S T U D E N T H A N D B O O K

Department of Geography/Geology

University of Wisconsin-Stevens Point

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Twenty-Seventh Edition

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ABOUT THE DEPARTMENT

INTRODUCTION

This handbook is mainly intended to help students who are pursuing a geography or geoscience major, a natural science major-earth science option or a minor in earth science, geography, geographic information systems (GIS) and spatial analysis, or geology or students who are interested in doing so and hence are seeking detailed information about these programs. If you are such a student, welcome! Further information may be obtained from the department's program assistant or chairperson.

DEPARTMENT MISSION

The Department of Geography and Geology provides quality educational programs and research opportunities in geography, geoscience, and planning, enabling students to succeed in their professional careers and as global citizens.

DEPARTMENT VISION

The Department of Geography and Geology will continue to be a recognized leader in delivering innovative programs in geography, geoscience, and planning, and stimulating life-long community engagement.

DEPARTMENT VALUES

Superior teaching
Scholarly excellence
Exemplary academic achievement
Innovative use of geospatial and pedagogical technology
Local, national, and international collaboration

DEPARTMENT MAJOR PROGRAMS

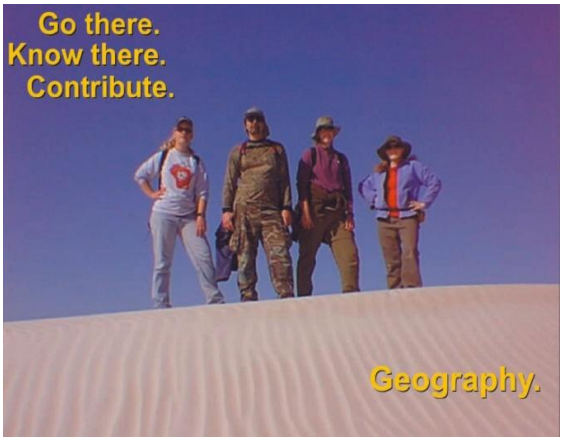
The Department of Geography/Geology offers the following programs:

GEOGRAPHY MAJOR

The Geography Major consists of a minimum of 40 credits and must include one of the four options listed below. Each option integrates course offerings from several departments. A common core of introductory courses is required of all majors as a foundation for more specialized work in a particular option.

- The Physical Environment Option
- The Geographic Information Science (GIS) and Cartographic Option
- The Human Geography Option
- The Urban Planning Option

Teacher certification may be obtained with a Geography Major. Contact UWSP's School of Education for information regarding the Professional Education Program and the secondary education curriculum for teacher certification.



GEOSCIENCE MAJOR

The Geoscience Major consists of a minimum of 48-62 credits (dependent upon the option chosen) and must include one of the four options listed below. A common core of introductory courses is required of all majors.

- Environmental Analysis Option
- Earth Materials Option
- Hydrogeology Option
- Biogeoscience Option

NATURAL SCIENCE MAJOR WITH EARTH SCIENCE OPTION

Students with general questions regarding the Natural Science Major or the Natural Science Broad-Field Minor should contact Dr. David Ozsvath, Coordinator of UWSP's Natural Science Program. Dr. Ozsvath's office is located in the Science Building, Room D333. His email address is dozsvath@uwsp.edu and his telephone number is 346-2287.

The Natural Science Major consists of three options.

- Earth Science – Administered by the Department of Geography/Geology
- Life Science – Administered by the Department of Biology
- Physical Science – Administered by the Department of Physics and Astronomy

Students seeking teacher certification should contact UWSP's School of Education for information regarding the Professional Education Program and the education curriculum for teaching certification. Enrollment caps are in effect for those seeking certification.

DEPARTMENT MINOR PROGRAMS

MINORS

The department offers seven minors, each requiring a minimum of 22 credits (students enrolling in the Geographic Information & Spatial Analysis Minor with a *geographic information science and cartography option* must take a minimum of 28 credits).

- Geography
- Geography for Teacher Certification
- Geology
- Earth Science
- Earth Science for Teacher Certification
- Environmental Geography
- Geographic Information Systems and Spatial Analysis (GISSA)

PROCEDURES FOR DECLARING A MAJOR AND/OR MINOR OR GIS CERTIFICATE PROGRAM

It is essential that students register with the Geography/Geology Office so their status as a major or minor in the Department may be entered into the University's records. To be accepted and registered as a major or minor in the Department of Geography/Geology, a student must file a copy of the Major and Minor Declaration Form with the Department. The Department's Major and Minor Declaration Form (sample form on page 69) is available from the Geography/Geology Office, which is located in Room D332 of the Science Building. To remain in good standing, students must keep this form up to date noting such things as change of option, change of advisor, etc.

Students who enroll in the GIS Certificate Program must also file a declaration form. The GIS Certificate Declaration form (sample form on page 70) is available from the GIS Center Office, which is located in Room B307A of the Science Building.

ADVISING PROCEDURES

Each major must have a departmental advisor, with whom the student must confer every semester. The Department of Geography/Geology requires students to consult with their advisor before requesting authorization to register for courses. Any faculty member in the Department may serve as a student's advisor; advisors and advisees serve by continued mutual agreement.

Since some upper-division geography and geology courses are offered only on a three- or four-semester sequence, it is important that students regularly confer with their advisors to plan their programs and to elect appropriate courses as they are available.

There are no similar advising requirements for minors; students who want advice concerning our minor programs should contact the departmental office or an appropriate faculty member.

ACADEMIC STANDARDS
GEOGRAPHY MAJOR AND MINORS

To be admitted, retained, and approved for graduation as an approved Geography major or minor, you must have a minimum cumulative grade point average of 2.00 (2.75 to student teach in Geography) for all courses taken within the major or minor, including collateral courses and regardless of a declaration of academic bankruptcy.

- You must complete Geography 101 and 120 before you are admitted as an approved major or minor; otherwise you are a provisional major or minor.
- If you transfer and have no credits earned at UWSP in the major or minor, you will be a provisional major or minor until you complete the minimum requirements.

If you do not maintain a 2.00 GPA, you will be placed on geography probation and will have two semesters to restore your GPA. If you fail to do so, you will be dropped from the major or minor. The department will attempt to notify and consult with students who are at or below a 2.00 GPA. However, it is your responsibility to know you own GPA status.

Majors must have an adviser in the department. Any department faculty member may advise a geography major. You must file a major declaration form in the department office, keep it current, and confer with your adviser every semester.

You may repeat a course in the major or minor only if you follow the policy on repeating courses found in the *Major Academic Information* section of the *UWSP Catalog*.

Geography and geology courses taken at the 300 or 400 level on a pass/fail basis do NOT count toward the major or minor.

ACADEMIC STANDARDS
GEOSCIENCE MAJOR

To be admitted, retained, and approved for graduation as an approved Geoscience major, you must have a minimum cumulative grade point average of 2.00 (2.75 to student teach in Geoscience) for all courses taken within the major, including collateral courses and regardless of a declaration of academic bankruptcy.

- You must complete Geology 104 before you are admitted as an approved major; otherwise you are a provisional major.
- If you transfer and have no credits earned at UWSP in the major, you will be a provisional major until you complete the minimum requirements.

If you do not maintain a 2.00 GPA, you will be placed on geoscience probation and will have two semesters to restore your GPA. If you fail to do so, you will be dropped from the major. The department will attempt to notify and consult with students who are at or below a 2.00 GPA. However, it is your responsibility to know you own GPA status.

Majors must have an adviser in the department. Any department faculty member may advise a geoscience major. You must file a major declaration form in the department office, keep it current, and confer with your adviser every semester.

You may repeat a course in the major only if you follow the policy on repeating courses found in the *Major Academic Information* section of the *UWSP Catalog*.

Geography and geology courses taken at the 300 or 400 level on a pass/fail basis do NOT count toward the major.

ACADEMIC STANDARDS
NATURAL SCIENCE MAJOR
EARTH SCIENCE OPTION

To be approved for graduation, you must have a minimum overall grade point average of 2.00 (2.75 to student teach) in all courses included in your natural science major, regardless of any declaration of academic bankruptcy. In addition, you must also meet the minimum GPA required for the earth science minor.

ACADEMIC STANDARDS
GEOLOGY MINOR

To be admitted, retained, and approved for graduation as an approved Geology minor, you must have a minimum cumulative grade point average of 2.00 for all courses taken within the minor, including collateral courses and regardless of a declaration of academic bankruptcy.

- You must complete Geology 104 before you are admitted as an approved minor; otherwise you are a provisional minor.
- If you transfer and have no credits earned at UWSP in the minor, you will be a provisional minor until you complete the minimum requirements.

If you do not maintain a 2.00 GPA, you will be placed on geology probation and will have two semesters to restore your GPA. If you fail to do so, you will be dropped from the minor. The Department will attempt to notify and consult with students who are at or below a 2.00 GPA. However, it is your responsibility to know your own GPA status.

You may repeat a course in the minor only if you follow the policy on repeating courses found in the *More Academic Information* section of the *UWSP Catalog.*

Geology, geography, and biology courses taken at the 300 or 400 level on a pass/fail basis do NOT count toward the minor.

ACADEMIC STANDARDS
EARTH SCIENCE MINOR

To be admitted, retained, and approved for graduation as an approved Earth Science minor, you must have a minimum cumulative grade point average of 2.00 (2.75 to student teach in Earth Science) for all courses taken within the minor, including collateral courses and regardless of a declaration of academic bankruptcy.

- You must complete Geography 101 or Geology 104 before you are admitted as an approved minor; otherwise you are a provisional minor.
- If you transfer and have no credits earned at UWSP in the minor, you will be a provisional minor until you have completed the minimum requirements.

If you do not maintain a 2.00 GPA, you will be placed on Earth Science probation and will have two semesters to restore your GPA. If you fail to do so, you will be dropped from the minor. The Department will attempt to notify and consult with students who are at or below a 2.00 GPA. However, it is your responsibility to know your own GPA status.

You may repeat a course in the minor only if you follow the policy on repeating courses found in the *More Academic Information* section of the *UWSP Catalog*.

Geology, geography, and astronomy courses taken at the 300 or 400 level on a pass/fail basis do NOT count toward the minor.

ACADEMIC STANDARDS
GEOGRAPHIC INFORMATION SYSTEMS AND SPATIAL ANALYSIS (GISSA) MINOR

To be admitted, retained, and approved for graduation as a GIS and Spatial Analysis minor, you must have a minimum cumulative grade point average of 2.00 for all courses taken within the minor, including collateral courses and regardless of a declaration of academic bankruptcy.

- You must have complete Geography 279 before you are admitted as an approved minor; otherwise you are a provisional minor.
- If you are a transfer student without credits earned at UWSP in the minor, you will be admitted as a provisional minor until you have completed the minimum requirements.

If you do not maintain a 2.00 GPA, you will be placed on probation for the minor, and will have two semesters to restore your GPA. If you fail to do so, you will be dropped from the minor. The Department will attempt to notify students of any changes in GPA status and consult with GIS and Spatial Analysis minors who are at or below the 2.00 GPA. However, it is the student's responsibility to know his or her own GPA status.

You may repeat a course in the minor only if you follow the policy on repeating courses found in the *More Academic Information* section of the *UWSP Catalog*.

TEST-OUT AND CREDIT-BY-EXAM POLICY

The Department of Geography/Geology will offer test-out examinations for all of its general degree requirement courses including Geography 100, 101, 110, 113, 120, 211, 226, 300, and Geology 100, 104.

A student wishing to take a test-out examination will confer with the Department chairperson. The chairperson will direct the student to the appropriate faculty member(s) who will administer the examination. Normally this will be the faculty member who most recently taught the course. The comprehensive written examination will be based on material normally covered in the course including questions from lecture and, if applicable, laboratory topics. The faculty member will notify the student in writing of the required minimum passing score prior to administering the examination; a score equivalent to the most recent class average for the course is generally considered to be the minimum passing grade. Results of the test-out examination will be provided in writing to the student within two weeks after taking the examination.

Credit will not be granted for Geography 100 and Geology 100, but students will receive a waiver for the corresponding GDR credits. Credit will be granted for all other geography and geology courses listed above. Students may take a test-out examination only once.

The Department assumes no responsibility for preparing students for test-out examinations, but maintains copies of current course syllabi for perusal.

FOUR-YEAR GRADUATION AGREEMENT

UWSP's Four-Year Agreement is designed for students to develop a plan with their advisors to graduate within forty-eight months of their initial enrollment. Participation in the Four-Year Agreement for a Geography Major or a Geoscience Major is limited to only one of the options in geography or geoscience and is not available for teacher certification. Students who change majors and seek approval to participate in a new Four-Year Agreement for a Geography Major or a Geoscience Major must do so by the end of their second semester of continuous enrollment.

Students should give careful consideration to participating in the Four-Year Agreement. The following circumstances may make it difficult to complete a baccalaureate degree with a major in Geography or Geoscience in four years.

- You may have pre-college work, for example in English and/or mathematics, to complete before you can proceed with college-level courses.
- You may change your geography or geoscience option or choose to enroll in multiple geography or geosciences options.
- You may wish to pursue a minor in geology, earth science, or geographic information systems and spatial analysis or in another discipline.
- You may involve yourself in a geography or geoscience internship in preparation for a post-graduate career.
- You may involve yourself in geographical or geological research or independent study opportunities.
- You may take additional courses to meet admission requirements for graduate school.
- You may choose to study abroad for a semester.
- You may choose to involve yourself heavily in extracurricular activities.
- You may be limited in the time of day and days of week when you can attend classes.
- You may have family or work responsibilities that prevent you from completing sufficient credits each semester.

INTERNSHIPS

A practical work experience or internship is often beneficial for enhancing one's classroom knowledge and skills. Students who wish to be considered for an internship must contact either the Department Chair or the Department Intern Director for approval. If an internship is available, one can then register for either Geography 480 or Geology 480 (1-12 credits). Students should not contact governmental agencies or private companies regarding possible internships without prior approval of the Department Chair or the Department Intern Director.

See also the following for other internship opportunities:

- www.internshipfinder.com/
- www.internshipprograms.com/
- www.internweb.com/
- http://www.thesca.org/

PRACTICUM IN GEOGRAPHY AND GEOLOGY

Students wishing to gain unpaid, practical experience in geography or geology may enroll in Geography 485 (Practicum in Geography) or Geology 485 (Practicum in Geology). A practicum provides an opportunity for students who do not qualify for an internship or who wish to engage in activities that do not fit the definition of directed study or independent research. Students will work with a faculty member in the Department on an assigned project (i.e., research, grant activity, development of curriculum materials). Prior to enrollment in Geography 485 or Geology 485, a student's proposed practicum activity must receive approval from the department chair. A student may receive 1 to 3 credits for the practicum; the course may be repeated for up to 6 credits total.

DEPARTMENTAL AWARDS

The Department of Geography/Geology has established a program of awards to encourage, reward, and recognize student excellence in the department. Each award includes a certificate and cash award, and inscription of the recipient's name on a plaque permanently displayed in the department. The awards are presented to students at the department's annual Spring Banquet. All majors and minors are encouraged to attend **the banquet which is normally held in late April or early May.

The following awards are regularly presented:

Academic Honors Award- Granted to the graduating geography major who has earned the highest grade point average in departmental courses at UWSP.

Writing Achievement Award - Awarded to the student who has written the best paper in geography or geology, as judged by a faculty panel.

Benjamin Ofori-Amoah Urban and Regional Planning Award – Granted to the student who has demonstrated capacity and potential for excellence in the field of urban and regional planning.

Specht Cartography Award - Presented to the student submitting the most outstanding cartographic project or limited map portfolio, as determined by a faculty panel.

In addition to the departmental awards, the following two national award certificates are presented to students:

Gamma Theta Upsilon Award for Excellence in Geography - Presented by the Kappa Pi chapter of Gamma Theta Upsilon, a cash award and certificate is awarded for excellence in geography.

National Council for Geographic Education and the Association of American Geographers Award for Excellence of Scholarship - A certificate and cash award, presented by the National Council for Geographic Education and based on the recommendation of the department, is given to a senior geography major for excellence of scholarship.

DEPARTMENTAL SCHOLARSHIP

Raymond and Ellen Specht Cartography Scholarship – The Department of Geography/Geology encourages qualified students to apply for the **Raymond and Ellen Specht Cartography Scholarship**, given to the department in memory of Raymond and Ellen Specht, former UWSP faculty.

In order to be considered for the scholarship, recipients must: a) be a full-time approved UWSP Geography major; b) have completed at least 12 UWSP geography credits; c) be a Geographic Information Science and Cartography option candidate; d) have demonstrated capacity and potential for excellence in the field of cartography; e) be enrolled for classes at UWSP the following semester, unless they are a graduating senior.

Previous recipients of the Raymond and Ellen Specht Scholarship are ineligible for this award. Graduating seniors are only eligible for the scholarship if they will be attending graduate school to major in the field of geography with a specialization in cartography, but preference will be given to continuing majors. The scholarship must be applied to tuition and student fees. Financial need may be considered in the deliberation of the candidate's qualifications.

See also the following for many other scholarship opportunities: www.fastweb.com/ and www.uwsp.edu/cols/Pages/Scholarships/default.aspx.

DEPARTMENTAL EMPLOYMENT OPPORTUNITIES

STUDENT ASSISTANTS

The Geography/Geology Department usually employs four to five student assistants during the academic year. Positions available under the regular and work study programs include Map Center Student Manager, Map Center Assistant and Lab Assistant. Students also are hired to work on special departmental projects. Students interested in such employment should apply in the Geography/Geology Department Office (Room D332).

In recent years the Geography/Geology Department has collaborated with the Cooperative Education Program to identify and hire a qualified student to assist faculty with the Department's introductory Geographic Information Systems course.

TUTORS

The Geography/Geology Department recommends tutors (majors and minors with at least a "B" grade point average in geography and geology courses) for the University's Tutoring-Learning Center. The tutors work with students who are having difficulty in introductory geography and geology courses. Students interested in serving as tutors or in receiving tutoring should notify their Geography or Geology instructor.

DEPARTMENTAL COMMUNICATIONS

A World Wide Web site at **http://www.uwsp.edu/geo/** is maintained by the Department of Geography/Geology. From the Web site, the Department disseminates information about academic programs and courses, online class materials and lessons, and provides linkages to numerous online resources related to geography, geology, and geographic information systems (GIS). Career information and job vacancy listings are available from the Department's home page.

Students also are urged to regularly check the departmental bulletin boards for job announcements, graduate school brochures, professional conferences, and activities sponsored by Gamma Theta Upsilon/GeoClub and the Department. The bulletin boards are located across the corridor from the departmental office (D-332).

GEOCLUB/GAMMA THETA UPSILON

The GeoClub is an officially recognized student organization at UWSP and is open without restriction to all students interested in the fields of geography and geoscience.

Students are encouraged to join the GeoClub. Membership is helpful in learning more about geography and geoscience, in developing leadership and organizational skills, in establishing professional contacts, and in gaining employment. Activities include field trips, professional presentations, and social events. Additional information about the GeoClub can be found on Facebook – *UWSP GeoClub*.

The GeoClub has established two scholarships for geography and geoscience majors -- an **Academic Scholarship** and **Potential as a Geographer or Geoscientist Scholarship**. The scholarships are announced at the Department's Spring Banquet. Scholarship awardees, who are chosen by the Department's Student Affairs Committee, receive a certificate and a check from the GeoClub which is credited toward their Fall tuition. Criteria for the scholarships can be obtained through the departmental office.

Gamma Theta Upsilon (GTU) is an international geographical honor society open to geography students. Prerequisites for regular membership include completion of a minimum of nine credits above the 100 level in geography, a geography grade point average of "B", and payment of a lifetime membership fee.

GTU's goals are to "further professional interest in Geography by affording a common organization for those interested in the field, strengthen student and professional training through academic experiences in addition to those of the classroom and laboratory, advance the status of Geography as a cultural and practical discipline for study and investigation, encourage student research of high quality and to promote an outlet for publication, and create and administer funds for furthering graduate study and/or research in the field of Geography."

Scholarships also are available through the national Gamma Theta Upsilon Society. The Society offers three scholarships for undergraduates, one for a senior entering graduate school and one for a continuing graduate student. Scholarship criteria and applications are available on GTU's website (www.gtuhonors.org/).

DEPARTMENTAL FACILITIES

SPATIAL INFORMATION ANALYSIS (SIAL) LABORATORY

The Spatial Information Analysis Lab is a training lab dedicated to spatial data analysis, especially Geographic Information Systems (GIS). The lab is equipped with 20 Windows7 (3GHz) - class professional workstations, an instructor station and LCD projection system. The workstations are networked to several dedicated department servers as well as the University network and the Internet.

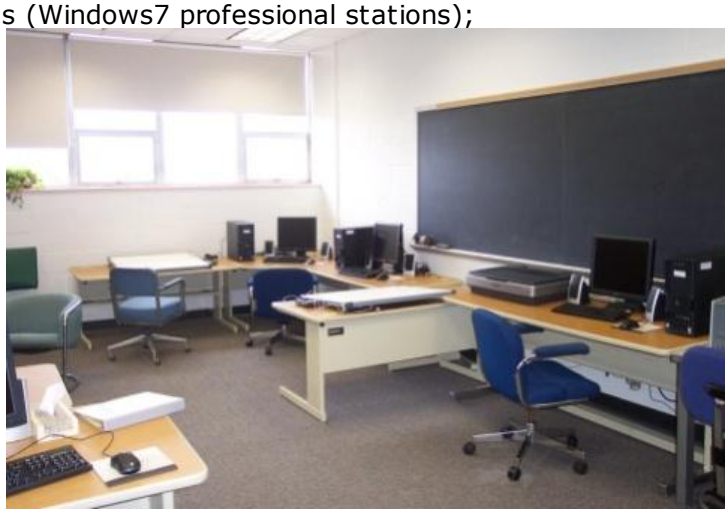
Computers are configured with several GIS software packages that include the latest version of ArcGIS, version 10 (ArcToolbox, ArcCatalog and ArcMap) and advanced modular extensions. Students have the opportunity to use available on-line federal, state, and local digital databases in gaining GIS database construction experience. Specialized geography and geoscience software is available for intermediate and advanced classes.

COMPUTER GEOGRAPHICS LABORATORY

The Computer Geographics Laboratory provides access to dedicated computer equipment for the facilitation of map production and geo-spatial analyses. Contour maps, three-dimensional terrain surfaces, and socio-economic thematic maps are examples of products created by students and faculty in this lab.

The laboratory, which is located on the third floor of the Science Building (B346), has a wide range of computing equipment including:

- five cartography/GIS pc workstations (Windows7 professional stations);
- Two networked Hewlett Packard printers (black & white and color);
- Four large manual digitizers: Calcomp 36” x 48” and 36” x 24” sizes;
- a variety of cartographic and GIS software: ArcGIS (10.0), SURFER 9.0, Adobe Illustrator, Flash, Freehand and Director, as well as MapViewer, CorelDRAW, Dreamweaver, and ERDAS Imagine.
- a large 11” x 17” color flatbed scanner (Epson 1000XL).



