student size, and by international student size.

The center of the main campus of Western Michigan University. The GISci Program labs are located in Wood Hall to the right of this photo.

The GISci Program originated in the early 1990s out of a geo0information processing major (cartography and computer applicatios in the Geography major). With many alumni in GISci careers, we look to develop our program further. We have some of the very best facilities in the U.S. for you to use; you will learn ESRI, ERDAS and asspcoated software that you can use immediately on the job.

The University is located in the City of Kalamazoo, in southern Michigan about half way between Chicago and Detroit. Kalamazoo is a safe, small metropolitan area. You can get to Kalamazoo by air, rail and highway, (US-131 and I-94).

The University offers comprehensive cultural and athletic programs. The City offers even more, so there are many opportunities to attend concerts, theaters and plays, and recreational athletics.

Michigan lies in the heart of the Great Lakes Region, one of the wonders of the world. The Great Lakes possess one-fifth of the world's surface fresh water. Michigan is a good GISci "laboratory". The state has developed an excellent digital data infrastructure; there are many governments that use GISci, with many still to learn of its potential .