GIS/REMOTE SENSING LABORATORIES and CLASSROOMS

The GIS/Remote Sensing Laboratory and classroom complex is located in B-308 and B-312 of the Science Bldg. B-308 has 20 Windows7 GIS workstations that are used for classroom instruction and are available for student use when classes are not in session.

The B-312 Lab has five GIS pc workstations, one large format printer (HP DesignJet 800ps (42")), and a Calcomp large format scanner (Scan Plus 6 LF742). These devices are used for the production of large maps and posters, GIS data input, and map analysis. There is also a Trimble GPS base station with associated computer hardware used for differential GPS positioning. Trimble Nomad GPS units and TerraSync software is used to collect and process field data. All available GIS pc-workstations have a wide variety of software available including ArcGIS, Leica ERDAS Imagine, Adobe Illustrator, Freehand, Director and Flash, as well as CorelDraw, Surfer, MapViewer, and Dreamweaver.

MAP CENTER

The University Map Center, located in Room B304 of the Science Building, is administrated by the Department of Geography/Geology and is open to use by the university community, as well as by the public. During the academic year the Map Center is open on a regular basis (a schedule is posted near the Map Center entrance). The Map Center is a depository for maps and charts of the U.S. Geological Survey (U.S.G.S.) and the National Geospatial Intelligence Agency (NGA).

The collection includes: (a) U.S. Geological Survey topographic maps of Wisconsin, and the other forty-nine states and territories, and some Canadian topographic maps. (b) Selected road maps of the United States and Canada. (c) Urban maps of selected Wisconsin cities. (d) U.S. Geological Survey maps of the geology of selected areas of the United States. (e) Aeronautical charts of the world. (f) Oceanographic and navigational maps. (g) The American Geographical Society map series on Latin America. (h) Miscellaneous maps of Wisconsin, the world, and of outer space made by various mapping agencies. (i) Selected aerial photographs and mosaics of central Wisconsin.
(j) Gazetteers and atlases. (k) CD/DVD-based digital map files (e.g., U.S. Census TIGER files 1992- 2005). (l) DeLorme 3D-Topo Quads (of all of the U.S).

FACULTY/STAFF DIRECTORY

DEPARTMENT OF GEOGRAPHY/GEOLOGY

Office: Science Building D332E-Mail Address: geoggeol@uwsp.edu
Telephone: 346-2629 Fax: 346-3372

GIS CENTER

Office: Science Building B307A
Telephone: 346-4788 Fax: 346-3372

FACULTY/STAFF	E-MAIL ADDRESS	OFFICE	TELEPHONE
Bruce M. Hall	bhall@uwsp.edu	Science D336A	346-4718
Kevin P. Hefferan	kheffera@uwsp.edu	Science D335	346-4453
Neil C. Heywood (Chair)	nheywood@uwsp.edu	Science D332A	346-4452
Samantha W. Kaplan	skaplan@uwsp.edu	Science D327	346-4149
Eric J. Larsen	elarsen@uwsp.edu	Science B331	346-4098
Karen A. Lemke	klemke@uwsp.edu	Science B345	346-2709
Eugene W. Martin	gmartin@uwsp.edu	Science B343	346-2802
Douglas A Miskowiak (GIS Education Specialist)	dmiskowi@uwsp.edu	Science B305	346-4789
Ismaila Odogba	iodogba@uwsp.edu	Science D337	346-4451
David L. Ozsvath	dozsvath@uwsp.edu	Science D333	346-2287
Keith W. Rice	krice@uwsp.edu	Science B307	346-4454
Michael E. Ritter	mritter@uwsp.edu	Science D331	346-4449
Karl E. Ryavec	kryavec@uwsp.edu	Science B329	346-4450
Diane M. Stelzer (Academic Dept Associate)	dstelzer@uwsp.edu	Science D332	346-2629
Lisa J. Theo	ltheo@uwsp.edu	Science B327	346-4455
EMERITUS PROFESSORS			
Thomas R. Detwyler	1981-2001		
William M. McKinney	1963-1988		
Gary C. Meyer	1981-2003		
Clarence J. Milfred	1970-1998		
Delmar C. Multhauf	1966-1988		
Marshall E. Parry	1967-1997		

FACULTY AND INTRUCTIONAL STAFF

BRUCE M. HALL
Visiting Instructor
ABD, Southern Illinois University

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Environmental geography; water resources management (IWRM); environmental policy and law.	Legitimacy issues in environmental resource collaboration, particularly with regards to watershed management; the monetary value of ecosystem services; non-point source water pollution; agricultural subsidies.

KEVIN P. HEFFERAN
Professor
Ph.D., Duke University, 1992

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Geoscience; structural geology and tectonics; Earth materials.	Geologic mapping and tectonics of mountain belts.

NEIL C. HEYWOOD
Professor
Ph.D., University of Colorado, 1989

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Environmental hazards; biogeography; field experiences; outdoor recreation; environmental change; North America.	Perception and mitigation of exotic organisms; biosphere change; impacts of resource use; hostile environments; outdoor recreation.

SAMANTHA W. KAPLAN
Assistant Professor
Ph.D., University of Wisconsin-Madison, 2003

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Quaternary studies, climatology; paleoecology; environmental change; geomorphology; sedimentology; lakes; soils; wetlands; remote sensing.	Palynology; paleoclimatology; dendroclimatology; paleolimnology; Everglades; Upper Midwest.

ERIC J. LARSEN
Associate Professor
Ph.D., Oregon State University, 2001

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Remote sensing, digital image processing, aerial photograph interpretation, physical geography.	Remote sensing, GIS, physical geography, biogeography.

KAREN A. LEMKE
Professor
Ph.D., University of Iowa, 1988

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Physical geography; geomorphology; hydrology; earth science; quantitative methods.	Stream channel geometric and hydraulic characteristics; fluvial processes; pedagogy and geographic education.

EUGENE W. MARTIN
Visiting Instructor
ABD, University of Washington

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
GIScience; critical GIS; Science, Technology and Society; decision making; landscape models; data quality; cartography and visualization; sustainability; remote sensing; natural resources.	Data transfer and reuse; organizational change; social implications of GIS; environmental indicators; community empowerment and contested landscapes.

DOUGLAS A. MISKOWIAK
Instructor
M.S., University of Wisconsin-Madison, 2009

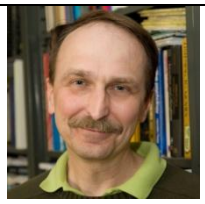
TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Geographic information systems; remote sensing-digital image processing; community geospatial applications	Natural resource management; community engagement; geospatial technologies outreach; GIS Education

ISMAILA ODOGBA
Assistant Professor
Ph.D., University of Louisville, 2009

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Comparative urban development; land use planning; political economy; urban and regional planning.	Urban policy and economic development; globalization; regional systems; institutional reorganization.

DAVID L. OZSVATH
Professor
Ph.D., State University of New York at Binghamton, 1985

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Hydrogeology; geochemistry; geomorphology; environmental geology; glacial geology.	Groundwater flow modeling; geochemical controls on groundwater quality; contaminant hydrogeology.



KEITH W. RICE
Professor
Ph.D., University of Kansas, 1989

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Dynamic/multimedia cartography; geographic information systems; remote sensing-digital image processing; cartographic production.	Interactive/dynamic cartography; map animation; geographic information systems; digital imagery.

MICHAEL E. RITTER
Professor
Ph.D., Indiana University, 1986

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Physical geography; climatology; distance education.	Hypermedia and internet applications for geographic education and research.

KARL E. RYAVEC
Associate Professor
Ph.D., University of Minnesota, 2002

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Cultural/historical geography; geographic information systems; Asia (China, India, Tibetan Plateau).	Land use/cover change and social change; historical geographic information systems; geohistory; geographic information systems as a research tool in digital libraries.

LISA J. THEO
Instructor
ABD, University of Wisconsin-Madison

TOPICAL/REGIONAL INTERESTS	RESEARCH INTERESTS
Urban geography; historical geography; field studies; tourism; race; class; gender; sexuality; ethnicity; environmental geography; quantitative methods; Wisconsin; North America.	Class change in tourist areas; geographic education; urban/rural land use conflicts; economic impact of Wisconsin's LGBT communities.

GIS CENTER

The GIS Center at UW-Stevens Point is an instructional and research facility dedicated to conducting and disseminating leading edge Geographic Information System (GIS) education. GIS instruction is the primary function of the GIS Center. The GIS Center offers a variety of educational opportunities for UWSP traditional students, post graduates, students pursuing a GIS certificate, and students seeking continuing education with or without academic credit. These include:

- GIS Professional and Focal Area Certificates for Academic Credit
- GIS Courses and Workshops for Continuing Education
- ESRI Software Training
- Minor in GIS and Spatial Analysis
- Geography Major with an Option in GIS

To declare a GIS certificate, minor, and/or major contact the Geography/Geology Department at 715-346-2629 or email geoggeol@uwsp.edu.

Research conducted at the GIS Center is designed to serve the educational interests of the program and students. Applied research projects complement GIS coursework and ensure the timeliness and practicality of the GIS curriculum.

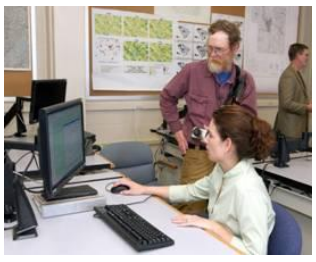
The GIS Center offices and laboratories are located on the third floor of the Science Building. The main office is Room B307A. Two GIS enabled computer laboratories are used for instruction and several labs are available for student study. The GIS Center is served by Dr. Keith Rice (Director), Eugene Martin and Douglas Miskowiak.

For more information about the GIS Center please contact:

Douglas Miskowiak
GIS Education Specialist
UW-Stevens Point - GIS Center
Department of Geography/Geology
Science Building
Stevens Point, WI 54481
Email: doug.miskowiak@uwsp.edu
Phone : 715.346.4789
GIS - Center Phone : 715.346.4788

Douglas Miskowiak, GIS Education Specialist, explains a new protocol for mapping shoreline resources to DNR officials in Northern Wisconsin.

A GIS Center student provides instruction on how to use ArcExplorer, a free and user-friendly GIS.



Dr. Heywood examines Corinna Neeb's environmental GIS model.

PART II

PROGRAMS AND COURSES

WHY STUDY GEOGRAPHY?

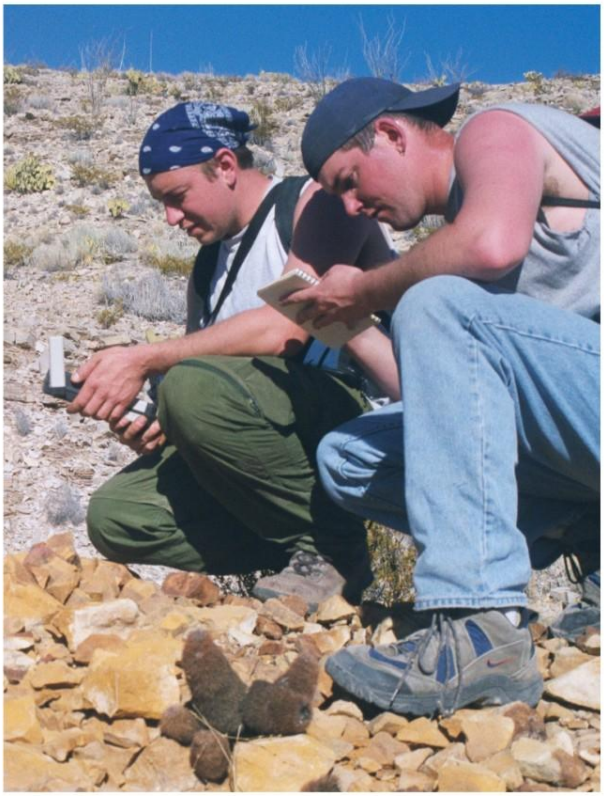
Why indeed? At first glance, you might think geography has little to do with your day-to-day life and even less to do with your career. You might think that studying geography is nothing more than memorizing state capitals or learning to plot points on a map. But geography is much more than that. While historians study events through time, geographers study the where and why. The keys are location and interaction across horizontal space. Maps are crucial for showing geographic information. Another focus of geography is the relationship between human beings and their environment. The truth is that geography may be one of the most useful subjects offered in any school.

The world is changing rapidly. Where people once focused on their neighborhood, their town, their country, they are now adopting a more global perspective. They are learning that the earth's resources are not limitless and that the impact of human beings on the environment is far greater than had been anticipated as little as a decade ago.

In its 1988 publication *Geography: Making Sense of Where We Are*, the National Geographic Society makes the following statement:

> *Geography for its own sake offers a fascinating realm of knowledge that can enrich our lives. Conversely, a lack of geographic understanding can diminish us as individuals, blunt the success of our international economic and political ventures, and dilute our strength as a nation.*

(Source: Careers in Geography, National Geographic Society, 1996.)



GEOGRAPHY MAJOR CORE COURSES

PREFERRED SCHEDULING OF CORE COURSES

All four options of the Geography Major require the same core of courses (22 cr) as follows. It is recommended that students follow the preferred scheduling sequence as closely as possible since some courses are prerequisites for upper division courses or are offered only on a rotational basis.

The Geography Major consists of a minimum of 40 credits (43 credits for the Urban Planning Option) including the required core courses and one of the four options. If you elect to pursue more than one option in the major, be advised that it may extend your time to degree. In addition to the required core courses, each geography major must elect one or more of the geography options listed on the following pages.

FRESHMAN YEAR	
FIRST SEMESTER	SECOND SEMESTER
Geography 101 The Physical Environment (5 cr)	*Geography 120* Human Geography (3 cr)

SOPHOMORE YEAR	
FIRST SEMESTER	SECOND SEMESTER
Geography 276 Introduction to Cartography (3 cr) *Geography 280* Seminar: Geography as a Profession (3 cr)	*Geography 279* Fundamentals of Geographic Information Systems (2 cr)

JUNIOR YEAR	
FIRST SEMESTER	SECOND SEMESTER
	Geography 390 Applied Statistics in Geography (3 cr)

SENIOR YEAR	
FIRST SEMESTER	SECOND SEMESTER
	*Geography 480** Internship in Geography (3 cr) *If taken as approved capstone course. **OR** *Geography 485** Practicum in Geography (3 cr) *If taken as approved capstone course **OR** *Geography 490* Senior Research (3 cr) **OR** *Geography 491* Senior Thesis (3 cr) **OR** *Geography 496**** Community Development Practices (3 cr) ***Required for the Urban Planning Option

GEOGRAPHY 480/485 CAPSTONE CRITERIA

In order to successfully use Geography 480 or 485 as a capstone experience for the Geography major a student will need to demonstrate:

(1) the ability to write effectively in the field of geography or geosciences;
(2) the aptitude to convey geographic concepts and/or theories in verbal or written form;
(3) application of one or more geographic or geosciences techniques;
(4) the ability to create a professional quality analog or digital map;
(5) a strong aptitude and competency in their geographic or geosciences specialization or option.

In the evaluation and assessment of the required Geography 480/485 written report or project at least two faculty members will appraise the student's abilities based upon the required criteria. One component of the report will include a statement concerning the purpose of their project and a synopsis of their completed work. It should also include a personal evaluation of their capstone experience. The student will also be required to either (a) create for evaluation a portfolio of examples created during their course of study (analog, digital and/or web based), (b) present a faculty-sponsored poster or paper at a local, regional or national meeting (e.g., Letters and Science Undergraduate Forum), or (c) meet with a minimum of two faculty members and be orally tested on their experience and knowledge.

Students would be graded based on successfully demonstrating the required capstone criteria:

(1) Exceeds minimum criteria (A work; "Excellent," 4.00)
(2) Meets all criteria (B work; "Good," 3.00)
(3) Meets the minimum criteria only with the help of the instructor (C work; "Acceptable," 2.00)
(4) Meets the minimum criteria only with significant help from the instructor (D work; "Poor," 1.00)
(5) Did not meet the minimum criteria (F work, "Failing," 0.00)

GEOGRAPHY MAJOR
PHYSICAL ENVIRONMENT OPTION

40 Credits

Physical geography is concerned with understanding the forces that shape the physical environment upon which humans depend. A knowledge of physical geography can aid students in understanding present environmental stresses as well as prepare them for a career in one of several environment-related occupations.

Graduates with a bachelor's degree often find employment in private firms or in local, state, and federal agencies. Types of jobs available include environmental research coordinator, soil technician, water resource planner, hydrologist, research meteorologist, natural resource planner, land management specialist, and climatologist.

CORE COURSES

REQUIRED COURSES		
Geography 340 **OR** Geography 344	3 cr 3 cr	Processes of Environmental Degradation Environmental Hazards
TWO OF 352, 353 or 354, OR 358: - Geography 352 - Geography 353 **OR** Geography 354 - Geography 358	 3 cr 3 cr 3 cr 3 cr	 Geomorphology Physical Climatology and Meteorology Climatology Biogeography
Geography 377 **OR** Geography 476	3 cr 3 cr	Remote Sensing I Geographic Information Systems I

SIX additional credits selected from: Geography 340, 344, 352, 353, 354, 358, 371, 377, 379, 393 (physical geography topics, three credit maximum), 476; Geology 330, 370, 393 (three credit maximum).

RECOMMENDED COURSES		
Biology 305	3 cr	General Ecology
History 280	3 cr	American Environmental History
Philosophy 380	3 cr	Environmental Ethics
Political Science 304	3 cr	Environmental Policy
English 248 **OR** English 254	3 cr 3 cr	Introduction to Environmental and Scientific Writing Introduction to Technical Writing

Students who elect the Physical Environment Option should be advised that they may need to take only a few additional geography and/or geology courses for an Earth Science Minor.

GEOGRAPHY MAJOR
GEOGRAPHIC INFORMATION SCIENCE (GIS) AND CARTOGRAPHIC OPTION
40 Credits

Geographic Information Systems (GIS) is a combination of modern technology and geographic data that provides insight, knowledge, and analysis to modern spatial problems. Cartography is the art, science, and technology of making and using maps. Together GIS and cartography provide indispensable tools for governance, society, commerce, and environmental management. The need for basic and applied research in these fields has never been greater and decision makers today rely on geospatial intelligence to manage natural and cultural resources, retail trade, coordinate emergency response, enforce laws, and conduct military operations.

Students with a background in GIS and cartography will find positions as GIS analysts, coordinators, and technicians, land information specialists, cartographers and cartographic illustrators, remote sensing analysts, surveyors, photogrammetric technicians, geospatial analysts and coordinators, and route inventory specialists.

CORE COURSES

REQUIRED COURSES		
Geography 377	3 cr	Remote Sensing I
Geography 379	3 cr	Remote Sensing II
Geography 382	3 cr	Dynamic Cartography
Geography 476	3 cr	Geographic Information Systems I
Geography 479	3 cr	Geographic Information Systems II
Geography 376 **OR** Geography 386	3 cr 3 cr	Statistical and Multimedia Cartography Map Design and Production
Geography 477 **OR** Geography 481 **OR** Geography 482	3 cr 3 cr 3 cr	GIS Applications in Local Government GIS Database Design and Modeling GIS Programming and Customization

RECOMMENDED COURSES		
Geography 376* **OR** Geography 386*	3 cr 3 cr	Statistical and Multimedia Cartography Map Design and Production
Geography 477* **OR** Geography 481* **OR** Geography 482*	3 cr 3 cr 3 cr	GIS Applications in Local Governments GIS Database Design and Modeling GIS Programming and Customization
Web&Digital Media Development 250	3 cr	Introduction to Digital Media Development
Web&Digital Media Development 307	3 cr	Multimedia Authoring
Web&Digital Media Development 308	3 cr	3-D Computer Graphics
Web&Digital Media Development 310	3 cr	Digital Image Development
Computer Information Systems 115	3 cr	Introduction to Information Systems
Computer Information Systems 116	1 cr	Introduction to Information Management
Computer Information Systems 210	4 cr	Database Design and Implementation
Computer Information Systems 345	3 -4 cr	Alternate Programming Language

*Whichever course was not taken in fulfillment of the required course.

GEOGRAPHY MAJOR
HUMAN GEOGRAPHY OPTION
40 Credits

The Human Geography Option focuses on the study of the processes that shape human interaction with the environment and the spatial distribution of human activity on the Earth's surface. It encompasses human, political, cultural, social, and economic aspects of social sciences. Human geography is methodologically diverse using both qualitative and quantitative methods, including case studies, survey research, statistical analysis, and model building among others. Human geography includes the sub-disciplines of: cultural, economic, health, historical, political, population, urban, and tourism geography (and others).

Students in this option will be equipped for a wide range of jobs in both the public and private sectors. Among these are ecologist, intelligence agent, industrial developer/ planner, international agency representative, international investment analyst, journalist, land developer/planner, land economist, land-use analyst, market analyst, museum education director, real estate agent/broker/appraiser, teacher, travel writer, and zoning investigator.

CORE COURSES

REQUIRED COURSES		
Geography 366 **OR** Geography 369	3 cr	Historical Geography Political Geography

ADDITIONAL COURSES **SIX additional credits selected from the following.**		
Geography 366*	3 cr	Historical Geography
Geography 369*	3 cr	Political Geography
Geography 373	3 cr	Urban Geography
Geography 374	3 cr	Rural Geography

*Whichever course was not taken in fulfillment of the required course.

Additional Courses for Human Geography Option Listed on Following Page

GEOGRAPHY MAJOR – HUMAN GEOGRAPHY OPTION (PART II)

ADDITIONAL COURSES NINE additional credits selected from the following.		
Geography 211	3 cr	Wisconsin (required for teacher certification)
Geography 226	3 cr	United States and Canada
Geography 300	3 cr	Africa
Geography 301	3 cr	Middle America
Geography 302	3 cr	Southwest Pacific
Geography 325	3 cr	Geography of China
Geography 328	3 cr	Europe
Geography 329	3 cr	Environmental Geography of Europe
Geography 365	3 cr	Tourism Geography
Geography 366*	3 cr	Historical Geography
Geography 369*	3 cr	Political Geography
Geography 373*	3 cr	Urban Geography
Geography 374*	3 cr	Rural Geography
Geography 382	3 cr	Dynamic Cartography
Geography 391	1-3 cr	Special Topics (when offered as a human geography topic)
Geography 393	1-3 cr	Field Trip in Geography (when offered with a human geography emphasis)
Geography 395	1-3 cr	Directed Study
Geography 399	1-3 cr	Research
Geography 476	3 cr	Geographic Information Systems I
Geography 479	3 cr	Geographic Information Systems II

*Whichever was not taken under required or additional courses.

RECOMMENDED COURSES		
Economics 342	3 cr	Environmental Economics
Economics 362	3 cr	Economic Development
Economics 374	3 cr	Regional Economic Growth
History 280	3 cr	American Environmental History
History 292	3 cr	Native American History
History 385	3 cr	Women, War and Peace
History 393	3 cr	Wisconsin Indians
Sociology 300	3 cr	The American Community
Sociology 356	3 cr	Urban Sociology
Sociology 360	3 cr	Population Problems
Political Science 315	3 cr	Minority Group Politics
Political Science 341	3 cr	Urban Politics

*Whichever was not taken under additional courses.

GEOGRAPHY MAJOR
URBAN PLANNING OPTION
43 Credits

The Urban Planning Option is concerned with the spatial arrangements, distribution and interrelationships between socio-economic development projects and programs and community life, and the processes for resolving issues related to them. Students take foundation as well as specialized courses in economic geography, urban geography, urban and regional planning, and community development practices.

Students in this option will be equipped for a wide range of jobs in both the public and private sectors. Among these are city and county planners, transportation planners, economic development coordinators, development program administrators, location analysts, market research analysts, and business analysts.

CORE COURSES

REQUIRED COURSES		
Geography 364	3 cr	Planning Theory and Process
Geography 373	3 cr	Urban Geography
Geography 388 **OR** Natural Resources 388	3 cr	Introduction to Urban and Regional Planning
Geography 389 **OR** Natural Resources 389	3 cr	Urban and Regional Planning Analysis
Geography 476	3 cr	Geographic Information Systems I
Geography 493	3 cr	Professional Practice/Planning Ethics

ADDITIONAL COURSES THREE additional credits selected from the following.		
Geography 344	3 cr	Environmental Hazards
Geography 374	3 cr	Rural Geography
Geography 477	3 cr	GIS Applications in Local Government
Natural Resources 488	3 cr	Land Use Plan Implementation
Political Science 341	3 cr	Urban Politics
Political Science 397	3 cr	Methods of Policy Analysis
Sociology 365	3 cr	Social Work with Native American and Other Culturally Diverse Families
Soil 365	3 cr	Soil Survey Interpretations for Land Use Planning

Recommended Courses for Urban Planning Option Listed on Following Page

GEOGRAPHY MAJOR – URBAN PLANNING OPTION (PART II)

RECOMMENDED COURSES		
Economics 311	3 cr	Public Finance
Economics 362	3 cr	Economic Development
Economics 374	3 cr	Regional Economic Growth
Geography 340	3 cr	Processes of Environmental Degradation
Geography 344	3 cr	Environmental Hazards
Geography 369	3 cr	Political Geography
Geography 371	3 cr	Gender and Environment
Geography 374	3 cr	Rural Geography
Geography 379	3 cr	Remote Sensing II
Geography 477	3 cr	GIS Applications in Local Government
Geography 479	3 cr	Geographic Information Systems II
Geography 300 **OR** Geography 327 **OR** Geography 328 **OR** Geography 329	3 cr 3 cr 3 cr 3 cr	Africa Asia Europe Environmental Geography of Europe
Geology 330	3 cr	Environmental Geology
Mathematics 355	4 cr	Elementary Statistical Methods
Natural Resources 340	3 cr	Basic Concepts of Sustainability
Natural Resources 395	3 cr	Introduction to Environmental Study
Natural Resources 488*	3 cr	Land Use Plan Implementation
Sociology 340	3 cr	Community Research
Sociology 356	3 cr	Urban Sociology
Sociology 357	3 cr	Sociology of Planning
Sociology 360	3 cr	Population Problems
Sociology 365	3 cr	Social Work with Native American and Other Culturally Diverse Families
Political Science 242	3 cr	State and Local Government
Political Science 341	3 cr	Urban Politics
Political Science 356	3 cr	Government Finance
Political Science 358	3 cr	Public Budgets
Political Science 397	3 cr	Methods of Policy Analysis
Soil 365*	3 cr	Soil Survey Interpretations for Land Use Planning

*If not taken under additional courses.

TEACHER CERTIFICATION REQUIREMENTS FOR GEOGRAPHY MAJOR

To attain **teacher certification in geography** a student must take all of the following courses (20 credits) *either as part of or in addition to one of the options in the geography major*.

REQUIRED COURSES		
Geography 101	5 cr	Physical Environment
Geography 113	3 cr	World Regional Geography
Geography 120	3 cr	Human Geography
Geography 211	3 cr	Wisconsin
Geography 276	3 cr	Introduction to Cartography
Geography 280	3 cr	Seminar: Geography as a Profession

Enrollment caps are in effect for those seeking teacher certification. Please contact the Department of Geography/Geology early for entrance requirements and application procedures.

NOTE: For teacher certification, the geography major is considered a social science program by the Department of Public Instruction.

REQUIREMENTS FOR GEOGRAPHY MINOR

A **minor in Geography** consists of 22 credits, of which at least six credits must be 300-level or above.

REQUIRED COURSES		
A. Geography 101 Geography 120	5 cr 3 cr	Physical Environment Human Geography
B. At least **one** course from each of the following groups: (1) Geography 110, 113, 211, 226, 300, 301, 302, 327, 328. (2) Geography 329, 340, 342, 344, 369, 370, 371, 372, 373, 374.		
C. Additional geography courses to total 22.		

TEACHER CERTIFICATION REQUIREMENTS FOR GEOGRAPHY MINOR

A **minor in Geography for teacher certification** consists of 20 credits.

REQUIRED COURSES		
Geography 101	5 cr	Physical Environment
Geography 113	3 cr	World Regional Geography
Geography 120	3 cr	Human Geography
Geography 211	3 cr	Wisconsin
Geography 276	3 cr	Introduction to Cartography
Geography 280	3 cr	Seminar: Geography as a Profession

NOTE: For teacher certification, the geography minor is considered a social science program by the Department of Public Instruction.

REQUIREMENTS FOR ENVIRONMENTAL GEOGRAPHY MINOR*

A **minor in Environmental Geography** consists of 23 credits.

REQUIRED COURSES		
A. Geography 100	3 cr	Physical Environment Under Stress
Geography 101	5 cr	Physical Environment
Geography 120	3 cr	Human Geography
Geography 340	3 cr	Processes of Environmental Degradation
Geography 366	3 cr	Historical Geography
B. **Physical Geography Option**: At least **one** course from the following or courses approved by advisor and chair: Geology 330; Geography 344, 354, 358.		
C. **Human Geography Option:** At least **one** course from the following or courses approved by advisor and chair: Geography 365, 369, 373, 374.		
RECOMMENDED COURSES		
Philosophy 380; Natural Resources 460.		

*Geography majors with a physical geography option may choose the Environmental Geography minor, but must take two additional physical geography courses which do not overlap with the major and minor.

*Geography majors with a human geography option may choose the Environmental Geography minor, but must take two additional human geography courses which do not overlap with the major and minor.

INFORMATION REGARDING MINORS FOR GEOGRAPHY MAJOR

Although it is not necessary for a student majoring in geography to take a minor, it is often advisable to improve your credentials and enhance your employment opportunities. Students may select a minor in geology, earth science, environmental geography or geographic information systems and spatial analysis, all of which are offered through the Department of Geography/Geology, or a minor offered through other departments in the College of Letters and Science or the College of Natural Resources. Although any minor may be combined with a geography major, certain minors tend to complement each of the three options of the geography major. The following are some suggested minors for each of the options.

Physical Environment Option

- Environment Geography
- Environmental Studies *
- International Resource Management*
- Earth Science
- Land Use Planning*
- Soil Science*

geographic information science (gis) and Cartographic Option

- Computer Information Systems*
- Land Use Planning*
- Geographic Information Systems
- Spatial Analysis

Human Geography Option

- Anthropology*
- Environmental Geography
- History*
- Land Use Planning*
- Peace Studies*
- Resource Management*
- Sociology*
- Art History*
- Environment Studies*
- International Studies*
- Native American Studies*
- Political Science*
- Small City Analysis*
- Women's Studies*

Urban planning Option

- Economics*
- Small City Analysis*
- Environmental Geography
- Land Use Planning*

*Information about minors administered outside the Department of Geography/Geology may be obtained from the UWSP Catalog, your advisor, or the department chairperson.

WHY STUDY GEOSCIENCE?

Geoscience relates to the study of Earth's processes involving the study of rocks, minerals, soils, oceans, fresh water and atmosphere. Geoscientists are individuals trained in multi-disciplinary fields of science designed to assess Earth's resources and to mitigate geohazards. These geohazards may be due to natural phenomena such as earthquakes as well as geohazards due to human impacts on Earth's surface. Geoscientists locate resources such as potable water, oil, gas and metallic ore deposits, forecast the weather and model climate change, develop land-use plans and geohazard maps, explore Earth's remote localities as well as other planets and the solar system. The geoscience field is experiencing significant growth in response to an interplay of increasing global consumption and decreasing availability of Earth materials (minerals, rocks, soils and water) and energy resources, as well as the recognition that resource extraction and use is profoundly impacting our global environment and our global economy. Increasingly, scientists, business and civic leaders and other concerned citizens recognize the need to study Earth systems and the effects of human actions.

UWSP's bachelor's degree in geosciences addresses the need for baccalaureate prepared geoscientists in the Upper Midwest that will integrate geoscience (environmental geology, Earth materials, hydrogeology, structural geology and field work), GIS and remote sensing. Why are these topics important to Wisconsin students? Earth material extraction in quarries and gravel pits throughout Wisconsin are essential to the construction of roadways, office buildings and airport expansion projects. Groundwater and surface water resources must be monitored and protected from overuse and contamination. Gas and oil wells continue to pump hydrocarbons from the Michigan basin. Continued rise in gas prices will result in a greater demand for geoscience skills as energy companies expand their research and development operations in the Midwest and throughout the world. Metal prices have risen largely due to the increased demand in countries such as China and India. The active mining of metallic ores continues in our neighboring states of Minnesota and Michigan. Meanwhile, Wisconsin hosts among the largest undeveloped copper and zinc deposits in North America. Clearly resource exploration will continue for the foreseeable future in the Upper Midwest.

GEOSCIENCE MAJOR CORE COURSES

All four options (Environmental Analysis Option, Earth Materials Option, Hydrogeology Option, Biogeoscience Option) of the Geoscience Major require the same core of courses.
Students should consult the "Tentative Sequence of Geography and Geology Course Offerings" since some upper division courses are offered only on a rotational basis.

The Geoscience Major consists of a minimum of 48-62 credits. The number of credits is dependent upon the option and courses chosen. If you elect to pursue more than one option in the major, be advised that it may extend your time to degree.

FRESHMAN YEAR	
Geology 104 Physical Geology (4 cr)	*Geology 106* Earth History (1 cr)

SOPHOMORE YEAR
Geology 200 Mineralogy and Petrology (4 cr)

JUNIOR YEAR/SENIOR YEAR	
Geology 310 Sedimentary Geology (3 cr)	*Geology 320* Structural Geology (3 cr)

GEOSCIENCE MAJOR
ENVIRONMENTAL ANALYSIS OPTION
48 Credits

The Environmental Analysis Option is designed for students interested in careers related to land use planning, environmental consulting, geospatial analysis, climate change, Earth material extraction, geohazard assessment or natural resource positions with local, county, state or federal governments. Students could also pursue graduate degrees in geoscience related programs.

CORE COURSES

REQUIRED COURSES		
Geography 101	5 cr	The Physical Environment
Geography 276	3 cr	Introduction to Cartography
Geography/Geology 335	3 cr	Climate: Past, Present, and Future
Geography 377	3 cr	Remote Sensing I
Geography 379	3 cr	Remote Sensing II
Geography 476	3 cr	Geographic Information Systems I
Geography 479	3 cr	Geographic Information Systems II
Math 355	4 cr	Elementary Statistical Methods

ADDITIONAL COURSES SIX additional credits selected from the following.		
Geology/Geography 352	3 cr	Geomorphology
Geology 330	3 cr	Environmental Geology
Geology 370	3 cr	Glacial Geology
Geology 383	3 cr	Hydrogeology
Geology 393	1-3 cr	Field Trip in Geology
Geography 340	3 cr	Processes of Environmental Degradation
Geography 344	3 cr	Environmental Hazards
Geography 354	3 cr	Climatology
Geography 376	3 cr	Statistical and Multimedia Cartography
Geography 382	3 cr	Dynamic Cartography
Geography 386	3 cr	Map Design and Production
Geography 390	3 cr	Applied Statistics in Geography
Soils 364	3 cr	Soil and Plant Analysis
Soils 365	3 cr	Soil Survey Interpretations for Land Use Planning
Soils 366	1 cr	Wetland Soils
Soils 367	1 cr	Wetland Delineation
Natural Resources 373	3 cr	Agronomy, Agriculture and Environment
Waste 350	3 cr	Selected Topics in Soil and Waste Management

GEOSCIENCE MAJOR
EARTH MATERIALS OPTION
51-56 Credits

The Earth Materials Option is designed for students interested in careers related to soils, minerals and rocks. This option provides students with a thorough background in the geological factors governing soil development, the origin and distribution of rock types, and the occurrences of mineral resources. Students who enroll in this option may also pursue either a major or minor in Soils with the College of Natural Resources. This option prepares students for careers in the environmental sciences as well or graduate degrees in geoscience related fields.

CORE COURSES

REQUIRED COURSES		
Geology 383 **OR** Water 389	3 cr 3 cr	Hydrogeology Hydrology
Natural Resources 251	4 cr	Introduction to Soil and Water Resources
Soils 362	3 cr	Soil Genesis and Morphology
Soils 465 **OR** Soils 461 **OR**	3 cr 3 cr	Soil Physics Soil Management for Resource Sustainability
Geography 279	2 cr	Fundamentals of Geographic Info Systems
Geography 476	3 cr	Geographic Information Systems I
Geography 479	3 cr	Geographic Information Systems II
Chemistry 105 **AND** Chemistry 106 **OR** Chemistry 117	5 cr 5 cr 5 cr	Fundamental Chemistry Fundamental Chemistry General Chemistry Principles

ADDITIONAL COURSES **SIX additional credits selected from the following.**		
Geology 330	3 cr	Environmental Geology
Geology 370	3 cr	Glacial Geology
Geology 385	2 cr	Geologic Site Investigations
Geology 393	1-3 cr	Field Trip in Geology
Geography 340	3 cr	Processes of Environmental Degradation
Geography 344	3 cr	Environmental Hazards
Geography 354	3 cr	Climatology
Geography 377	3 cr	Remote Sensing I
Geography 379	3 cr	Remote Sensing II
Geography /Geology 335	3 cr	Climate: Past, Present, and Future
Geography/ Geology 352	3 cr	Geomorphology
Water /Geology 487	3 cr	Groundwater Geochemistry

REQUIRED MATHEMATICS COURSE **FOUR additional credits selected from the following.**		
Mathematics 111 **OR** Mathematics 118 **OR** Mathematics 355	4 cr 4 cr 4 cr	Applied Calculus Precalculus Algebra Elementary Statistical Methods

GEOSCIENCE MAJOR
HYDROGEOLOGY OPTION
52-62 Credits

The field of hydrogeology is concerned with the influences of hydrology, geology, and humans on the occurrence, movement and quality of groundwater. A well-trained hydrogeologist has a good grasp of the near-surface geologic environment, as well as a broad background in math and natural science, especially chemistry. An understanding of microbiology has also proven useful in the interpretation of contaminant fate and transport. Although still a field-based discipline, hydrogeology increasingly relies on numerical modeling and the use of geographic information systems.

Hydrogeologists are employed in both the private and public sectors, enjoying careers with consulting firms, regulatory agencies, and other governmental entities, such as state or federal geologic surveys. Although graduates with bachelor's degrees can find employment opportunities, master's degrees are often required to advance within the field. For this reason, students are encouraged to take the math and science courses that prepare them for graduate school.

CORE COURSES

REQUIRED COURSES		
Geology/Geography 352	3 cr	Geomorphology
Geology 370	3 cr	Glacial Geology
Geology 383	3 cr	Hydrogeology
Geology 487	3 cr	Groundwater Geochemistry
Geology 393 **OR** Geol 385 **OR** Soils 465	1-3 cr 2 cr 3 cr	Field Trip in Geology Geologic Site Investigations Soil Physics
Geography 279	2 cr	Fundamentals of GIS
Geography 476	3 cr	Geographic Information Systems I
Geography 479	3 cr	Geographic Information Systems II
Chemistry 105 **AND** Chemistry 106 **OR** Chemistry 117	5 cr 5 cr 5 cr	Fundamental Chemistry Fundamental Chemistry General Chemistry Principles
Mathematics 111 **OR** Mathematics 118	4 cr 4 cr	Applied Calculus Precalculus Algebra
Physics 201 **AND** Physics 202 **OR** Physics 203 **AND** Physics 204	4 cr 3 cr 5 cr 5 cr	Applied Principles of Physics I Applied Principles of Physics II College Physics II College Physics II

GEOSCIENCE MAJOR
BIOGEOSCIENCE OPTION
53-58 Credits

The Biogeoscience Option is designed for students whose interests lie at the intersection of biology and geology. This option focuses upon life forms, climate change and evolution through geologic history as well as the key role played by biology in earth system processes. Students who enroll in this option may also pursue either a major or minor in biology. This option prepares students for careers in the environmental sciences or graduate degrees in geoscience related fields.

CORE COURSES

REQUIRED COURSES		
Biology 101 **OR**	5 cr	General Biology
Biology 130 **OR**	5 cr	Introduction to Plant Biology
Biology 160	5 cr	Introduction to Animal Biology
Chemistry 105 **AND**	5 cr	Fundamental Chemistry
Chemistry 106	5 cr	Fundamental Chemistry
OR		
Chemistry 117	5 cr	General Chemistry Principles
Geography 279	2 cr	Fundamentals of GIS
Mathematics 111 **OR**	4 cr	Applied Calculus
Mathematics 118	4 cr	Precalculus Algebra

ADDITIONAL COURSES **NINE additional credits selected from the following.**		
Anthropology 311	3 cr	Human Evolution
Biology 305	3 cr	General Ecology
Biology 311	3 cr	General Principles of Organic Evolution
Biology 322	3 cr	Museum Methods
Biology 323	3 cr	Paleontology Collecting Field Trip
Biology 332	3 cr	Paleobotany
Biology 370	4 cr	Comparative Vertebrate Anatomy
Geography 358	3 cr	Biogeography

Additional Courses for Bioscience Option Listed on Following Page

GEOSCIENCE MAJOR – BIOGEOSCIENCE OPTION (PART II)

ADDITIONAL COURSES NINE additional credits selected from the following.		
Anthropology 311*	3 cr	Human Evolution
Biology 305*	3 cr	General Ecology
Biology 311*	3 cr	General Principles of Organic Evolution
Biology 322*	3 cr	Museum Methods
Biology 323*	3 cr	Paleontology Collecting Field Trip
Biology 332*	3 cr	Paleobotany
Biology 370*	4 cr	Comparative Vertebrate Anatomy
Biology 399	1-2 cr	Independent Studies (Paleofossil Lab)
Biology 498	1-3 cr	Selected Topics in Biology (Evolution Lab)
Geography /Geology 335	3 cr	Climate: Past, Present, and Future
Geography/Geology 352	3 cr	Geomorphology
Geography/Geology 393	1-3 cr	Field Trip in Geography/Geology
Geography 354	3 cr	Climatology
Geography 358*	3 cr	Biogeography
Geology 330	3 cr	Environmental Geology
Geology 370	3 cr	Glacial Geology
Geology 383	3 cr	Hydrogeology
Geology 480	1-12 cr	Internship in Geology
Geology 485	1-3 cr	Practicum in Geology
Soils 350	1-3 cr	Selected Topics in Soil & Waste Resources
Soils 362	3 cr	Soil Genesis and Morphology

*If not taken to fulfill additional courses listed on previous page.

WHY STUDY GEOLOGY?

The Geology minor provides skills that enable students to obtain employment in a wide variety of fields which include: geological resource mapping, energy exploration, environmental engineering and site remediation, urban and regional planning and geohazard assessment. Combined with geographic information systems (GIS), and remote sensing skills, students gain experience in field-based studies as well as cutting edge technology. Small upper-level class size, active academic advising, superb laboratory facilities and rich field experiences contribute to academic success. Students work with faculty on research projects ranging from Central Wisconsin, Big Bend Texas, Hawaii to Morocco. The 22-credit Geology minor is intended to be used in conjunction with other disciplines and is most commonly combined with a major in Geography, Geoscience, Water Resources or Soil Science. The minor offers students the flexibility to take a traditional sequence of geology courses or a combination of traditional and techniques courses in geology, geography and biology. The minor also complements majors in chemistry, biology, wildlife, forestry and education and would be of interest to students in hydrogeology, soil mapping, natural resource exploration or site remediation.

Government agencies such as the United States Geological Survey, the Environmental Protection Agency, the Department of Homeland Security, and state natural resource and geological agencies as well as private consulting and insurance companies, among others, all seek employees with geoscience expertise.

REQUIREMENTS FOR GEOLOGY MINOR

A **minor in Geology** consists of 22 credits.

REQUIRED COURSES		
A. Geology 104	4 cr	Physical Geology
Geology 106	1 cr	Earth History
Geology 200	4 cr	Mineralogy and Petrology
Geology 310	3 cr	Sedimentary Geology
Geology 320	3 cr	Structural Geology
B. Geology/Geography 352 **OR**	3 cr	Geomorphology
Geology 370	3 cr	Glacial Geology

Additional credits selected from the following list to total 22 credits: Geology 330, 335, 352*, 370*, 383, 391, 393 (maximum of three credits), 395, 479, 487, 495; Geography 279, 352*, 390, 393 (provided cross-listed with Geology, maximum of three credits), 377 or 476; Biology 311.

*Whichever course not taken in fulfillment of the required course.

WHY STUDY EARTH SCIENCE?

The Earth Science minor offered through the Department of Geography/Geology is designed to offer a concentration of studies in earth and atmospheric science. The Earth Science provides a broad-based program and satisfies the basic framework required by the Department of Public Instruction, which has certified the minor for education majors. Courses for the 22-credit minor are taught by the Department of Geography/Geology and the Department of Physics/Astronomy. The program offers students a cutting-edge learning environment in which teaching excellence is of prime importance. Faculty members work closely with students enrolled in the minor, helping design a course of study oriented to the students' interests, special abilities and career objectives. Small upper-level class size, active academic advising and superb laboratory facilities promote academic success. Students are also encouraged to participate in field trip courses to gain a better understanding of our natural environment throughout the world.

In addition to K-12 education, the Earth Science minor prepares students for employment in government agencies such as the United States Geological Survey, the Environmental Protection Agency, the Department of Homeland Security, and state natural resource and geological agencies as well as private consulting companies.

REQUIREMENTS FOR EARTH SCIENCE MINOR

A **minor in Earth Science** consists of 22 credits.

REQUIRED COURSES		
A. Geography 101	5 cr	Physical Environment
Geology 104	4 cr	Physical Geology
Geology 106	1 cr	Earth History
B. At least one course from each of the following groups:		
1. Geography/Geology 352	3 cr	Geomorphology
Geography 353	3 cr	Physical Climatology & Meteorology
Geography 354	3 cr	Climatology
2. Geology 200	4 cr	Mineralogy and Petrology
Geology 320	3 cr	Structural Geology
Geology 330	3 cr	Environmental Geology
Geology 370	3 cr	Glacial Geology
Geology 383	3 cr	Hydrogeology

Additional credits selected from either groups (B.1.) and (B.2.) above or from the following to total 22 credits: Geography 393 (maximum of three credits), 395 (for earth science topics); Geology 393 (maximum of three credits), 395, Astronomy 205 and 206 or 311.

NOTE: No more than three total field experience credits (Geology 393 or Geography 393) can be used to satisfy the earth science minor requirements.

TEACHER CERTIFICATION REQUIREMENTS FOR EARTH SCIENCE MINOR

To attain **teacher certification in Earth Science**, a student must meet the requirements of the Earth Science Minor including Astronomy 205 and 206 or 311 and at least two field experience credits in Geography 393 and/or Geology 393.

Due to limited resources, admission caps are in effect for students seeking teacher certification in Earth Science. Applications for admission are processed on specific dates each semester. Contact the Chair of the Geography/Geology Department for more information on admission policies.

WHY STUDY GEOGRAPHIC INFORMATION SYSTEMS AND SPATIAL ANALYSIS?

There is an immense societal need for professionals educated in the use of Geographic Information Systems (GIS) and spatial analysis techniques. It is a technology and methodology that has been used to conduct site analysis, track wolves, develop land use plans, access damage along the path of a forest fire, and track crime interactively (*New York Times*, January, 2000). It is estimated that over 500,000 professionals in fields ranging from environmental assessment to retail trade analysis are asked to use GIS in their jobs, with 50,000 being asked to use GIS full-time. These numbers are growing 15% a year and will likely accelerate. The depth and breadth of this technique and associated application knowledge will continue to increase with both governmental agencies and businesses demanding more GIS educated professionals, as well as greater knowledge breadth of their employees. Although many disciplines will provide GIS training, Geography programs provide the best focus and education for students of GIS (*ESRI,* 2000; *AAG Newsletter*, June, 2000). The Department of Geography/Geology has taught GIS courses at UWSP for the last fifteen years and spatial methodology courses, like cartography, for forty years. Yet, the true integration and utility of these techniques was not realized until the advent of modern computing. Many disciplines outside the field of geography now recognize the impact and importance of GIS and spatial analysis within their own fields. The GIS analyst normally has expertise in a particular area, such as land use planning, forest management, or business and uses GIS knowledge to help solve problems in their main academic field.

The Department of Geography/Geology now offers a Geographic Information Systems (GIS) and Spatial Analysis minor that provides a mix of theory and practical knowledge having broad application in various disciplines. GIS is used to effectively access, analyze, and interpret vast amounts of spatial data. GIS is employed to explore the interrelationships of geographic variable that can involve weather, politics, crime, environment management, real estate development, forestry inventory, wildlife tracking, and retail trade analysis. For example, one could use GIS to determine the best location for a new department store, or evaluate the impact of spraying chemicals on a local well water supply. The true power of GIS is its ability to combine and synthesize any form of geographic information.

The 22-credit minor (28 credits for students enrolled in the cartography option of the geography major) covers the foundation of spatial analysis and geographic information systems, including cartography, statistical analysis, and hands-on exposure to cutting edge GIS technology. The Department of Geography/Geology offers three courses that provide basic to advanced training in GIS, and several complementary courses in associated GIS technology, such as digital remote sensing. The minor complements programs in geography, geology, resource management, land use planning, wildlife, forestry, water, soils, biology and other fields reliant on spatial analysis.

REQUIREMENTS FOR GEOGRAPHIC INFORMATION SYSTEMS AND SPATIAL ANALYSIS (GISSA) MINOR

22 Credits

REQUIRED CORE COURSES		
Geography 276	3 cr	Introduction to Cartography
Geography 279	2 cr	Fundamentals of GIS
Geography 377	3 cr	Remote Sensing I
Geography 379	3 cr	Remote Sensing II
Geography 476	3 cr	Geographic Information Systems I
Geography 479	3 cr	Geographic Information Systems II

APPLIED SPATIAL STATISTICS COURSE		
Geography 376	3 cr	Statistical and Multimedia Geography
OR		
Geography 390	3 cr	Applied Statistics in Geography
OR		
Wildlife 311	2 cr	Quantitative Methods for Wildlife and Fisheries Research and Management
OR		
Forestry 322	3 cr	Forest Mensuration
OR		
Courses mutually agreed upon by the student's academic advisor and the Chair of the Department of Geography/Geology		

Additional three credits selected from the following list to total 22 credits:
Biology 306; Geography 344, 358, 376 (if not applied to spatial statistics requirement), 382, 386, 471, 472, 473, 480, 481, 482, 483, 484, 485, 486, 487, 488; Geology 330, 495; Forestry 319, 320, 321, 385; Natural Resources 363, 385; Soils 360, 365; Water/Geology 383; Wildlife 350; Web and Digital Media Development (WDMD) 110, 200, 302; **OR** Courses mutually agreed upon by the student's academic advisor and the Chair of the Department of Geography/Geology.

Geography majors with the Geographic Information Science and Cartography Option may choose the GISSA minor, but must take an additional six credits from the elective courses listed as additional credits.

NATURAL SCIENCE MAJOR
EARTH SCIENCE OPTION

The Natural Science Major consists of three options: Earth Science, Life Science, and Physical Science. The Department of Geography/Geology advises students who choose the Earth Science option. Students interested in the Life Science option should contact the Department of Biology and students interested in the Physical Science option should contact the Department of Physics and Astronomy.

For teaching certification contact UWSP's School of Education for information regarding the Professional Education Program and the education curriculum for teaching certification. Enrollment caps are in effect for those seeking teacher certification.

REQUIRED MINOR IN EARTH SCIENCE
A **minor in Earth Science** consisting of 22 credits is required.

ADDITIONAL REQUIRED COURSES		
Astronomy 205* **AND**	4 cr	The Solar System
Astronomy 206*	4 cr	Stars and Stellar Systems
Biology – 10-14 credits including	10-14 cr	
Biology 130	5 cr	Introduction to Plant Biology
Biology 160	5 cr	Introduction to Animal Biology
Chemistry – 9-14 credits including	9-14 cr	
Chemistry 105 **AND**	5 cr	Fundamental Chemistry
Chemistry 106	5 cr	Fundamental Chemistry
OR		
Chemistry 117	5 cr	General Chemistry Principles
Physics – 10-14 credits which must consists of		
Physics 203 **AND**	5 cr	College Physics I
Physics 204	5 cr	College Physics II
OR		
Physics 150 **AND**	5 cr	University Physics I
Physics 250 **AND**	5 cr	University Physics II
Any Physics courses numbered 300 and above.		

At least 14 credits must be earned in one of the areas of Biology, Chemistry or Physics.

COLLATERAL COURSE – 4 credits required		
Math 111 **OR**	4 cr	Applied Calculus
Math 118 **OR**	4 cr	Precalculus Algebra
Math 119 **OR**	2 cr	Precalculus Trigonometry
Math 355	4 cr	Elementary Statistical Methods

*May be used in the Earth Science Minor in replacement of Astronomy 311 and one elective credit.

GIS Focal Certificate
CARTOGRAPHY
18 Credits

Maps help us to effectively represent the world around us and communicate our place-centric ideas to others in ways that speech, writing, and numbers cannot. A GIS Focal Certificate in Cartography will help learners to efficiently and effectively manipulate, analyze, and express spatial ideas, forms, patterns, and trends.

REQUIRED COURSES		
Geography 279	2	Fundamentals of GIS
Geography 476	3	Geographic Information Systems I
Geography 479	3	Geographic Information Systems II
Geography 480* **OR** Geography 485* *Must be approved as capstone course	1 1	Internship in Geography Practicum in Geography

ADDITIONAL COURSES		
Geography 276	3	Introduction to Cartography
Geography 376 **OR** Geography 386	3 3	Statistical and Multimedia Cartography Map Design and Production
Geography 382	3	Dynamic Cartography

GIS Focal Certificate
FORESTRY
18 Credits

Professional foresters have long considered how to balance forest resource objectives and constraints in the context of economics, productivity, and ecological sustainability. Today, foresters are further challenged by complex regulations and increased pressures on limited resources. A GIS Focal Certificate in Forestry will help learners effectively utilize GIS and GPS best practices for integrated forest management.

REQUIRED COURSES		
Geography 279	2	Fundamentals of GIS
Geography 476	3	Geographic Information Systems I
Geography 479	3	Geographic Information Systems II
Geography 480* **OR** Geography 485* *Must be approved as capstone course	1 1	Internship in Geography Practicum in Geography

ADDITIONAL COURSES		
Geography 377	3	Remote Sensing I
Geography 379	3	Remote Sensing II
Geography 486	3	GIS and GPS Applications in Forestry Management

GIS Focal Certificate
URBAN AND REGIONAL PLANNING
18 Credits

The complex systems of and the interrelationships between the human and natural environments require better understanding to support well-informed decision-making, planning, and management. A GIS Focal Certificate in Urban and Regional Planning will help learners maximize the utility of GIS to:

- Analyze relationships among human populations, natural resources, and other land patterns and trends;
- Allocate limited and competing resources efficiently and equitably;
- Evaluate the consequences of decisions prior to implementation;
- Monitor progress toward reaching community goals and objectives
- Engage the public in the decision-making process.

REQUIRED COURSES		
Geography 279	2	Fundamentals of GIS
Geography 476	3	Geographic Information Systems I
Geography 479	3	Geographic Information Systems II
Geography 480* **OR** Geography 485* *Must be approved as capstone course	1 1	Internship in Geography Practicum in Geography

ADDITIONAL COURSES.		
Geography 377	3	Remote Sensing I
Geography 473/673	3	GIS Applications for Managing Working Lands and Operations
Geography 477	3	GIS Applications in Local Government
Geography 484	3	GIS Applications in Urban and Regional Planning

GIS Focal Certificate
PROGRAMMING & WEB DEVELOPMENT
18 Credits

Modern computing tools and programming provides endless opportunity to customize the GIS interface in ways that are user friendly and help us share information globally. A GIS Focal Certificate in Programming and Web Development will expose learners to an array of programming functionality and web development platforms. Learners will augment their ability to use and share content rich geographic information.

REQUIRED COURSES		
Geography 279	2	Fundamentals of GIS
Geography 476	3	Geographic Information Systems I
Geography 479	3	Geographic Information Systems II
Geography 480* **OR** Geography 485* *Must be approved as capstone course	1 1	Internship in Geography Practicum in Geography

ADDITIONAL COURSES		
Geography 481	3	GIS Database Design and Modeling
Geography 482	3	GIS Programming and Customization
Geography 487	3	GIS Web Server Applications and Administration

GIS Focal Certificate
ENVIRONMENTAL MANAGEMENT
18 Credits

Increasing populations on a static-sized planet equates to higher demand for scarce environmental resources. Well informed solutions are mandatory that consider both environmental opportunities and threats. A GIS Focal Certificate in Environmental Management will equip learners with the tools and functionality needed to manage scarce environmental resources at local, regional, and global scales.

REQUIRED COURSES		
Geography 279	2	Fundamentals of GIS
Geography 476	3	Geographic Information Systems I
Geography 479	3	Geographic Information Systems II
Geography 480* **OR** Geography 485* *Must be approved as capstone course	1 1	Internship in Geography Practicum in Geography

ADDITIONAL COURSES		
Geography 377	3	Remote Sensing I
Geography 471	3	GIS Applications in Sustainability
Geography 472	3	GIS Environmental Modeling & Management Techniques

GIS Focal Certificate
EMERGENCY MANAGEMENT
18 Credits

Emergencies and disasters are geographic events and require geographic information. GIS tools and skills are critical to facilitate preparedness, response, and recovery efforts. A GIS Focal Certificate in Emergency Management will help students prepare, respond, and facilitate recovery for various emergency and disaster situations.

REQUIRED COURSES		
Geography 279	2	Fundamentals of GIS
Geography 476	3	Geographic Information Systems I
Geography 479	3	Geographic Information Systems II
Geography 480* **OR** Geography 485* *Must be approved as capstone course	1 1	Internship in Geography Practicum in Geography

ADDITIONAL COURSES		
Geography 377	3	Remote Sensing I
Geography 483	3	GIS Applications in Emergency Management
Geography 488	3	Mobile GIS Techniques

TENTATIVE SEQUENCE OF GEOGRAPHY COURSE OFFERINGS
2012-2016

(October 2011)

COURSE	SP 12	FA 12	SP 13	FA 13	SP 14	FA 14	SP 15	FA 15	SP 16	FA 16	COURSE TITLE
Geog 100	X	X	X	X	X	X	X	X	X	X	Physical Environment Under Stress
Geog 101	X	X	X	X	X	X	X	X	X	X	The Physical Environment
Geog 113	X	X	X	X	X	X	X	X	X	X	World Regional Geography
Geog 120	X	X	X	X	X	X	X	X	X	X	Human Geography
Geog 198	As Announced										Reading in the Discipline
Geog 211			X				X				Wisconsin
Geog 226	As Announced										North America
Geog 276		X		X		X		X		X	Introduction to Cartography
Geog 279	X	X	X	X	X	X	X	X	X	X	Fundamentals of GIS
Geog 280		X		X		X		X		X	Seminar: Geography as a Profession
Geog 300/500	X			X				As Announced			Africa
Geog 301/501	As Announced										Middle America
Geog 302/502	As Announced										Southwest Pacific
Geog 325/525	X		X		X		X		X		Geography of China
Geog 327/527	As Announced										Asia
Geog 328/528	As Announced – Semester Abroad Program										Europe
Geog 329/529	As Announced										Environmental Geography of Europe
Geog 335/535	X		X		X		X		X		Climate: Past, Present, and Future
Geog 340/540	X		X		X		X		X		Processes of Environmental Degradation
Geog 342/542	As Announced										Soils and Society
Geog 344/544		X				X				X	Environmental Hazards
Geog 350	As Announced – Semester Abroad Program										Physical Geography of New Zealand
Geog 352/552		X		X		X		X		X	Geomorphology
Geog 353/553	X				X				X		Physical Climatology and Meteorology
Geog 354/554	As Announced										Climatology
Geog 358				X				X			Biogeography
Geog 364/564	As Announced				X					X	Planning Theory and Process
Geog 365/565	As Announced										Tourism Geography
Geog 366/566		X		X		X		X		X	Historical Geography
Geog 368/568											Geography of Religion
Geog 369/569			X		X		X				Political Geography
Geog 370	As Announced										Transportation and Logistics
Geog 371/571	As Announced										Gender and Environment
Geog 372	As Announced										Industrial Location
Geog 373/573		X		X		X		X		X	Urban Geography
Geog 374/574	X		X		X		X		X		Rural Geography
Geog 376			X				X				Statistical and Multimedia Cartography
Geog 377	X	X	X	X	X	X	X	X	X	X	Remote Sensing I
Geog 378	As Announced										Retail and Service Location
Geog 379/579		X		X		X		X		X	Remote Sensing II
Geog 382/582		X		X		X		X		X	Dynamic Cartography
Geog 386	X				X				X		Map Design and Production
Geog 388/588		X		X		X		X		X	Intro to Urban & Regional Planning
Geog 389/589	X		X		X		X		X		Urban and Regional Planning Analysis
Geog 390	X		X		X		X		X		Applied Statistics in Geography

Tentative Sequence of Geography Course Offerings Continued on Next Page

TENTATIVE SEQUENCE OF GEOGRAPHY COURSE OFERINGS
2012-2015

(October 2011)

COURSE	SP 12	FA 12	SP 13	FA 13	SP 14	FA 14	SP 15	FA 15	SP 16	FA 16	COURSE TITLE
Geog 391/591	As Announced										Special Topics
Geog 393/593	As Announced										Field Trip in Geography
Geog 395/595	X	X	X	X	X	X	X	X	X	X	Directed Study
Geog 399/599	X	X	X	X	X	X	X	X	X	X	Research
Geog 471/671	X										GIS Applications in Sustainability
Geog 472/672	As Announced										GIS Environmental Modeling&Managmt
Geog 473/673		X				X				X	GIS Apps Managing Working Lands/Op
Geog 476/676	X	X	X	X	X	X	X	X	X	X	Geographic Information Systems I
Geog 477/677	As Announced										GIS Applications in Local Government
Geog 479/679	X		X		X		X		X		Geographic information Systems II
Geog 480	X	X	X	X	X	X	X	X	X	X	Internship in Geography
Geog 481/681				X			X				GIS Database Design and Modeling
Geog 482/682		X		X		X		X		X	GIS Programming and Customization
Geog 483/683		X									GIS Apps in Emergency Management
Geog 484/684				X				X			GIS Apps in Urban & Regional Planning
Geog 485	X	X	X	X	X	X	X	X	X	X	Practicum in Geography
Geog 486/686	X		X		X						GIS & GPS Apps in Forestry Managmt
Geog 487/687	As Announced										GIS Web Server Apps & Administration
Geog 488/688	As Announced										Mobile GIS Techniques
Geog 490	X		X		X		X		X		Senior Research
Geog 491	X	X	X	X	X	X	X	X	X	X	Senior Thesis
Geog 493	As Announced			X		X		X		X	Professional Practice/Planning Ethics
Geog 495/695	As Announced										Adv Urban&Regional Planning Analysis
Geog 496/696	X		X		X		X		X		Community Development Practices
Geog 779	As Announced										Geographic Techniques

TENTATIVE SEQUENCE OF GEOLOGY COURSE OFFERINGS
2012-2016

(October 2011)

COURSE	SP 12	FA 12	SP 13	FA 13	SP 14	FA 14	SP 15	FA 15	SP 16	FA 16	COURSE TITLE
Geol 100	X	X	X	X	X	X	X	X	X	X	Geology and Science
Geol 104	X	X	X	X	X	X	X	X	X	X	Physical Geology
Geol 106		X		X		X		X		X	Earth History
Geol 198	As Announced										Reading in the Discipline
Geol 200	X		X		X		X		X		Mineralogy and Petrology
Geol 310/510		X		X		X		X		X	Sedimentary Geology
Geol 320		X		X		X		X		X	Structural Geology
Geol 330/530	As Announced										Environmental Geology
Geol 335/535	X		X		X		X		X		Climate: Past, Present, and Future
Geol 352/552		X		X		X		X		X	Geomorphology
Geol 370/570	X		X		X		X		X		Glacial Geology
Geol 383/583		X		X		X		X		X	Hydrogeology
Geol 385/585	As Announced										Geologic Site Investigations
Geol 393/593	As Announced										Field Trip in Geology
Geol 395/595	X	X	X	X	X	X	X	X	X	X	Directed Study
Geol 479/679	As Announced										Contaminant Hydrogeology
Geol 480	X	X	X	X	X	X	X	X	X	X	Internship in Geology
Geol 485	X	X	X	X	X	X	X	X	X	X	Practicum in Geology
Geol 487/687	X		X		X		X		X		Groundwater Geochemistry
Geol 495/695	As Announced										Computer Modeling to Hydrogeology
Geol 730	As Announced										Environmental Geology for Educators

COURSES OF INSTRUCTION – GEOGRAPHY

Geography 100. Human Impacts on the Physical Environment. 3 cr. Physical geographic principles and processes applied to understand selected human impacts on atmosphere, water, land, and biota. Includes detailed, interdisciplinary analysis of several environmental problems, including causes, consequences, and solutions. GDR:NS-EL

Geography 101. The Physical Environment. 5 cr. Introduction to modern physical geography: survey spatial distribution of the earth's physical characteristics, including weather and climate, water, soils, vegetation, and landforms; discuss environmental processes and interactions creating these physical geographic patterns; discuss importance to humans of the physical environment; use geographic tools including maps, air photos, and investigative techniques. 3 hrs lec, 4 hrs lab per wk; Possible field trip(s). GDR:NS

Geography 113 (NW). World Regional Geography. 3 cr. Survey major patterns of physical features, culture, and human-land relations by region in today's world; examples may show present and impending resource, environmental, social and political problems, and explore basic solutions. GDR:SS1

Geography 120 (NW). Human Geography. 3 cr. Examine components and spatial expressions of contemporary culture including patterns and problems of population, language, religion, urban and rural settlements, political and economic development from perspectives of diffusion, ecology, integration, landscape, and region. GDR:SS1

Geography 198. Reading in the Discipline. 1 cr; pass/fail. Does not apply to geography major or minor. Prereq: Con reg in another designated geography course.

Geography 211. Wisconsin. 2 or 3 cr. Geographic analysis of selected physical and cultural features. Prereq: So st. GDR:SS1

Geography 226. North America. Historical and contemporary geographic examination of physical and human landscapes in Canada, Mexico, the Caribbean, and the United States of America. GDR:SS1

Geography 276. Introduction to Cartography: Map Conceptualization and Development. 3 cr. The map production process, including rationale, graphic structure, data collection and organization, map layout, and final production. 2 hrs lec, 3 hrs lab per wk. Prereq: So st.

Geography 279. Fundamentals of Geographic Information Systems. 2 cr. Definition and components of Geographic Information Systems (GIS) for resource management. Principles and structure of spatial data and cartographic modeling. Spatial data acquisition, manipulation, translation, aggregation, analysis, and presentation. Prereq: Any Geography, CNR or environmental science course.

Geography 280 (WE). Seminar: Geography as a Profession. 3 cr. Examine geography in professional practice. Includes disciplinary history, programs of study, careers, information resources, current research. Required during first year after declaring major/minor. Prereq: Declared major/minor, or cons instr.

Geography 300/500 (NW). Africa. 3 cr. Regional interpretation; distribution and activities of peoples in relation to physical and cultural patterns and various stages and problems of development. GDR:SS1

Geography 301/501. Middle America. 3 cr. Mexico, Central America, and the Antilles: landforms, climate, natural vegetation, resources, population, historical evolution, political divisions, and economic organization.

Geography 302/502 (NW). Southwest Pacific. 3 cr. Geography of Australia, New Zealand, and the Southwest Pacific Islands as conditioned by environmental circumstances, native and alien cultural influences, and political affiliations. GDR:SS1

Geography 325/525 (NW). Geography of China. 3 cr. Historical development and contemporary situations of human cultures and regions of China. Explore interrelationships between population, ethnicity, economic activities and the environment in a geographic context. GDR: SS1

Geography 327/527 (NW). Asia. 3 cr. Study historical development and contemporary situation of human cultures and regions of Asia. Explore interrelationships between population, ethnicity, economic activities and the environment in a geographic context. GDR:SS1.

Geography 328/528. Europe. 3 cr. Distinctive features of Europe as a continent; physical/historical background; natural regions and their division into political units; characteristics of each country. GDR:SS1

Geography 329/529. Environmental Geography of Europe. 3 cr. Development of Europe as differentiated and unevenly integrated social ecosystems. Examine comparative environmental practices and policies. Prereq: 100 or 110, or cons instr. GDR:EL

Geography 335/535. Climate: Past, Present, and Future. 3 cr. Explore the physical and theoretical underpinnings of climate change science. Field and laboratory methods combined with computer model simulations are used to investigate the geological and biological evidence of past, present, and future climate including global warming and its impacts. Field trip(s) required. May not earn credit in both 335/535 and Geology 335/535. Prereq: 101; Geol 104 and Geol 106, or cons instr.

Geography 340/540. Processes of Environmental Degradation. 3 cr. Study why and how humans harm the physical environment; includes geographic, cultural, political, economic causes and consequences. Case studies from around the world. Possible field trip(s). GDR:NS

Geography 342/542. Soils and Society. 3 cr. Geographical distribution of soils with interaction between human activities and soil dynamics; political economy of soil management; soil's functional relations to social systems and ecosystem components. Possible field trip(s). Prereq: 101 or Natural Resources 251 or cons instr. GDR:SS2

Geography 344/544. Environmental Hazards. 3 cr. Human interaction with hazardous phenomena such as earthquakes, storms, and infectious diseases; spatial aspects of the social processes and perceptions creating risk and vulnerability in the environment; local hazards. 2 hrs lec, 2 hrs lab per wk. Field trips are required. Prerequisite: Jr st.

Geography 350. Physical Geography of New Zealand. 3 cr. Examine basic physical environmental processes that form and drive the physical environment of New Zealand and resulting geographic environmental patterns. How human activities affect and are affected by natural systems. Develop geographic skills through lab and field work. May require field trips. Offered only during New Zealand semester abroad. GDR:NS

Geography 352/552. Geomorphology. 3 cr. Characteristics, origin, and development of landforms. 2 hrs lec, 2 hrs lab per wk. Possible field trip(s). May not earn credit in both Geog 352 and Geol 352. Prereq: 101, or Geology 104, or cons instr.

Geography 353/553. Physical Climatology and Meteorology. 3 cr. Radiation and energy balances; composition, characteristics, and circulation of the atmosphere. Introduction to weather map analysis and forecasting. Possible field trip(s). Prereq: 101 or cons instr.

Geography 354/554. Climatology. 3 cr. Examine world climatic patterns, climate classification, air pollution climatology, and global climate change. Possible field trip(s). Prereq: 101 or cons instr.

Geography 358. Biogeography. 3 cr. Examine spatial and temporal patterns of plants, animals, and microbes with emphasis on dynamic relationships between life form, population, and habitat. Significance of biotic distributions on human affairs and human impacts on biosphere locations. 2 hrs lec, 2 hrs lab per wk. Field trip(s) required. Prereq: 101 or Biology 101, or cons instr.

Geography 364/564. Planning Theory and Process. 3 cr. Review of historical development of planning theories as they relate to planning practice in selected cities in the US and the world. Emphasis on the origin and evolution of planning, and key issues that have confronted planning interventionists in developing solutions to fundamental problems of urban areas. Prereq: con instr

Geography 365/565. Tourism Geography. 3 cr. Cultural, economic, physical, and biotic factors affecting the distribution of recreation and tourism resources and participation. Global as well as local case studies and examples employed. Field trip(s) required.

Geography 366/566. Historical Geography. 3 cr. Examine the problems of reconstructing past geographies and analyzing changes of geographic phenomena through time. Includes construction and analysis of historical spatial databases. Field trip(s) required. GDR:SS1

Geography 368/568. Geography of Religion. 3 cr. Historical development and spatial distributions of the major religions of the world. Study the interactions of belief systems with socioeconomic processes in different parts of the world. GDR:SS1

Geography 369/569. Political Geography. 3 cr. Geographical interpretation of selected political areas; the political significance of cultural and physical aspects of such areas. GDR:SS1

Geography 370. Transportation and Logistics. 3 cr. Survey/analyze spatial aspects of transportation and communication systems. Includes evolution of transport systems, network and flow analysis, routing and logistics analysis, and transportation planning and management. Possible field trip(s). Prereq: 110 and Math 355, or cons instr.

Geography 371/571. Gender and Environment. 3 cr. Gendered nature of environmental degradation; feminist theories and gender-sensitive methodologies for the study of and solution to environmental problems. Prereq: 100 or Women's Studies 105 or cons instr. GDR:EL

Geography 372. Industrial Location. 3 cr. Analyze manufacturing activities from a spatial perspective. Topics include theory and practice of industrial location, manufacturing production systems, industrial districts, and local economic development. Possible field trip(s). Prereq: 110 or cons instr.

Geography 373/573. Urban Geography. 3 cr. Physical characteristics, spatial patterns, functions, populations, land use, and livelihood structures of cities. Possible field trip(s). Prereq: 110 or 120, or cons instr. GDR:SS1

Geography 374/574. Rural Geography. 3 cr. The influence of locational characteristics on the social and economic components of the rural environment. Field trip(s) required. GDR:SS1

Geography 376. Statistical and Multimedia Cartography. 3 cr. Statistical manipulation and symbolization of spatial data for map presentation. Acquire and handle quantitative data within a multimedia mapping environment. 2 hrs lec, 3 hrs lab per wk. Prereq: 276 or cons instr.

Geography 377. Remote Sensing I. 3 cr. Characteristics of aerial photographs and digital imagery. Use remote sensing materials to conduct resource inventories, and land use evaluation, and landform analysis. 2 hrs lec, 2 hrs lab per week. May not earn credit in both Geog 377 and Natural Resources 377.

Geography 378. Retail and Service Location. 3 cr. Analyze retail and service activities from a spatial perspective. Location strategies of retail and service firms, site selection, trade area analysis, store and office assessment methods, and local economic development. Possible field trip(s). Prereq: 110 or 373, Math 355, or cons instr.

Geography 379/579. Remote Sensing II. 3 cr. Learn principles of remote sensor technology and apply them to inventory earth resources, detect and monitor pollution, and measure other environmental phenomena. Use visual analysis and computer-assisted digital imaging processing techniques to interpret various types of remote sensor imagery. 2 hrs lec, 2 hrs lab per wk. Possible field trip(s). Prereq: 377 or Natural Resources 377.

Geography 382/582. Dynamic Cartography. 3 cr. Theory and practical applications of interactive mapping and hypermedia presentation. Survey of animated mapping, Web-based cartography, dynamic map displays and associated authoring tools within a multimedia environment. 2 hrs lec, 2 hrs lab per wk. Prereq: 276 or cons of instr.

Geography 386. Map Design and Production. 3 cr. How the graphic elements of a map affect its physical and perceived structure. Graphic communication, design principles, and map production skills. 2 hrs lec, 3 hrs lab per wk. Prereq: 276 or cons instr.

Geography 388/588. Introduction to Urban and Regional Planning. 3 cr. Historical evolution of urban/regional planning. Theories, ideologies, philosophies, and functional areas of planning. Also primary plan implementation tools. May not earn credit in both Geog 388 and NRES 388.

Geography 389/589 (WE). Urban and Regional Planning Analysis. 3 cr. Research methods for urban and regional planning. Design and implementation of citizen surveys. May not earn credit in both Geog 389 and NRES 389. Prereq: 373, 388 or NRES 388, Math 355 or Forestry 321 or Sociology 351, or cons instr.

Geography 390. Applied Statistics in Geography. 3 cr. Survey geographic problems and quantitative problem solving methods; create or extract relevant data sets from published geographic resources; apply, interpret, and present appropriate spatial and nonspatial statistics. Prereq: 276, 279; Math 355 recommended.

Geography 391/591. Special Topics. 1-3 cr. Subtitle will designate topic of geographical interest. May repeat for credit with different subtitle. Possible field trip(s).

Geography 393/593. Field Trip in Geography. 1-3 cr. Observe physical and cultural phenomena; required readings, field notebook and/or report. May repeat for credit with change in locale or topic. May not earn credit in Geog 393 and Geol 393 under same locale or topic. Possible field trip fee. Prereq: Intro level geog course.

Geography 395/595. Directed Study. 1-3 cr. Students may, with cons instr., arrange for directed study of a geographical topic. Prereq: One geog course, and cons chair.

Geography 399/599. Research. 1 to 3 cr. Students may arrange for a special research problem with cons instr. Results will be publicly presented. Prereq: Cons chair.

Geography 471/671. GIS Applications in Sustainability. 3 cr. GIS concepts and applications to support regional and community level sustainability initiatives. Examination of spatial analysis topics and practices including sustainability indicators, resource management, public participation, decision making and effective presentation. 2 hrs lec, 2 hrs lab. Prerequisite: 279, 476/676 or cons instr.

Geography 472/672. GIS Environmental Modeling and Management Techniques. 3 cr. GIS modeling techniques for natural resource managers and environmental scientists, GIS algorithms for recreational management, conservation, habitat suitability, watershed delineation, environmental pollution, land use planning, and natural disasters. 2 hrs lec, 2 hrs lab. Prerequisite: 476/676, 479/679 or cons instr. Recommended: 377/577, 379/579.

Geography 473/673. GIS Applications for Managing Working Lands and Operations. 3 cr. GIS and data to effectively plan and manage agricultural working lands and operations. Analysis of local and regional agricultural patterns and trends, utilization of digital soil databases, assessment of community working lands for informing public policy, effective use of working land assets. 2 hrs lec, 2 hrs lab. Prerequisite: 279 or cons instr.

Geography 476/676. Geographic Information Systems I. 3 cr. Develop, use and maintain a geographic-based spatial information system (GIS) for resource management. Acquire and assess spatial data. Compare raster and vector data models. Computer-based geographic data handling, analysis, interpretation, and display. Cartographic and spatial modeling. 2 hrs lec, 2 hrs lab per wk. Prereq: Any geography, CNR, or environmental science course; Geog 279 recommended.

Geography 477/677. GIS Applications in Local Government. 3 cr.
Administration of land records and emergency management services using GIS technology. Fundamentals of GIS-based network and location analysis in relation to cadastral maps, zoning regulations, health services and emergency service infrastructure. 2 hrs lec, 2 hrs lab per wk. Prereq: 476 or cons instr.

Geography 479/679. Geographic Information Systems II. 3 cr. Intermediate and advanced GIS techniques; integrate medium and large scale digital databases, use rectified aerial and satellite geographic base data. Principles and development of complex environmental and cultural spatial modeling, GIS programming concepts and applications. 2 hrs lec, 2 hrs lab per wk. Prereq: 476; 379 recommended.

Geography 480. Internship in Geography. 1-12 cr. Supervised training program in geography in cooperation with public or private agencies. One credit is at least 60 hrs work. Credits and/or addl requirements set by instr before registration. May repeat once 12 cr max. Prereq: Jr or sr st, 9 cr 300/400 geography courses, and cons intern director.

Geography 481/681. GIS Database Design and Modeling. 3 cr. Effectively construct, integrate, design and implement geodatabases. Examine storage, cataloging, maintenance and use of geospatial data within practical applications. 2 hrs lec, 2 hrs lab per wk. Prereq: 476, 479 or cons instr.

Geography 482/682. GIS Programming and Customization. 3 cr. Customize GIS software for extended functionality and utility of the import, query, and display of geospatial information. Use and survey GIS programming languages to develop spatial applications and geographic models. 2 hrs lec, 2 hrs lab per wk. Prereq: 476, 479 or cons instr.

Geography 483/683. GIS Applications in Emergency Management. 3 cr. Public safety issues and GIS–based response assessment and emergency management. GIS methodologies involving crime analysis, fire response strategies, search and rescue, networked operations, risk assessment, personnel deployment, 911 infrastructure, and homeland security issues. 2 hrs lec, 2 hrs lab. Field trips may be required. 2 hrs lecture, 2 hrs lab. Prereq: 279, 476/676 or cons instr.

Geography 484/684. GIS Applications in Urban and Regional Planning. 3 cr. Use of GIS software and associated techniques within the planning environment. Investigation of GIS techniques used for decision support systems, scenario planning,
3-D visualization, suitability analysis, geographic growth management, public participation and impact assessment for planners. 2 hrs lec, 2 hrs lab. Prereq: 476/676, 479/679 or cons instr. Recommended: 388/588, 477/677.

Geography 485. Practicum in Geography. 1-3 cr. Practical experience in geography under faculty supervision. Proposed practicum requires cons chair. May repeat for 6 cr max. Prereq: Jr st and written cons instr.

Geography 486/686. GIS and GPS Applications in Forestry Management. 3 cr. Design and implementation of silviculture spatial databases using GIS tools. Acquisition and capture of forestry data using global positioning systems (GPS) differential techniques. Use of GIS in forest stewardship assessment, tree stand management and recreational appraisal. Field trips are required. 2 hrs lec, 2 hrs lab. Prereq: 279, 476/676 or cons instr.

Geography 487/687. GIS Web Server Applications and Administration. 3 cr. Formulation and construction of web-based maps, spatial data and geoprocessing models. Examination of relevant properties, functionality, interoperability and geodata services. Basics of GISweb server systems, installation and operations. 2 hrs lec, 2 hrs lab. Prereq: 476/676, 479/679 or cons instr. Recommended: 481/681, 482/682, and working knowledge of computing and programming.

Geography 488/688. Mobile GIS Techniques. 3 cr. Principles and practical applications of using mobile GIS. Planning, creation, implementation of an integrated digital network within a public environment. Mobile project design, development, synchronization, maintenance and deployment. Field trips may be required. 2 hrs lec, 2 hrs lab. Prereq: 476/676, 479/679 or cons instr.

Geography 490. Senior Research. 3 cr. Capstone experience for geography majors. Define, devise, and pursue a plan to address an approved group problem. Communicate contribution for resolution of problem. Written and oral reports; may require field trips. Experience in team field work and projects. Prereq: 280 and sr st.

Geography 491. Senior Thesis. 3 cr. Individualized capstone experience for geography majors seeking graduate or professional study. Define geographical problem, devise and pursue solution. Communicate findings in written paper and oral presentation. Prereq: Cons 2 faculty. May extend over two consecutive semesters. Prereq: 280, dept. GPA 3.50, sr st.

Geography 493/693. Professional Practice/Planning Ethics. 3 cr. Explore ethical issues that arise in professional practice such as conflict of interest, social justice, public responsibility and fairness. Develop skills in identifying ethical challenges in planning practice and how to respond to them without compromising professional integrity. Prereq: 364 or con instr.

Geography 495/695. Advanced Urban and Regional Planning Analysis. 3 cr. Advanced techniques/methods of urban/regional planning. Social and economic analysis. Includes population analysis, income measures, linkages and flow studies, economy composition analysis, economic base analysis, input-output, project evaluation, and geographic information systems applications. Prereq: 279, 389 or NRES 389, or cons instr.

Geography 496/696. Community Development Practices. 3 cr. Processes and interactions between citizens, community officials, and planners in designing, planning, and implementing community development projects. Social and economic development projects and programs. May require field trip(s). Prereq: 373, 388 or NRES 388, or cons instr.

Geography 779. Geographic Techniques for Educators and Professionals. 1-3 cr. Teachers/professionals examine, develop, and apply one or more spatial technique(s). Acquisition/assessment of spatial data, computer-based geographic data handling, aggregation, translation, analysis, interpretation and mapping of geographic information. Possible field trip(s). Subtitle will designate topic.

EL Environmental Literacy
NS Natural Science
NW Non-Western Course
SS Social Science (Category 1 or 2)
WE Writing Emphasis Course

COURSES OF INSTRUCTION – GEOLOGY

Geology 100. Geology and Science. 3 cr. Introduction to scientific inquiry as it applies to understanding human interactions with the physical environment. 2 hrs lec, 2 hrs lab per wk. Group work required; Possible field trip(s). GDR:NS

Geology 104. Physical Geology. 4 cr. Introduction to study of minerals and rocks and processes which act upon and within the earth. 3 hrs lec, 2 hrs lab per wk. Possible field trip(s). GDR:NS

Geology 106. Earth History. 1 cr. Development of the earth through time. Prereq: 104 or con reg.

Geology 198. Reading in the Discipline. 1 cr; pass/fail. Does not apply to geology minor. Prereq: Con reg in another selected geology course.

Geology 200. Mineralogy and Petrology. 4 cr. Origin and classification of common rocks and minerals with emphasis on hand sample identification. Field trip(s) required. Prereq: 104.

Geology 310/510. Sedimentary Geology. 3 cr. Origin, evolution, and classification of sedimentary rocks and surficial deposits; modern and ancient depositional systems, stratigraphic principles; resource significance of sedimentary deposits. Possible field trip(s). Prereq: 104, or cons instr.

Geology 320. Structural Geology. 3 cr. Analysis of rock deformation features such as folds, faults and shear zones, their tectonic significance. 2 hrs lec, 2 hrs lab per wk. Field trip(s) required. Prereq: 104.

Geology 330/530. Environmental Geology. 3 cr. Apply geological principles to understand and solve problems associated with human interaction with the physical environment, including soil and rock mechanics, slope stability, land subsidence, earthquakes, coastal erosion, and resource extraction. 2 hrs lec and 2 hrs lab per wk. Field trip(s) required. Prereq: 104.

Geology 335/535. Climate: Past, Present, and Future. 3 cr. Explore the physical and theoretical underpinnings of climate change science. Field and laboratory methods combined with computer model simulations are used to investigate the geological and biological evidence of past, present and future climate including global warming and its impacts. Field trip(s) required. May not earn credit in both 335/535 and Geography 335/535. Prereq: Geog 101, or Geol 104 and 106, or cons instr.

Geology 352/552. Geomorphology. 3 cr. Characteristics, origin, and development of landforms. 2 hrs lec, 2 hrs lab per wk. Possible field trip(s). May not earn credit in both Geol 352 and Geog 352. Prereq: 104, or Geog 101, or cons instr.

Geology 370/570. Glacial Geology. 3 cr. Origin and development of glacial features and related phenomena over the last three million years. Possible field trip(s). Prereq: 104 or Geog 101.

Geology 383/583. Hydrogeology. 3 cr. Hydrologic budgets, occurrence and movement of groundwater in flow net analysis, well hydraulics and interpretation of aquifer pumping tests, well head protection. 2 hrs lec, 2 hrs lab per week. May not earn credit in both Geology/Water 383. Prereq: 104 or cons instr.

Geology 385/585. Geologic Site Investigations. 2 cr. Site investigation design; drilling, sampling, and well installation; description and classification of rock cores and sediment samples; analysis and interpretation of subsurface geologic data. (II) Prereq: 104, 383 or Water 383, or cons instr.

Geology 391/591. Special Topics. 1-3 cr. Subtitle will designate topic of geological interest. May repeat for credit with different subtitle. Possible field trip(s).

Geology 393/593. Field Trip in Geology. 1-3 cr. Observe geological phenomena; readings, field notebook and/or report. May repeat for credit with change in locale or topic. May not earn credit in Geology 393 and Geography 393 under the same locale or topic. Possible field trip. Prereq: Intro geology course.

Geology 395/595. Directed Study. 1-3 cr. Students may arrange for directed study of a geological topic with cons instr. Prereq: Cons instr, and a 300 level geology course.

Geology 479/679. Contaminant Hydrogeology. 3 cr. Physical and chemical processes affecting behavior and transportation of groundwater contaminants; apply contaminant transportation models; monitor and remediate groundwater contamination. May not earn credit in both Water 479 and Geol 479. Prereq: Water/Geology 383; Mathematics 120; Chemistry 106 or 116; and written cons instr.

Geology 480. Internship in Geology. 1-12 cr. Supervised training program in geology in cooperation with public or private agencies. One cr equals at least 60 hrs work. Credits and/or addl requirements set by instr before registration. May repeat once for 12 cr max. Prereq: Jr or sr st, 9 credits of 300/400 geology courses, and cons intern director.

Geology 485. Practicum in Geology. 1-3 cr. Practical experience in geology under faculty supervision. Proposed practicum requires cons chair. May repeat for 6 cr max. Prereq: Jr st and written cons instr.

Geology 487/687. Groundwater Geochemistry. 3 cr. Factors and processes controlling the chemistry of subsurface waters including mineral solubility, complexation, redox reactions, ion exchange, and absorption; hydrochemical behavior of contaminants. May not earn credit in both Geology 487 and Water 487. Prereq: 104; Chemistry 106 or 116; Water 180; or cons instr.

Geology 495/695. Application of Computer Modeling to Hydrogeology. 3 cr. Introduction to computer modeling; emphasis on modeling theory, groundwater flow and particle tracking models. May not earn credit in both Water 495/Geology 495. Prereq: Water/Geology 383, Math 120, and written cons instr.

Geology 730. Environmental Geology for Educators. 1 cr. Examine effects that earth materials and geologic processes have on humans and society, emphasizing natural geologic hazards. Exposure to resources for teaching environmental geology including the Internet. Prereq: Bachelor's degree.

PART III

STUDENT PLANNING

MAJOR AND MINOR DECLARATION FORM
DEPARTMENT OF GEOGRAPHY/GEOLOGY

Date: _____ ID No._____

Student Name: _____

Geography Major Options:	GIS and Cartographic Option*	_____
	Human Geography Option*	_____
	Physical Environment Option*	_____
	Urban Planning Option*	_____
	Undecided	_____
Geoscience Major:	Environmental Analysis Option	_____
	Earth Systems Science Option*	_____
	Hydrogeology Option	_____
	Undecided	_____
Minor(s), if any:	Geography*	_____
	Geology	_____
	Earth Science*	_____
	Environmental Geography	_____
	GIS and Spatial Analysis	_____

*Students seeking or deleting teacher certification must contact the School of Education.

Departmental Advisor: _____

Major(s) deleting, if any: _____

Minor(s) deleting, if any: _____

OPTIONAL HERITAGE INFORMATION

The Department is responsible for reporting data to Madison assessing the Geography and Geoscience Majors. One critical piece of information relates to ethnicity with particular reference to minority status. The program will be measured in part by the diversity of the students attracted to the Geography and Geoscience Majors.

American Indian/Alaskan Native	☐	Hispanic or Latino	☐
Asian/Pacific Islander	☐	White	☐
Black or African American	☐	Other Heritage	_____

THE DEPARTMENT OF GEOGRAPHY/GEOLOGY REQUIRES STUDENTS TO CONSULT WITH THEIR ADVISOR BEFORE REQUESTING AUTHORIZATION TO REGISTER FOR COURSES.

I have received information pertaining to the Geography major and/or the Geoscience major or the department minors listed above and am responsible for this information and the information printed in the UW-Stevens Point Catalog.

_____
Signature

GIS CERTIFICATE DECLARATION FORM
UWSP GIS CENTER

Date: _____ UWSP Student ID No._____

Student Name: _____

Professional Certificate: Standard _____
Undecided _____

Focal GIS Certificate in:
Cartography _____
Forestry _____
Urban & Regional Planning _____
GIS Programming & Web Development _____
GIS Environmental Management _____
GIS Emergency Management _____

GIS Center Advisor: _____

Certificate(s) deleting, if any: _____

IF APPROPRIATE, PLEASE FILL IN BACKGROUND INFORMATION BELOW:

Undergraduate
Status (Freshman → Senior): _____

Major(s): _____

Minor(s): _____

Graduate Student
Discipline: _____

Professional
Title, Organization/Business: _____

THE DEPARTMENT OF GEOGRAPHY/GEOLOGY REQUIRES STUDENTS TO CONSULT WITH THEIR GIS CENTER ADVISOR BEFORE REQUESTING AUTHORIZATION TO REGISTER FOR COURSES.

I have received information pertaining to the GIS Certificate listed above and am responsible for this information and the information printed in the UW-Stevens Point Catalog.

_____
Signature

PLANNING SHEET – GEOGRAPHY MAJOR
Physical Environment Option
40 Credits

Required Core Courses: 22 credits

Courses	Credits	Date Completed
Geography 101: The Physical Environment	5	
Geography 120: Human Geography	3	
Geography 276: Introduction to Cartography	3	
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 280: Seminar: Geography as a Profession	3	
Geography 390: Applied Statistics in Geography	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* **OR** Geography 490: Senior Research **OR** Geography 491: Senior Thesis *Must be approved as capstone course	3	

Additional Required Courses -- 12 credits from the following:

Courses	Credits	Date Completed
Geography 340: Environmental Degradation **OR** Geography 344: Environmental Hazards	3	
TWO of Geography 352, 353 or 354, or 358: a. Geography 352: Geomorphology b. Geography 353: Physical Climatology and Meteorology **OR** Geography 354: Climatology c. Geography 358: Biogeography	6	
Geography 377: Remote Sensing I **OR** Geography 476: Geographic Information Systems I	3	

SIX additional credits selected from the following:

Courses	Credits	Date Completed
Geography 344: Environmental Hazards	3	
Geography 352: Geomorphology	3	
Geography 353: Physical Climatology and Meteorology	3	
Geography 354: Climatology	3	
Geography 358: Biogeography	3	
Geography 371: Gender and Environment	3	
Geography 377: Remote Sensing I*	3	
Geography 379: Remote Sensing II	3	
Geography 393: Field Trip in Geography (3 credit maximum)**	1-3	
Geography 476: Geographic Information Systems I*	3	
Geology 330: Environmental Geology	3	
Geology 370: Glacial Geology	3	
Geology 393: Field Trip in Geology (3 credit maximum)	1-3	

Recommended Courses:

Courses	Credits	Date Completed
Biology 305: General Ecology	3	
History 280: American Environmental History	3	
Philosophy 380: Environmental Ethics	3	
Political Science 304: Environment Policy	3	
English 248: Introduction to Environmental and Scientific Writing	3	
English 254: Introduction to Technical Writing	3	

* If not taken in fulfillment of required course. **Topic(s) must be relevant to physical geography.

PLANNING SHEET – GEOGRAPHY MAJOR
Geographic Information Science (GIS) and Cartographic Option
40 Credits

Required Core Courses: 22 credits

Courses	Credits	Date Completed
Geography 101: The Physical Environment	5	
Geography 120: Human Geography	3	
Geography 276: Introduction to Cartography	3	
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 280: Seminar: Geography as a Profession	3	
Geography 390: Applied Statistics in Geography	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* **OR** Geography 490: Senior Research **OR** Geography 491: Senior Thesis *Must be approved as capstone course	3	

Additional Required Courses: 21 credits

Courses	Credits	Date Completed
Geography 377: Remote Sensing I	3	
Geography 379: Remote Sensing II	3	
Geography 382: Dynamic Cartography	3	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Geography 376: Statistical and Multimedia Cartography **OR** Geography 386: Map Design and Production	3	
Geography 477: GIS Applications in Local Government **OR** Geography 481: GIS Database Design and Modeling **OR** Geography 482: GIS Programming and Customization	3	

Recommended Courses

Courses	Credits	Date Completed
Geography 376: Map Development and Symbolization* **OR** Geography 386: Map Design and Production*	3	
Geography 477: GIS Applications in Local Government* **OR** Geography 481: GIS Database Design and Modeling* **OR** Geography 482: GIS Programming and Customization*	3	
Web & Digital Media Development 250: Introduction to Digital Media Development	3	
Web & Digital Media Development 307: Multimedia Authoring	3	
Web & Digital Media Development 308: 3-D Computer Graphics	3	
Web & Digital Media Development 310: Digital Image Development	3	
Computer Information Systems 115-116: Introduction to Information Systems and Information Management	3 1	
Computer Information Systems 210: Database Design and Implementation	3	
Computer Information Systems 345: Alternate Programming Language	3 or 4	

*Whichever course was not taken in fulfillment of the required course.

PLANNING SHEET – GEOGRAPHY MAJOR
Human Geography Option
40 Credits

Required Core Courses: 22 credits

Courses	Credits	Date Completed
Geography 101: The Physical Environment	5	
Geography 120: Human Geography	3	
Geography 276: Introduction to Cartography	3	
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 280: Seminar: Geography as a Profession	3	
Geography 390: Applied Statistics in Geography	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* **OR** Geography 490: Senior Research **OR** Geography 491: Senior Thesis *Must be approved as capstone course	3	

Three additional CREDITS selected from the following: 3 credits

Courses	Credits	Date Completed
Geography 366: Historical Geography **OR** Geography 369: Political Geography	3	

Six additional CREDITS selected from the following: 6 credits

Courses	Credits	Date Completed
Geography 366: Historical Geography*	3	
Geography 369: Political Geography*	3	
Geography 373: Urban Geography	3	
Geography 374: Rural Geography	3	

Nine additional CREDITS selected from the following: 9 credits

Courses	Credits	Date Completed
Geography 211: Wisconsin	2 or 3	
Geography 226: United States and Canada	3	
Geography 300: Africa	3	
Geography 301: Middle America	3	
Geography 302: Southwest Pacific	3	
Geography 325: Geography of China	3	
Geography 328: Europe	3	
Geography 329: Environmental Geography of Europe	3	
Geography 365: Tourism Geography	3	
Geography 366: Historical Geography*	3	
Geography 369: Political Geography*	3	
Geography 373: Urban Geography*	3	
Geography 374: Rural Geography	3	
Geography 382: Dynamic Cartography	3	
Geography 391: Special Topics (when offered as a human geography topic)	1-3	
Geography 393: Field Trip in Geography (when offered with a human geography emphasis)	1-3	
Geography 395: Directed Study	1-3	
Geography 399: Research	1-3	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	

PLANNING SHEET – GEOGRAPHY MAJOR
Human Geography Option
40 Credits

Recommended Courses

Courses	Credits	Date Completed
Economics 342: Environmental Economics	3	
Economics 362: Economic Development	3	
Economics 374: Regional Economic Growth	3	
History 280: American Environmental History	3	
History 292: Native American History	3	
History 385: Women, War and Peace	3	
History 393: Wisconsin Indians	3	
Sociology 300: The American Community	3	
Sociology 356: Urban Sociology	3	
Sociology 360: Population Problems	3	
Political Science 315:Minority Group Politics	3	
Political Science 341: Urban Politics	3	

*Whichever course was not taken in fulfillment of the required course.

PLANNING SHEET – GEOGRAPHY MAJOR
Urban Planning Option
43 Credits

Required Core Courses: 22 credits

Course	Credits	Completed
Geography 101: The Physical Environment	5	
Geography 120: Cultural Geography	3	
Geography 276: Introduction to Cartography	3	
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 280: Seminar: Geography as a Profession	3	
Geography 390: Applied Statistics in Geography	3	
Geography 496: Community Development Practices	3	

Required Courses: 15 credits

Course	Credits	Completed
Geography 364: Planning Theory and Process	3	
Geography 373: Urban Geography	3	
Geography 388: Intro to Urban and Regional Planning **OR** Natural Resources 388: Intro to Urban and Regional Planning	3	
Geography 389: Urban & Regional Planning Analysis **OR** Natural Resources 389: Urban & Regional Planning Analysis	3	
Geography 476: Geographic Information Systems I	3	
Geography 493: Professional Practice/Planning Ethics	3	

THREE additional credits selected from the following:

Course	Credits	Completed
Geography 344: Environmental Hazards	3	
Geography 374: Rural Geography	3	
Geography 477: GIS Applications in Local Government	3	
Natural Resources 488: Land Use Plan Implementation	3	
Political Science 341: Urban Politics	3	
Political Science 397: Methods of Policy Analysis	3	
Sociology 365: Social Work with Native American and Other Culturally Diverse Families	3	
Soil 365: Soil Survey Interpretations for Land Use Planning	3	

Recommended Courses for Urban Planning Option Listed on Following Page

PLANNING SHEET – GEOGRAPHY MAJOR (PART II)
Urban Planning Option

Recommended Courses:

Course	Credits	Completed
Economics 311: Public Finance	3	
Economics 362: Economic Development	3	
Economics 374: Regional Economic Growth	3	
Geography 340: Processes of Environmental Degradation	3	
Geography 344: Environmental Hazards	3	
Geography 369: Political Geography	3	
Geography 371: Gender and Environment	3	
Geography 374: Rural Geography	3	
Geography 379: Remote Sensing II	3	`
Geography 477: GIS Applications in Local Government	3	
Geography 479: Geographic Information Systems II	3	
Geography 300: Africa **OR** Geography 327: Asia **OR** Geography 328: Europe **OR** Geography 329: Environmental Geography of Europe	3 3 3 3	
Geology 330: Environmental Geology	3	
Mathematics 355: Elementary Statistical Methods	4	
Natural Resources 340: Basic Concepts of Sustainability	3	
Natural Resources 395: Introduction to Environmental Study	3	
Natural Resources 488: Land Use Plan Implementation*	3	
Sociology 340: Community Research	3	
Sociology 356: Urban Sociology	3	
Sociology 357: Sociology of Planning	3	
Sociology 360: Population Problems	3	
Sociology 365: Social Work with Native American and Other Culturally Diverse Families	3	
Political Science 242: State and Local Government	3	
Political Science 341: Urban Politics	3	
Political Science 356: Government Finance	3	
Political Science 358: Public Budgets	3	
Political Science 397: Methods of Policy Analysis	3	
Soil 365: Soil Survey Interpretations of Land Use Planning*	3	

*If not taken in fulfillment of the three additional required credits.

PLANNING SHEET – TEACHER CERTIFICATION REQUIREMENTS
GEOGRAPHY MAJOR AND MINOR

40 credits - Geography Major
20 credits - Geography Minor

GEOGRAPHY MAJOR

Required Courses for TEACHER CERTIFICATION (20 credits) either AS PART OF OR IN ADDITION TO ONE OF THE OPTIONS in the geography major.

Courses	Credits	Date Completed
Geography 101: Physical Geography	5	
Geography 113: World Regional Geography	3	
Geography 120: Human Geography	3	
Geography 211: Wisconsin	3	
Geography 276: Introduction to Cartography: Map Conceptualization and Development	3	
Geography 280: Seminar: Geography as a Profession	3	
Geography Major: Courses for Specific Option	40	

GEOGRAPHY MINOR

Required Courses for TEACHER CERTIFICATION: 20 credits

Courses	Credits	Date Completed
Geography 101: Physical Geography	5	
Geography 113: World Regional Geography	3	
Geography 120: Human Geography	3	
Geography 211: Wisconsin	3	
Geography 276: Introduction to Cartography: Map Conceptualization and Development	3	
Geography 280: Seminar: Geography as a Profession	3	

NOTE: For teacher certification, the geography major and geography minor are considered a social science program by the Department of Public Instruction.

PLANNING SHEET – GEOGRAPHY MINOR
22 Credits

Required Courses: 8 credits

Courses	Credits	Date Completed
Geography 101: The Physical Environment	5	
Geography 120: Human Geography	3	

At least ONE Course from the following: 3 to 11 credits

Courses	Credits	Date Completed
Geography 110: Global Economic Geography	3	
Geography 113: World Regional Geography	3	
Geography 211: Wisconsin	3	
Geography 226: United States and Canada	3	
Geography 300: Africa	3	
Geography 301: Middle America	3	
Geography 302: Southwest Pacific	3	
Geography 327: Asia	3	
Geography 328: Europe	3	

At least ONE Course from the following: 3 to 11 credits

Courses	Credits	Date Completed
Geography 329: Environmental Geography of Europe	3	
Geography 340: Environmental Degradation	3	
Geography 342: Soils and Society	3	
Geography 344: Environmental Hazards	3	
Geography 369: Political Geography	3	
Geography 370: Transportation and Logistics	3	
Geography 371: Gender and Environment	3	
Geography 372: Industrial Location	3	
Geography 373: Urban Geography	3	
Geography 374: Geography of Agriculture	3	

Additional geography credits to total 22 credits which at least six credits must be 300-level or above.

PLANNING SHEET – ENVIRONMENTAL GEOGRAPHY MINOR*
23 Credits

Required Courses: 17 credits

Courses	Credits	Date Completed
Geography 100: Physical Environment Under Stress	3	
Geography 101: The Physical Environment	5	
Geography 120: Human Geography	3	
Geography 340: Processes of Environmental Degradation	3	
Geography 366: Historical Geography	3	

Physical Environment Option: At least ONE Course from the following or courses approved by advisor and chair: 3 credits

Courses	Credits	Date Completed
Geology 330: Environmental Geology	3	
Geography 344: Environmental Hazards	3	
Geography 354: Climatology	3	
Geography 358: Biogeography	3	

Human Geography Option: At least ONE Course from the following or courses approved by advisor and chair: 3 credits

Courses	Credits	Date Completed
Geography 365:Tourism Geography	3	
Geography 369: Political Geography	3	
Geography 373: Urban Geography	3	
Geography 374: Rural Geography	3	

*Geography majors with a physical environment option may choose the Environmental Geography minor, but must take two additional physical geography courses which do not overlap with the major and minor.

*Geography majors with a human geography option may choose the Environmental Geography minor, but must take two additional human geography courses which do not overlap with the major and minor.

PLANNING SHEET -- GEOSCIENCE MAJOR
Environmental Analysis Option
48 Credits

Required Core Courses: 15 credits

Course	Credits	Date Completed
Geology 104: Physical Geology	4	
Geology 106: Earth History	1	
Geology 200: Mineralogy and Petrology	4	
Geology 310: Sedimentary Geology	3	
Geology 320: Structural Geology	3	

Required Courses: 27 credits

Course	Credits	Date Completed
Geography 101: The Physical Environment	5	
Geography 276: Introduction to Cartography	3	
Geography/Geology 335: Climate: Past, Present, and Future	3	
Geography 377: Remote Sensing I	3	
Geography 379: Remote Sensing II	3	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Math 355: Elementary Statistical Methods	4	

SIX additional credits selected from the following: 6 credits

Course	Credits	Date Completed
Geology/Geography 352: Geomorphology	3	
Geology 330: Environmental Geology	3	
Geology 370: Glacial Geology	3	
Geology 383: Hydrogeology	3	
Geology 393: Field Trip in Geology	1-3	
Geography 340: Processes of Environmental Degradation	3	
Geography 344: Environmental Hazards	3	
Geography 354: Climatology	3	
Geography 376: Statistical and Multimedia Cartography	3	
Geography 382: Dynamic Cartography	3	
Geography 386: Map Design and Production	3	
Geography 390: Applied Statistics in Geography	3	
Soils 364: Soil and Plant Analysis	3	
Soils 365: Soil Survey Interpretations for Land Use Planning	3	
Soils 366: Wetland Soils	1	
Soils 367: Wetland Delineation	1	
Natural Resources 373: Agronomy, Agriculture and Environment	3	
Waste 350: Selected Topics in Soil and Waste Management	1	

PLANNING SHEET – GEOSCIENCE MAJOR
Earth Materials Option
51-56 Credits

Required Core Courses: 15 credits

Course	Credits	Date Completed
Geology 104: Physical Geology	4	
Geology 106: Earth History	1	
Geology 200: Mineralogy and Petrology	4	
Geology 310: Sedimentary Geology	3	
Geology 320: Structural Geology	3	

Required Courses: 26-31 credits

Course	Credits	Date Completed
Geology 383: Hydrogeology **OR** Water 389: Hydrology	3 3	
Natural Resources 251: Introduction to Soils and Water Resources	4	
Soils 362: Soil Genesis and Morphology	3	
Soils 465: Soil Physics **OR** Soils 461: Soil Management for Resource Sustainability	3 3	
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Chemistry 105: Fundamental Chemistry **AND** Chemistry 106: Fundamental Chemistry **OR** Chemistry 117: General Chemistry Principles	5 5 5	

SIX additional credits selected from the following: 6 credits

Course	Credits	Date Completed
Geology 330: Environmental Geology	3	
Geology 370: Glacial Geology	3	
Geology 385: Geologic Site Investigations	2	
Geology 393: Field Trip in Geology	1-3	
Geography 340: Processes of Environmental Degradation	3	
Geography 344: Environmental Hazards	3	
Geography 354: Climatology	3	
Geography 377: Remote Sensing I	3	
Geography 379: Remote Sensing II	3	
Geography/Geology 335: Climate – Past, Present, and Future	3	
Geography/Geology 352: Geomorphology	3	
Water/Geology 487: Groundwater Geochemistry	3	

FOUR additional credits selected from the following: 4 credits

Mathematics 111: Applied Calculus **OR** Mathematics 118: Precalculus Algebra **OR** Mathematics 355: Elementary Statistical Methods	4 4	
Mathematics 355: Elementary Statistical Methods	4	

PLANNING SHEET – GEOSCIENCE MAJOR
Hydrogeology Option
52-62 Credits

Required Core Courses: 15 credits

Course	Credits	Date Completed
Geology 104: Physical Geology	4	
Geology 106: Earth History	1	
Geology 200: Mineralogy and Petrology	4	
Geology 320: Structural Geology	3	
Geology 310: Sedimentary Geology	3	

Required Courses: 37-47 credits

Course	Credits	Date Completed
Geology/Geography 352: Geomorphology	3	
Geology 370: Glacial Geology	3	
Geology 383: Hydrogeology	3	
Geology 487: Groundwater Geochemistry	3	
Geology 393: Field Trip in Geology (1-3 crs) **OR** Geology 385: Geologic Site Investigations **OR** Soils 465: Soil Physics	1-3 2 3	
Geography 279: Fundamentals of GIS	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Chemistry 105: Fundamental Chemistry **AND** Chemistry 106: Fundamental Chemistry **OR** Chemistry 117: General Chemistry Principles	5 5 5	
Mathematics 111: Applied Calculus **OR** Mathematics 118: Precalculus Algebra	4 4	
Physics 201: Applied Principles of Physics I **AND** Physics 202: Applied Principles of Physics II **OR** Physics 203: College Physics II **AND** Physics 204: College Physics II	4 3 5 5	

PLANNING SHEET – GEOSCIENCE MAJOR
Biogeoscience Option
53-58 Credits

Required Core Courses: 15 credits

Course	Credits	Date Completed
Geology 104: Physical Geology	4	
Geology 106: Earth History	1	
Geology 200: Mineralogy and Petrology	4	
Geology 310: Sedimentary Geology	3	
Geology 320: Structural Geology	3	

Required Courses: 20-25 credits

Course	Credits	Date Completed
Biology 101: General Biology **OR** Biology 130: Introduction to Plant Biology **OR** Biology 160: Introduction to Animal Biology	5 5 5	
Chemistry 105: Fundamental Chemistry **AND** Chemistry 106: Fundamental Chemistry **OR** Chemistry 117: General Chemistry Principles	5 5 5	
Geography 279: Fundamentals of GIS	2	
Mathematics 111: Applied Calculus **OR** Mathematics 118: Precalculus Algebra	4 4	

NINE additional credits selected from the following: 9 credits

Course	Credits	Date Completed
Anthropology 311: Human Evolution	3	
Biology 305: General Ecology	3	
Biology 311: General Principles of Organic Evolution	3	
Biology 322: Museum Methods	3	
Biology 323: Paleontology Collecting Field Trip	3	
Biology 332: Paleobotany	3	
Biology 370: Comparative Vertebrate Anatomy	4	
Geography 358: Biogeography	3	

Additional Courses for Bioscience Option Listed on Following Page

PLANNING SHEET – GEOSCIENCE MAJOR (PART II)
Biogeoscience Option

NINE additional credits selected from the following: 9 credits

Course	Credits	Date Completed
Anthropology 311: Human Evolution*	3	
Biology 305: General Ecology*	3	
Biology 311: General Principles of Organic Evolution*	3	
Biology 322: Museum Methods*	3	
Biology 323: Paleontology Collecting Field Trip*	3	
Biology 332: Paleobotany*	3	
Biology 370: Comparative Vertebrate Anatomy*	4	
Biology 399 : Independent Studies (Paleofossil Lab)	1-2	
Biology 498: Selected Topics in Biology (Evolution Lab)	1-3	
Geography/Geology 335: Climate – Past, Present, and Future	3	
Geography/Geology 352: Geomorphology	3	
Geography/Geology 393: Field Trip in Geography/Geology	1-3	
Geography 354: Climatology	3	
Geography 358: Biogeography*	3	
Geology 330: Environmental Geology	3	
Geology 370: Glacial Geology	3	
Geology 383: Hydrogeology	3	
Geology 480: Internship in Geology	1-12	
Geology 485: Practicum in Geology	1-3	
Soils 350: Selected Topics in Soil and Waste Resources	1-3	
Soils 362: Soil Genesis and Morphology	3	

*If not taken to fulfill additional courses listed on previous page.

PLANNING SHEET – GEOLOGY MINOR
22 Credits

Required Core Courses: 18 credits

Courses	Credits	Date Completed
Geology 104: Physical Geology	4	
Geology 106: Earth History	1	
Geology 200: Mineralogy and Petrology	4	
Geology 310: Sedimentary Geology	3	
Geology 320: Structural Geology	3	
Geology/Geography 352: Geomorphology **OR** Geology 370: Glacial Geology	3	

Remaining Credits selected from the following: 4 credits

Courses	Credits	Date Completed
Geology 330: Environmental Geology	3	
Geology 335: Climate: Past, Present and Future	3	
Geology 352: Geomorphology*	3	
Geology 370: Glacial Geology*	3	
Geology 383: Hydrogeology	3	
Geology 391: Special Topics	1-3	
Geology 393: Field Trip in Geology**	1-3	
Geology 395: Directed Study	1-3	
Geology 479: Contaminant Hydrogeology	3	
Geology 487: Groundwater Geochemistry	3	
Geology 495: Application of Computer Modeling to Hydrogeology	3	
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 352: Geomorphology*	3	
Geography 390: Applied Statistics in Geography	3	
Geography 393: Field Trip in Geography**	1-3	
Geography 377: Remote Sensing I **OR** Geography 476: Geographic Information Systems I	3	
Biology 311: General Principles of Organic Evolution	3	

*Whichever course not taken in fulfillment of the required course.
**Maximum of three credits.
***Provided cross-listed with Geology, maximum of three credits.

PLANNING SHEET – EARTH SCIENCE MINOR
22 Credits

Required Courses: 10 credits

Courses	Credits	Date Completed
Geography 101: The Physical Environment	5	
Geology 104: Physical Geology	4	
Geology 106: Earth History	1	

At least ONE COURSE FROM EACH of the following groups: 6-7 credits

Courses	Credits	Date Completed
A. Geography/Geology 352: Geomorphology **OR** Geography 353: Physical Climatology and Meteorology **OR** Geography 354: Climatology	3	
B. Geology 200: Mineralogy and Petrology **OR** Geology 320: Structural Geology **OR** Geology 330: Environmental Geology **OR** Geology 370: Glacial Geology **OR** Geology 383: Hydrogeology	3-4	

Additional Courses: 5 to 6 credits

Courses	Credits	Date Completed
Six additional credits **either** from groups (A) and (B) above, **OR** from the following: Geography 393: Field Trip in Geography* Geography 395: Directed Study** Geology 393: Field Trip in Geology* Geology 395: Directed Study Astronomy 205: The Solar System **AND** Astronomy 206: Stars and Stellar Systems **OR** Astronomy 311: Introduction to Astronomy.	5-6	

*Maximum of three credits
**For topics appropriate to earth science

PLANNING SHEET – TEACHER CERTIFICATION REQUIREMENTS EARTH SCIENCE MINOR
22 Credits

Required Courses

Courses	Credits	Date Completed
Satisfy requirements of the Earth Science Minor listed above including the following courses:		
A. Astronomy 205: The Solar System **AND** Astronomy 206: Stars and Stellar Systems **OR** Astronomy 311: Introduction to Astronomy	3 or 6	
B. At least two field experience credits in: Geography 393: Field Trip in Geography **AND/OR** Geology 393: Field Trip in Geology	2	

PLANNING SHEET – GEOGRAPHIC INFORMATION SYSTEMS AND SPATIAL ANALYSIS (GISSA) MINOR

22 Credits

28 Credits (Geographic Information Science and Cartographic Option)

Required Core Courses: 17 credits

Courses	Credits	Date Completed
Geography 276: Introduction to Cartography	3	
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 377: Remote Sensing I	3	
Geography 379: Remote Sensing II	3	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	

Applied Spatial Statistics Course: 2-3 credits

Course	Credits	Date Completed
A. Geography 376: Statistical and Multimedia Cartography **OR** Geography 390: Applied Statistics in Geography **OR** Wildlife 311: Quantitative Methods for Wildlife and Fisheries Research and Management **OR** Forestry 322: Forest Mensuration **OR** Courses mutually agreed upon by the student's academic Geography/Geology	3 3 2 3	

Additional Courses: 3 credits (Cartography Option: 9 credits)

Courses	Credits	Date Completed
Biology 306: Ecological Methods	1	
Geography 344: Environmental Hazards	3	
Geography 358: Biogeography	3	
Geography 376: Statistical and Multimedia Cartography*	3	
Geography 382: Dynamic Cartography	3	
Geography 386: Map Design and Production	3	
Geography 471: GIS Applications in Sustainability	3	
Geography 472:GIS Environmental Modeling and Management Techniques	3	
Geography 473: GIS Applications for Managing Working Lands and Operations	3	
Geography 480: Internship in Geography	1-12	
Geography 481: GIS Database Design and Modeling	3	
Geography 482: GIS Programming and Customization	3	
Geography 483: GIS Applications in Emergency Management	3	
Geography 484: GIS Applications in Urban and Regional Planning	3	
Geography 485: Practicum in Geography	1-3	
Geography 486: GIS and GPS Applications in Forestry Management	3	
Geography 487: GIS Web Server Applications and Administration	3	
Geography 488: Mobile GIS Techniques	3	

Additional Courses for the Geographic Information Systems and Spatial Analysis (GISSA) Minor Listed on Following Page

PLANING SHEET – GEOGRAPHIC INFORMATION SYSTEMS AND SPATIAL ANALYSIS MINOR (PART II)

Additional Courses: 3 credits (Cartography Option: 9 credits)

Courses	Credits	Date Completed
Geology 330: Environmental Geology	3	
Geology 495: Application of Computer Modeling to Hydrogeology	3	
Forestry 319: Land Surveying	1	
Forestry 320: Field Experiences in Forest Measurement	1	
Forestry 321: Forest Biometry	4	
Forestry 385: Applied Landscape Architecture	2	
Natural Resources 363: Interpretive Signs, Trails, and Waysides	1-2	
Natural Resources 385: Field Techniques in Forestry, Soils, Water and Wildlife	2	
Soils 360: Field Experiences in Soil Inventory Methods	1	
Soils 365: Soil Survey Interpretations for Land Use Planning	3	
Water/Geology 383: Hydrogeology	3	
Wildlife 350: Wildlife Management Techniques	3	
Web and Digital Media Development 110: Introduction to Object-Oriented Computing	2	
Web and Digital Media Development 200: Introduction to Computer Graphics	3	
Web and Digital Media Development 302: Multimedia Authoring	4	
OR Courses mutually agreed upon by the student's academic advisor and the Chair of the Department of Geography/Geology		

*If not applied to spatial statistics requirement

PLANNING SHEET – NATURAL SCIENCE MAJOR
EARTH SCIENCE OPTION

Earth Science Minor – Required Courses: 10 credits

Courses	Credits	Date Completed
Geography 101: The Physical Environment	5	
Geology 104: Physical Geology	4	
Geology 106: Earth History	1	

Earth Science Minor – At least ONE COURSE FROM EACH of the following groups: 6 to 7 credits

Courses	Credits	Date Completed
A. Geography/Geology 352: Geomorphology **OR** Geography 353: Physical Climatology and Meteorology **OR** Geography 354: Climatology	3	
B. Geology 200: Mineralogy and Petrology **OR** Geology 320: Structural Geology **OR** Geology 330: Environmental Geology **OR** Geology 370: Glacial Geology **OR** Geology 383: Hydrogeology	3-4	

Earth Science Minor – Additional Courses: 5 to 6 credits

Courses	Credits	Date Completed
Six additional credits **either** from groups (A) and (B) above, **OR** from the following: Geography 393: Field Trip in Geography* Geography 395: Directed Study** Geology 393: Field Trip in Geology* Geology 395: Directed Study Astronomy 205: The Solar System **AND** Astronomy 206: Stars and Stellar Systems **OR** Astronomy 311: Introduction to Astronomy***	5-6	

*Maximum of three credits
**For topics appropriate to earth science
***May use Astronomy 205 and 206 in replacement of Astronomy 311

Additional Requirements for the Natural Science Major with Earth Science Option
Listed on Following Page

PLANNING SHEET – NATURAL SCIENCE MAJOR WITH EARTH SCIENCE OPTION (PART II)

Additional Required Courses

Courses	Credits	Date Completed
Astronomy 205: The Solar System***	4	
Astronomy 206: Stars and Stellar Systems***	4	
Biology 130: Introduction to Plant Biology	5	
Biology 160: Introduction to Animal Biology	5	
Chemistry 105: Fundamental Chemistry **AND** Chemistry 106: Fundamental Chemistry **OR** Chemistry 117: General Chemistry Principles	5 5 5	
Physics 203: College Physics I **AND** Physics 204: College Physics II **OR** Physics 150: University Physics I **AND** Physics 250: University Physics II **AND** Any Physics courses numbered 300 and above	5 5 5 5	

At least 14 credits must be earned in one of the following areas:

AREA	Credits	Date Completed
Biology	14	
Chemistry	14	
Physics	14	

Required Collateral Course: 4 credits of Math

Course	Credits	Date Completed
Math 111: Applied Calculus **OR**	4	
Math 118: Precalculus Algebra **OR**	4	
Math 119: Precalculus trigonometry **OR**	2	
Math 355: Elementary Statistical Methods	4	

***May be used in the Earth Science Minor in replacement of Astronomy 311 and one elective credit.

PLANNING SHEET – GIS FOCAL CERTIFICATE

Cartography
18 Credits

Required Core Courses: 9 credits

Courses	Credits	Date Completed
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* *Must be approved as capstone course	1	

Additional Required Courses: 9 credits

Courses	Credits	Date Completed
Geography 276: Introduction to Cartography	3	
Geography 376: Statistical and Multimedia Cartography **OR** Geography 386: Map Design and Production	3	
Geography 382: Dynamic Cartography	3	

PLANNING SHEET – GIS FOCAL CERTIFICATE

Forestry
18 Credits

Required Core Courses: 9 credits

Courses	Credits	Date Completed
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* *Must be approved as capstone course	1	

Additional Required Courses: 9 credits

Courses	Credits	Date Completed
Geography 377: Remote Sensing I	3	
Geography 379: Remote Sensing II	3	
Geography 486: GIS and GPS Applications in Forestry Management	3	

PLANNING SHEET – GIS FOCAL CERTIFICATE

Urban and Regional Planning
18 Credits

Required Core Courses: 9 credits

Courses	Credits	Date Completed
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* *Must be approved as capstone course	1	

Additional Required Courses: 9 credits

Courses	Credits	Date Completed
Geography 377: Remote Sensing I	3	
Geography 477: GIS Applications in Local Government	3	
Geography 484: GIS Applications in Urban & Regional Planning	3	

PLANNING SHEET – GIS FOCAL CERTIFICATE

GIS Programming and Web Development
18 Credits

Required Core Courses: 9 credits

Courses	Credits	Date Completed
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* *Must be approved as capstone course	1	

Additional Required Courses: 9 credits

Courses	Credits	Date Completed
Geography 481: GIS Database Design and Modeling	3	
Geography 482: GIS Programming and Customization	3	
Geography 487: GIS Web Server Applications and Administration	3	

PLANNING SHEET – GIS FOCAL CERTIFICATE

GIS Environmental Management
18 Credits

Required Core Courses: 9 credits

Courses	Credits	Date Completed
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* *Must be approved as capstone course	1	

Additional Required Courses: 9 credits

Courses	Credits	Date Completed
Geography 377: Remote Sensing I	3	
Geography 471: GIS Applications in Sustainability	3	
Geography 472: GIS Environmental Modeling & Management Techniques	3	

PLANNING SHEET – GIS FOCAL CERTIFICATE

GIS Emergency Management
18 Credits

Required Core Courses: 9 credits

Courses	Credits	Date Completed
Geography 279: Fundamentals of Geographic Information Systems	2	
Geography 476: Geographic Information Systems I	3	
Geography 479: Geographic Information Systems II	3	
Geography 480: Internship in Geography* **OR** Geography 485: Practicum in Geography* *Must be approved as capstone course	1	

Additional Required Courses: 9 credits

Courses	Credits	Date Completed
Geography 377: Remote Sensing I	3	
Geography 487: GIS Web Server Applications and Administration	3	
Geography 488: Mobile GIS Techniques	3	

GENERAL DEGREE REQUIREMENTS

Students should confer with their advisor and refer to the UWSP catalog to insure that all general degree requirements (GDR) are met. Prior to their final year of studies, students are urged to review their Degree Progress Report and note any GDR deficiencies that need to be resolved before graduation. Students can also schedule an appointment with a Student Status Examiner of Graduation Requirements in the Registration and Records Office (Room 101, Student Services Building) to have their general degree credits evaluated.

GRADUATION

Students should apply for graduation at least one full semester prior to their final term. The application to apply for graduation is available online at http://www.uwsp.edu/reg-rec/gradinfo.aspx. Students should list their major with options noted (i.e., Geography - Physical Environment), as well as any minors.

The Department is responsible for approving geography, geoscience, geology, earth science, and geographic information systems and spatial analysis programs for graduation. The Department also approves the natural science major-earth science option program for graduation. The Registration and Records Office usually forwards application materials to the Department for approval approximately four to six weeks prior to the student's graduation date.

To be eligible for the bachelor's degree, with a geography, geoscience, or natural science major-earth science major, a student must:

- Complete all the general requirements for a degree.
- Earn a cumulative grade point average of 2.00 in all courses attempted at UWSP.
- Earn a minimum 2.00 GPA in all courses required for the geography major, the geoscience major, or the natural science major-earth science option and complete all the requirements for the major.

PART IV

POSTGRADUATE OPPORTUNITIES

EMPLOYMENT OPPORTUNITIES

ENVIRONMENTAL GEOGRAPHY

Environmental Management
Waste Management
Emergency Management
Conservation
Environmental Regulation
Outdoor Recreation Management

Employers

Federal and state government
- Environmental Protection Agency
- Departments of Agriculture
- National Forest Service

Law firms
Real estate developers
Scientific and research groups
Firms specializing in forestry, mining, engineering, environmental issues, waste management, architecture, or surveying.

Strategies

Environmental geographers are concerned with how human beings use the earth. They focus on human impact on the environment.

Learn federal government job application process.
Become skilled in related computer technology.
Courses in biology and chemistry are a must.
Take elective courses in botany, plant science, and wildlife.
For a career in law, you must earn a graduate degree in law.

CULTURAL & HUMAN GEOGRAPHY

Cultural Resources
Historic Preservation
Historical Consultation
Education
Research

Employers

State, Regional, and Local government
Federal government including:
- Central Intelligence Agency
- Defense Mapping Agency
- Bureau of Census
- Department of State
- National Park Service

Peace Corps
Real estate developers
Companies dealing with insurance, transportation, communications, and international trade
Scientific and research groups
Museums

Strategies

Cultural and human geographers study the aspects of geography that relate to different cultures. They especially focus on cultural origins and movement and the cultural characteristics of regions.

Learn federal, state and local government job application process.
Become skilled in related computer technology.
Develop excellent communication and teamwork skills in order to work with historians and archivists in recreating the geography of the past.
Learn how to conduct library research, make field observations, and interpret artifacts.
A good foreign language background is necessary for field observations in other countries.
Develop an open mind towards the language, history, customs, and culture of other countries.

ECONOMIC GEOGRAPHY

Location Scouting
Real Estate Analysis
Transportation
Agricultural Planning
Travel\Tourism Planning

Employers

Federal, state, and local government
Manufacturing, wholesale, and retail firms
Public utilities
Consulting firms
Real estate developers
Banks

Strategies

Economic geographers study the distribution of resources and economic activities within a certain region. They may use this information to advise organizations on where to build new facilities.

Obtain business knowledge through coursework or related work experience.
Learn to see all sides of a problem, including economic, social, political, and environmental.

GEOTECHNIQUES

Cartography
Geographic Information Systems
Remote Sensing

Employers

Federal government agencies
- Departments of Defense, Interior, Commerce, Agriculture, and State
- Defense Mapping
- National Aeronautics and Space Administration
- Central Intelligence Agency

State and regional government
- Departments of Transportation or Agriculture

Private industry including utilities, construction, engineering, energy, environmental planning, and consulting firms
Map publishers
Colleges and Universities

Strategies

Become skilled in related computer technology.
Learn photography skills.
Take courses in surveying and measurements, photogrammetry, technical mathematics, drafting, statistics, optics, remote sensing, art, and graphics.
Seek work-related experience such as internships, and summer or part-time jobs.
Learn federal, state and local government job application process since most of these positions are in government agencies.
Develop excellent communication skills.

SOCIAL AND URBAN

City\Regional Planning
Housing Development
Convention\Tourism
Community Development
Demography
Transportation

Employers

City, county, and regional planning agencies
State government
Federal government
  Agency for International Development
  World Bank
  Department of Housing and Urban Development
Research organizations
Private businesses
Banks
Industrial firms
Public Utilities
Real estate developers

Strategies

Planners ensure that communities develop in an orderly way and that they have the services necessary to support them.

Develop team work skills.
Learn federal, state and local job application process. Local government is a large employer in this area.
Maintain excellent academic undergraduate record.
Obtain master's degree in planning.
Take courses in public administration or public finance.

GEOGRAPHIC EDUCATION

Teaching
Research

Employers

Elementary\secondary schools, public and private Colleges and universities

Strategies

Obtain certification\licensure for public school teaching.
Join National Council for Geographic Education and\or the Association of American Geographers.
Complete a master's degree for community college teaching or a Ph.D. for college/ university teaching and research.
Specialize in an area such as quantitative research techniques, computer mapping, or natural resource management.

PHYSICAL GEOGRAPHY

Biogeography
Natural Hazards
Hydrology
Weather and Climate
Geomorphology

Employers

State and local government
Federal government agencies including:
- US Geological Survey
- National Oceanic and Atmospheric Administration
- Forest Service
- Bureau of Land Management
- The National Resources Conservation Service

TV\Radio stations
Agribusiness corporations
Outdoor recreation companies
Resource management agencies
Research institutes
Insurance companies

Strategies

Physical geographers study earth processes such as climate and weather. They also look at the impact of natural hazards such as hurricanes, tornadoes, and earthquakes.

Take courses in physics and chemistry.
Develop excellent communication skills.
Be willing to relocate to regions that have job availability.

GENERAL INFORMATION

- Bachelor's degree qualifies you for entry-level positions in government and industry.
- Master's degree qualifies you for community college teaching and advancement in industry and government.
- Ph.D. is required for research and teaching positions in colleges and universities and senior positions in government and industry.
- Geography provides a broad foundation for future career endeavors.
- Obtain volunteer, part-time, summer, internship, or co-op experience in your area of interest.
- Join professional organizations such as the American Geography Society or the National Council for Geographic Education.
- Become a member of groups directed toward improvement of natural resources or environment and pollution control.
- Computer knowledge is becoming extremely important in geography. Obtain experience with geographic information systems and computer-aided drafting (CAD).
- Develop strong mathematical and statistical skills.
- Develop skills and interest in mapping, graphics, and charts. An interest in photography may prove beneficial.
- Develop good communication skills.

Prepared by the Career Planning staff of Career Services
University of Tennessee-Knoxville.

CAREERS IN GEOGRAPHY INTERNET SITE

The Association of American Geographers (AAG) maintains an excellent Web site with detailed information relative to careers in geography as well as the discipline of geography. The site is located at:

http://www.aag.org/

CAREERS IN GEOSCIENCES INTERNET SITE

The American Geological Institute's (AGI) Web Site is a valuable resource for students seeking employment opportunities in the geosciences as well as information on the geosciences, environmental legislation and AGI publications and services. The site is located at:

http://www.agiweb.org

EMPLOYMENT RESOURCES INTERNET SITES

There are numerous internet sites that provide geography, geoscience, geology, earth science and GIS employment information. Several of these sites are listed below.

- American Congress on Surveying and Mapping (http://www.acsm.net)
- Careers in Geosciences – American Geological Institute (http://www:agiweb.org/workforce)
- GeoCommunity Career Center (http://careers.geocomm.com/)
- Geography Jobs (http://www.geogjobs.com/)
- GeoSearch (http://www.geosearch.com)
- Geospatial Information and Technology Association (http://gita.org/resources/careercenter.asp)
- GIS and Remote Sensing Searchable Linkbase (http://www.geog.ubc.ca/gislinks/index)
- GIS Jobs (http://www.gisjobs.com/)
- GIS Jobs Clearinghouse (http://www.gjc.org/)
- Job Search and Internship Guide for Geographers – Association of American Geographers (http://www.aag.org/cs/careers)
- University of Manitoba Student Counseling and Career Centre (http://www.umanitoba.ca/student/counselling/WhatCanIDo/geography/index.html)
- University of Wisconsin- Stevens Point GIS Center (http://www.uwsp.edu/geo/giscenter/gisjobs.aspx)
- Wisconsin Land Information Association (http://www.wlia.org/classified.cfm)
- Wisconsin State Cartographer's Office (http://www.sco.wisc.edu/geojobs.html)

In addition to the websites listed above, UWSP's Career Services has the following link on their website.

http://www.uwsp.edu/career/jobSearchInformation/jobSrchByFields/SciJobLinks/GeographyLinks.htm

RELATED EMPLOYMENT RESOURCES INTERNET SITES

Sites that may include geography and geoscience employment information, as well as geology, earth science, and GIS employment information, include the following:

- American Water Resources Association (http://awra.org/careers/)
- Career Builder (http://www.careerbuilder.com/)
- CareerOneStop (http://www.careeronestop.com)
- College Recruiter (http://www.collegerecruiter.com/)
- E Jobs [Environmental Jobs and Careers] (http://www.ecoemploy.com/)
- Environmental Careers Organization (http://www.eco.org/)
- Environmental Protection Agency (http://www.epa.gov/careers/gradopp.html)
- Federal Jobs for College Graduates http://www.magiclink.com/web/jobcofji/fedjobs.htm)
- FlipDog (http://http:www.flipdog.com)
- Geoscientists-in-the-Park Program (http://www2.nature.nps.gov/geology/gip//index.htm)
- Geotimes (http://www/earthmagazine.org/earth/section/classifieds/all)
- Indeed (http://www.indeed.com/?from=ja)
- Job Center of Wisconsin (https://jobcenterofwisconsin.com)
- Land Trust Alliance (http://www.lta.org)
- Monster.com (http://www.monster.com/)
- National Park Service (geoscientists)
- (http://www2.nature.nps.gov/geology/gip//index.cfm)
- NationJob.com (http://www.nationjob.com)
- Research Experiences for Undergraduates (http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5517&from=fund)
- The Nature Conservancy (http://www.nature.org/)
- The Riley Guide (http://www.rileyguide.com/)
- Simply Hired (http://www.simplyhired.com/a/jobs/list/q-geoscience)
- Student Conservation Association (http://www.thesca.org/)
- University of North Texas Career Center (http://careercenter.unt.edu/)
- USA Jobs (http://www.usajobs.gov/)
- Water Resources Jobs (http://careers.awra.org/)
- Wisconsin JobNet (https://jobcenterofwisconsin.com)

PROFESSIONAL ASSOCIATIONS

Several geographical and geological and related professional associations can provide information about the purposes and work of geography, geosciences and related fields, as well as employment opportunities. Some of them also offer membership to students at reduced rates.

American Congress on Surveying and Mapping (www.acsm.net/)
6 Montgomery Village Avenue, Suite 403 Gaithersburg, MD 20879
Telephone: 240-632-9716 Fax: 240-632-1321

American Geographical Society (www.amergeog.org/)
120 Wall Street, Suite 100 New York, New York 10005
Telephone: 212-422-5456 Fax: 212-422-5480

American Geological Institute (www.agiweb.org/)
4220 King Street Alexandria, VA 22302
Telephone: 703-379-2480 Fax: 703-379-7563

American Planning Association (www.planning.org/)
122 S. Michigan Avenue, Suite 1600 Chicago, Illinois 60603
Telephone: 312-431-9100 Fax: 312-431-9985
OR
1776 Massachusetts Avenue, NW Washington, D.C. 20036
Telephone: 202-872-0611 Fax: 202-872-0643

American Society of Photogrammetry and Remote Sensing (www.asprs.org/)
5410 Grosvenor Lane, Suite 210 Bethesda, MD 20814
Telephone: 301-493-0290 Fax: 301-493-0208

Association of Collegiate Schools of Planning (www.acsp.org/)
6311 Mallard Trace Drive Tallahassee, FL 32312
Telephone: 850-385-2054 Fax: 850-385-2084

Association of American Geographers (www.aag.org/)
1710 Sixteenth Street, N.W. Washington, D.C. 20009
Telephone: 202-234-1450 Fax: 202-234-2744

Cartography Specialty Group (www.csun.edu/~hfgeg003/csg/)
[Association of American Geographers Specialty Group]
Cartography Specialty Group Central Office, Dept of Geography, 150 Sierra Hall
California State University, Northridge 18111 Nordhoff Street
Northridge, California 91330
Telephone: 818-677-3532 OR 818-677-3527 Fax: 818-677-2723

Geological Society of America (www.geosociety.org/)
P.O. Box 9140 Boulder, Colorado 80301
Telephone: 303-357-1000 Fax: 303-357-1070

National Council for Geographic Education (www.ncge.org/)
1710 Sixteenth Street, NW Washington, D.C. 20009
Telephone: 202-360-4237 Fax: 202-234-2744

North American Cartographic Information Society (www.nacis.org/)
American Geographical Society Library, P.O. Box 399 Milwaukee, WI 53201
Telephone: 414-229-6282 Fax: 414-229-3624

GRADUATE STUDY

Students contemplating graduate study in geography are advised to review an annual publication from the Association of American Geographers, *Guide to Geography Programs in North America*, which is located in the departmental office. The *Guide* is a valuable reference tool for prospective graduate students. Students interested in graduate study in disciplines related to geography (e.g., urban and regional planning, resource management, or public affairs) are advised to consult their advisor or the department chair. Graduate school brochures (for both geography and other disciplines), posted on the bulletin boards located across the corridor from the departmental office, may also be useful.

Copies of the *Graduate Record Examination (GRE) Information Bulletin* are available from UWSP's Testing Services, Delzell Hall, or from the GRE web page at www.gre.org. The Graduate Record General Exam is a computer-based test and is administered by Testing Services. Registration for the GRE General Exam can be made by calling either Testing Services (346-4472) or the toll-free number at Prometric Candidate Services Call Center (800-473-2255). A valid credit card is required to pay for the testing fee when scheduling the test. If a check or money order will be used to pay the test fee, students need to meet with the staff at Testing Services to arrange their appointment time.

On-line registration is available for those who need to write a GRE Subject Exam. The test registration is confirmed while on line. There also is a registration form available in the *Graduate Record Examination Information Bulletin* which can be used to register for a subject exam.

Applications for graduate admission exams -- GRE, GMAT, LSAT -- also are available from Career Services, Main Building.

SUGGESTED TIMELINE FOR APPLYING TO GRADUATE SCHOOLS

FOUR SEMESTERS PRIOR TO GRADUATION

Identify your skills and relate them to possible career fields.
Define your professional goals and objectives.
Investigate sources of information on graduate programs and assistantships.
Seek out research-related internships or independent study opportunities in your field for your senior year.

THREE SEMESTERS PRIOR TO GRADUATION

Identify specific graduate programs and assistantships you wish to pursue.
Register and prepare for necessary admissions tests (e.g., GRE).

TWO SEMESTERS PRIOR TO GRADUATION

Write universities to request application materials and information on assistantships and grants.
Apply for admittance into graduate school.
Take necessary admissions tests.
Identify and obtain the consent of your references.
Complete applications for assistantships and grants.
Obtain letters of recommendation.
Refine your interviewing skills.

ONE SEMESTER PRIOR TO GRADUATION

Check with universities to be sure your application file is complete (follow up with references if letters are not in).
Follow up on letters and resumes being sent out for assistantships and grants.
Follow up on your status both for admission to the academic program, and in the selection process for assistantships.
Interview.
Choose the offer that you are going to accept.
Notify all institutions that accept you of your choice.
File your Employment Status Report form in the Career Services Office (upon graduation).
Provide the Department of Geography/Geology office or your academic advisor with information relative to your graduate plans (e.g., institution you will attend, area of study).

WHAT EMPLOYERS WANT

When employers recruit candidates for positions within their organizations, they consider a multitude of factors including qualities/skills, preparation, presentation and appearance.

TOP TEN SKILLS/QUALITIES NEEDED[1]

- Communication skills (verbal)
- Strong work ethnic
- Teamwork skills (works well with others)
- Analytical skills
- Initiative
- Problem-solving skills
- Communication skills (written)
- Interpersonal skills (relates well to others)
- Computer skills
- Flexibility/adaptability

SKILLS/COMPETENCIES NEEDED BY YOUNG ADULTS[2]

- Basic skills: writing (spelling, grammar, sentence structure, composition of letters, memos, simple reports), oral and visual communication, summarizing ideas and relevant points clearly and succinctly, and preparing reports.
- Professionalism and maturity: frame realistic salary and job expectations, act professionally in relationships with management and clients, understand job demands, be able to manage time and priorities, and accept feedback for improvement in job performance.
- Interpersonal skills: ability to hold a one-on-one conversation with another adult, ability to work in a team, and ability to establish rapport with clients, co-workers and management.

EMPLOYER ADVICE TO JOB SEEKERS[3]

1. Gain experience (internships, civic engagement, volunteer work, leadership, study abroad, research)
2. Create connections (build professional relationships while still in school)
3. First impressions count (present yourself professionally)
4. Be a professional (in dress, communication and demeanor)
5. Be prepared (do your research on each organization and practice interviewing)
6. Be persistent (it is a tough market and you will have to leverage all the tools available to find that first job)
7. Be open-minded, flexible and realistic.

EMPLOYER ADVICE TO YOUNG PROFESSIONALS STARTING THEIR CAREERS[4]

1. Be a 24/7 learner (demonstrate desire to continue learning, be coachable and open to change.
2. Shelve the technology and build people rapport (understand the value of personal interactions).
3. Act with integrity (be honest, build trust with others, live up to your commitments).
4. Take the initiative through hard work (look at what you can do for the employer rather than vice-versa).
5. Be positive, yet humble (be strong and confident while also asking questions and helping others).

[1]Source: "Job Outlook 2011" - published in November 2010 by the National Association of Colleges & Employers

[2]Source: "It's the Basics, Really! What Trips up College Seniors in the Job Search and Early Career?"
Recruiting Trends Note 2010-11:1 – published in 2010 by the Michigan State University Collegiate Employment Research Institute

[3]Source: "What Employers Want You to Know about Winning in Your Job Search." Recruiting Trends Note
2010-11:2.1 – published in 2010 by the Michigan State University Collegiate Employment Research Institute

4Source: "What Employers Want You to Know about Winning in Your First Job." Recruiting Trends Note
2010-11:2.2 – published in 2010 by the Michigan State University Collegiate Employment Research Institute

(Source: *UW-Stevens Point Career Planning Guide – 2011-2012*)

UWSP CAREER SERVICES

Information on careers and employment opportunities may be obtained through UWSP's Career Services Office (located in the Student Services Center) or through their web site (http://www.uwsp.edu/career). The *"Career Planning Guide 2011-12,"* prepared by the Career Services Office, is an excellent resource to view. The "*Guide"* is accessible online.

Services offered through Career Services include the following:

CAREER EXPLORATION
- Assessment instruments and career counseling
- Career Exploration Portal
- *WISCareers* online career resource
- Follow-up studies of recent UWSP graduates tracking employment/continued education

JOB SEARCH PREPARATION
- Employer research and job search sources
- Resume and correspondence resources
- Interviewing resources including InterviewStream, online practice interview system Geographic relocation resources
- Salary and compensation resources

INTERNSHIPS/PRACTICAL EXPERIENCE AND EMPLOYMENT
- *CareerPoint* online system and other sources of intern, temp/seasonal and career-level job postings
- Job/career fairs at UWSP and elsewhere
- International opportunities and resources including Giong Global online system

GRADUATE/PROFESSIONAL STUDIES
- Program identification and admission requirements
- Study guides and information on graduate admission exams

It is strongly recommended that students attend one of the resume workshops conducted by Mike Pagel of Career Services (note the suggested checklist for career planning on page 111 of this handbook). A schedule of the workshops is posted on the departmental bulletin board.

(Source: Career Services Web Site: http://www.uwsp.edu/career)

SCHEDULE OF FEES
OFFICE OF CAREER SERVICES

Services to students are free (with the exception of nominal fees for assessments) and extend up to a year following graduation.

Assessments:	
Myers-Briggs Type Indicator	$ 2.00
Campbell Interest & Skill Survey	$ 10.00
Holland's Self–Directed Search	$ 4.00

Alumni need to pay for the services they wish to utilize more than a year beyond their UWSP graduation. Services and fees are as follows:

Career Counseling and/or Job Search Assistance	$ 20.00/hour
Assessments:	
Myers-Briggs Type Indicator	$ 2.00*
Campbell Interest & Skill Survey	$ 10.00*
Holland's Self–Directed Search	$ 4.00*
*Plus $20 for meeting with a staff member for interpreting results	
Six-month Subscription to CareerPoint Online System	$ 20.00
Teaching Credential Requests:	$ 4.00/set

Students and alumni may contact the Career Services Office to arrange appointments to meet with a staff member. Walk-in hours are also available on Thursdays between 1:00 P.M. and 4:00 P.M. throughout the academic year. When people contact Career Services to work with a career counselor, they are assigned to a staff member on the basis of their academic major or teaching intent.

Office library resources and computer lab, attendance at group presentations offered each semester and handouts on a variety of career/job search topics are free.

All fees are subject to change.

(Source: Career Services Web Site: http://www.uwsp.edu/career)

CHECKLIST FOR CAREER PLANNING

FRESHMAN YEAR

Familiarize yourself with the Career Services Office and research the Career Exploration Portal website. Learn more about yourself and take advantage of career assessments to identify your values, interests, skills and strengths.

Become active in a club or organization in which you are particularly interested, preferably one that is career-related. Develop interpersonal skills that will help you expand friendships, acquire leadership training, and provide access to organizations that will link your to others. Learn about student organizations at www.uwsp.edu/ centers/sieo/Pages/Involvemet.aspx

Learn how to pursue relevant summer work, volunteer experiences and/or a part-time job that relates to your major or interests. Utilize resources provided by the Student Involvement and Employment Office.

SOPHOMORE YEAR

Declare your academic major if you have not previously done so. If you are still undecided or cannot meet or maintain the academic requirements of your preferred major, explore other options through the Student Academic Advising Center.

Identify at least two career interest areas. Visit the Career Services Office and meet with your career counselor to begin the process of relating your skills, interests and values to your choice of major and future career. Collect data on career options and read specific materials about careers.

Research typical starting salaries for the careers/jobs you hope to pursue and identify the top three geographic areas where you would like to live and work.

Conduct two-three informational interviews in your field(s) of interest and arrange a "job shadowing" experience.

JUNIOR YEAR

Create a profile in *CareerPoint*, the Career Services online system, and use it to search for internships, career events or interviews.

Attend workshops on resumes, interviewing and the job search. Create a resume and have it critiqued by your career counselor. Got to job fairs and take copies of your resume to distribute when you talk with employers.

Start preparing a portfolio or work samples to highlight your experience and skills.

Experience the first of several internships or relevant work experiences for pre-career training – either for pay or for credit – and test out your field of interest.

List at least three people who you can talk to whose jobs are in career areas that you are considering. Identify the type of organization in which you would like to work.

List at least five occupational titles that might be appropriate to your interests and abilities. Identify the level of education and additional skills necessary to attain your employment or other career goals.

SENIOR YEAR

Seek leadership or supervisory opportunities during work experiences or activities. Continue associations with mentors and faculty in your chose academic area(s).

Meet with your career counselor to discuss organizing your job search, revising/updating your resume and cover letter, strategies for negotiating salaries, identifying employers and upcoming job fairs. Use varied resources to identify and pursue jobs.

Upload/update your resume in *CareerPoint* and continue using the system and other sources to search for job opportunities, career events or interviews. Participate in job fairs and on-campus interviews appropriate to your background and interests.

Develop lists of possible contacts for job opportunities or graduate/professional schools and have a system for keeping track of contacts, interviews and other job-search activities.

Send thank-you letters or emails to every person who interviews you.

Notify the Career Services Office when you have found employment. A follow-up study is conducted on first destinations of graduating students

Provide the Department of Geography/Geology office or your academic advisor with information relative to your employment (e.g., job title, name of employer and address).

(Source: *UW-Stevens Point Career Planning Guide – 2011-2012*)

GRADUATE PROFILES

The following profiles represent some of the careers and graduate studies pursued by graduates of the Department of Geography/Geology. Some of these program alumni also maintain contact through Facebook – *UWSP GeoClub*.

PROFESSIONAL CAREERS

John Armbruster (Class of 2003)
GIS Associate
Michael Baker, Jr., Inc.
Reno, Nevada

Melissa Kraemer Badtke (Class of 2002)
GIS/Planning Specialist
East Central Wisconsin Regional Planning Commission
Menasha, Wisconsin

Rod Bassler (Class of 1988)
GIS Coordinator
North Dakota State Water Commission
Bismarck, North Dakota

Brad Bastian (Class of 1997)
GIS Coordinator/Land Information Officer
Outagamie County Planning Department
Appleton, Wisconsin

Luke Behling (Class of 2003)
GIS Specialist
Outagamie County Planning Department
Appleton, Wisconsin

Jameson Belke (Class of 2002)
Arizona Route Inventory GIS Specialist
Bureau of Land Management – Arizona Field Office
Phoenix, Arizona

Jason Bitter (Class of 2001)
Senior Geospatial Analyst
GeoEye
St. Louis, Missouri

Bryan Blum (Class of 2010)
GIS/Land Records Technician
Buffalo County
Alma, Wisconsin

Dan Bowers (Class of 2000)
Assistant Planner
Portage County Planning and Zoning Department
Stevens Point, Wisconsin

Norman Bushor (Class of 1992)
GIS Analyst
Headwaters Resources
Tomahawk, Wisconsin

Jeff Cegielski (Class of 1998)
Director of GIS Recruiting
Millennium Technical Contracting, Inc.
Menomonee Falls, Wisconsin

Steven Cherek (Class of 2005)
GIS Technician
Tippecanoe County Surveyor Office
Lafayette, Indiana

Travis Clemens (Class of 2005)
Government Remote Sensing Analyst and Navigational Analyst
Jeppsen Corporation
Denver, Colorado

Ann Turk Coakley (Class of 1993)
Waste and Materials Management Bureau Director
Wisconsin Department of Natural Resources
Madison, Wisconsin

Justin Conner (Class of 2001)
GIS Specialist
Wood County Planning and Zoning Department
Wisconsin Rapids, Wisconsin

Philip Daley (Class of 2007)
GIS Technician
TechniGraphics (CACI Company)
Wooster, Ohio

Adam Derringer (Class of 2001)
Manager of GIS Services
Mapping Specialists
Madison, Wisconsin

Dana Dierkes (Class of 1989)
Supervisory Park Ranger
Catoctin Mountain Park
Thurmont, Maryland

Dale Drayna (Class of 2000)
Assistant Planner
City of Plainfield
Plainfield, Illinois

Jeff DuMez (Class of 1995)
GIS Coordinator
Brown County Land Information Office
Green Bay, Wisconsin

John DuMez (Class of 1991)
Registered Land Surveyor
Compsite Surveying and Mapping
Hingham, Wisconsin

Sarah Ecke (Class of 2005)
GIS Technician
Xcel Energy, Inc.
Minneapolis, Minnesota

Mat Eddy (Class of 1996)
Land Records Coordinator/Land Information Officer
Monroe County
Sparta, Wisconsin

Clifford Elack (Class of 2005)
Geospatial Analyst
Wiser Company
Murfreesboro, Tennessee

Michael Falkowski (Class of 2000)
Assistant Professor
School of Forest Resources and Environmental Science
Michigan Technological University
Houghton, Michigan

Barbara [Tormohlen] Gibson (Class of 2002)
GIS Coordinator/Land Information Officer
Vilas County Mapping Department
Eagle River, Wisconsin

Brian Giebel (Class of 2002)
Code Enforcement Officer
Green Lake County
Green Lake, Wisconsin

Martin Goettl (Class of 2000)
Land Records Modernization Coordinator
Land Records Department
Trempealeau County
Whitehall, Wisconsin

Nathan Goldberg (Class of 2002)
Planner
Planning and Development Department
Las Vegas, Nevada

Andrew Gould (Class of 2005)
Geospatial Analyst
Aero-Metric, Inc.
Sheboygan, Wisconsin

Shane Graham (Class of 2003)
Associate Planner
Planning and Zoning Department
Waterloo, Iowa

Ian Grasshoff (Class of 2004)
GIS Specialist
Waupaca County Land Information Office
Waupaca, Wisconsin

Matthew Guptail (Class of 2000)
GIS/Planning Technician
North Central Regional Planning Commission
Wausau, Wisconsin

Matthew Halada (Class of 2001)
Program and Planning Analyst
Department of Transportation, District 4
Wisconsin Rapids, Wisconsin

Jonathan Hanes (Class of 2006)
Assistant Professor
Department of Earth, Environmental and Geographical Sciences
Northern Michigan University
Marquette, Michigan

Mark Harris (Class of 1989)
GIS Coordinator/Webmaster
City of Mequon
Mequon, Wisconsin

Gary Hetzer (Class of 1991)
GIS Coordinator
Marathon County Planning Department
Wausau, Wisconsin

Dale Hewitt (Class of 2007)
Survey Crew Chief
Rettler Corporation
Stevens Point, Wisconsin

Jeff Hintz (Class of 2008)
City Planner – City of San Angelo
San Angelo, Texas

Audrey Cox Jensen (Class of 2002)
Addressing Coordinator
Lincoln County
Merrill, Wisconsin

Randall Jerome (Class of 2003)
Senior Agricultural Services Account Manager
WE Energies
Appleton, Wisconsin

Gina John (Class of 2006)
GIS Analyst
USC/Chevron Partner
Bakersfield, California

David Johnson (Class of 1990)
Assistant Planning Director
Outagamie County Planning Department
Appleton, Wisconsin

Dan Jurgella (Class of 2008)
GIS Technician
GIS Department, York Cuo
York County, Virginia

Nicholas Kania (Class of 2004)
Senior GIS Technician
Tier 3, Inc.
Stillwater, Minnesota

Kevin Kapitan (Class of 2009)
GIS Technician
TechniGraphics (CACI Company)
Wooster, Ohio

Michael Kinnick (Class of 2000)
Community Development Planner
Northwest Regional Planning Commission
Spooner, Wisconsin

Timothy Klatt (Class of 2004)
Analytics Analyst
Map Info
Ann Arbor, Michigan

Brian Kowalkowski (Class of 1994)
Community Resource Development Educator, UW-Extension
Menominee County
Keshena, Wisconsin

Brea Lemke (Class of 1999)
City Planner/Zoning Administrator
Department of Planning and Development
Ashland, Wisconsin

Steven Lenaker (Class of 2005)
GIS Coordinator
Central Upper Peninsula Planning and Development Regional Commission
Escanaba, Michigan

Benjamin Leonard (Class of 2007)
Photogrammetry Technician
Continental Mapping
Sun Prairie, Wisconsin

Christopher Lucas (Class of 1994)
Senior Account Manager, State of Wisconsin
Manatron
Antigo, Wisconsin

Kris Lyons (Class of 2002)
GIS/CAD Specialist
Omnni Associates
Appleton, Wisconsin

David Mack (Class of 1988)
Regional Planning Specialist
North Central Regional Planning Commission
Wausau, Wisconsin

Jim Marcoe (Class of 1989)
Project Scientist
National Geospatial Intelligence Agency
Reston, Virginia

Jonathan Mineau (Class of 2010)
GIS Technician
Central Upper Peninsula Planning and Development Regional Commission
Escanaba, Michigan

Lance Musack (Class of 1990)
Surveyor, Engineering Department
City of Stevens Point
Stevens Point, Wisconsin

Nickolas Musson (Class of 2007)
Transportation Planner
East Central Wisconsin Regional Planning Commission
Menash, Wisconsin

Corinna Neeb (Class of 2008)
Information System Technician
Portage County Emergency Management
Stevens Point, Wisconsin

Cynthia Patulski (Class of 2002)
Landscape Design and Construction
Albuquerque, New Mexico

David Poffinbarger (Class of 1996)
GIS Coordinator
Shawano County Technology Services
Shawano, Wisconsin

Douglas Prigge (Class of 1993)
Land Information Officer
Vilas County
Eagle River, Wisconsin

Andrew Ratzlaff (Class of 1986)
GIS Systems Engineer
Intergraph Corporation
Appleton, Wisconsin

Shawn Retherford (Class of 2001)
Field Technician
Giles Engineering Associates
Waukesha, Wisconsin

Eric Reible (Class of 2007)
Photogrammetry Technician
Continental Mapping
Sun Prairie, Wisconsin

Benny Rockweiler (Class of 2009)
GIS Technician
TechniGraphics (CACI Company)
Wooster, Ohio

Andrew Rooyakkers (Class of 2008)
GIS Technician
WE Energies
Milwaukee, WIsconsin

Shawn Rude (Class of 2000)
High School Social Science Teacher
New Holstein, Wisconsin

Brett Erdmann Runge (Class of 1997)
GIS Analyst
Kadrmas, Lee and Jackson
Rapid City, South Dakota

Michael Schiedermayer (Class of 1993)
Village and Zoning Administrator
Village of Egg Harbor
Egg Harbor, Wisconsin

Jean Schultz (Class of 2005)
Environmental Scientist
Giles Engineering Associates
Waukesha, Wisconsin

Jordan Scupien (Class of 2008)
Regional Planner
Regional Planning Commission-Area 15
Ottumwa, Iowa

William Shockley (Class of 1998)
GIS Technician
Winnebago County Land and Water Conservation Department
Oshkosh, Wisconsin

Rodney Sutter (Class of 1997)
GIS Technician
Portage County Planning and Zoning Department
Stevens Point, Wisconsin

Jay Tappen (Class of 1987)
Senior Planner
West Central Wisconsin Regional Planning Commission
Eau Claire, Wisconsin

Thomas Tews (Class of 1980)
Geography Librarian
UW-Madison Geography Library
Madison, Wisconsin

Michael Tanner (Class of 2011)
Geological Field Technician
Green Diamond Resource Company
Korbel, California

Eric Van Handel (Class of 2007)
Photogrammetry Supervisor
Continental Mapping
Sun Prairie, Wisconsin

Eric Venden (Class of 1993)
GIS Specialist
Village of Gurnee
Gurnee, Illinois

Ryan Waldkirch (Class of 1996)
GIS Coordinator
City of Ankeny
Ankey, Iowa

Gregory Walters (Class of 1999)
GIS Technician
City of West Bend
West Bend, Wisconsin

Jason Warzinik (Class of 1999)
Program Manager
Boone County
Columbia, Missouri

John Whitstone (Class of 1986)
Environmental Project Designer
Foth and Van Dyke Engineering
Green Bay, Wisconsin

Ann Zdroik (Class of 2003)
GIS Specialist
Fond du Lac County
Fond du Lac, Wisconsin

GRADUATE STUDIES

Angela Eichler (Class of 2010)
Department of Geology
University of Kansas
Lawrence, Kansas

Bradly Evraets (Class of 2009)
Department of Geological Sciences
University of Idaho
Moscow, Idaho

Dean Forss (Class of 2006)
College of Natural Resources
University of Wisconsin-Stevens Point
Stevens Point, Wisconsin

Daryn Hardwick (Class of 2011)
Department of Geography, Planning and Community Development
St. Cloud State University
St. Cloud, Minnesota

Anna Hess (Class of 2007)
[M.S., 2009 – University of Wisconsin-Stevens Point]
School of Forest Resources and Environmental Science – Ph.D. Program
Michigan Technological University
Houghton, Michigan

Jeremy Jenkins (Class of 2009)
Department of Geography
University of Idaho
Moscow, Idaho

Nicole Rumpca (Class of 2011)
University of Wollongong
Australia