

PSYC 203 Psychology of Adolescence (4 credits)  
 PSYC 204 The Psychology of Adulthood and Aging (4 credits)  
 PSYC 288 Psychology of Marriage and the Family (4 credits)  
 SOWK 210 Relationship, Intimacy, and Sexuality (4 credits)  
 SOWK 441 Family Resiliency and Diversity (4 credits)  
 SOCI 304 Adolescence in Society (4 credits)  
 SOCI 321 Marriage and the Family (4 credits)  
 SOCI 354 Sex in Society (4 credits)  
 THEO 315 Christian Marriage (4 credits)

**FAST 295, 296 Topics (2 credits)**

**FAST 297, 298 Topics (4 credits)**

The subject matter of these courses will vary from year to year, but will not duplicate existing courses. Descriptions of these courses are available in the Searchable Class Schedule on Murphy Online, <https://banner.stthomas.edu/pls/banner/prod/bwckschd>.

**FAST 400 Seminar in Family Studies (4 credits)**

This advanced capstone course for the Family Studies minor is a multidisciplinary seminar taken after the learner has completed at least four courses in the Family Studies minor. The course will incorporate a variety of methods, theories, and pedagogies drawn from the family studies paradigm. A substantial portion of the course will be devoted to student research and presentations that incorporate family studies scholarship.

Prerequisite: PSYC 288 or SOCI 321 and three other courses from the list of approved courses for the minor.

**FAST 495, 496 Individual Study (2 credits)**

**FAST 497, 498 Individual Study (4 credits)**

See the description of these courses at the beginning of the “Curricula” section of this catalog.

### **Finance**

See Business Administration

### **French (FREN)**

See Modern and Classical Languages

### **Geography (GEOG)**

College of Arts and Sciences, Department of Geography  
 John Roach Center for the Liberal Arts (JRC) 432, (651) 962-5569  
 Kelley (Chair), Hansen, Lorah, Slaats, Werner

The Department of Geography offers a major and minor in geography, as well as a geographic information systems (GIS) minor (for non-geography majors) and a concentration area in GIS for majors. The GIS minor is well-adapted to majors in the physical and social sciences and complements studies in education, marketing, real estate, and entrepreneurship.

The department emphasizes GIS laboratory work, internships, collaborative faculty-student research and service learning to give our students a solid foundation in geographic principles and techniques, as well as an appreciation for the diversity of people and places. It makes extensive use of computer skills to explore a wide range of topics, from regional studies to remote sensing.

With foundations in both the natural and social sciences, geography prepares students for a wide range of careers in government, the private sector, and education. Geographers create digital maps, perform location analyses for retail and service stores, analyze land use and urban planning, work with census data, teach, and hold a wide variety of other jobs. Graduates also pursue advanced degrees in geography, business, urban and regional planning, community development, GIS, and natural resource management.

#### **Major in Geography**

GEOG 111 Human Geography (4 credits)  
 GEOG 112 Landscapes: Physical Systems (4 credits)  
 GEOG 113 World Geography (4 credits)  
 GEOG 480 Seminar in Geography (4 credits)

*Plus eight credits in methods courses:*

GEOG 221 Computer Skills in Geography (4 credits)  
 GEOG 223 Remote Sensing (4 credits)  
 GEOG 321 Geographic Information Systems (4 credits)  
 GEOG 322 Geographical Analysis (4 credits)  
 GEOG 421 Applied Geographic Information Systems (4 credits)

## Geography

*Plus four credits in a topical course:*

GEOG 230 Weather and Climate (4 credits)  
 GEOG 231 Global Migrations (4 credits)  
 GEOG 330 Geography for Business and Planning (4 credits)  
 GEOG 331 Conservation Geography (4 credits)  
 GEOG 430 Urban Geography (4 credits)

*Plus four credits in a regional course:*

GEOG 241 Geography of Minnesota (4 credits)  
 GEOG 298 Special Topics in Geography (Africa, Latin America, etc.) (4 credits each)  
 GEOG 340 Geography of the U.S. and Canada (4 credits)  
 GEOG 384 Field Study in Geography (4 credits)

*Plus:*

Eight elective geography credits

Note: At least twelve of the credits used to fulfill the major must be at the 300-level or above.

### **Major in Geography - Geographic Information Systems (GIS)**

GEOG 111 Human Geography (4 credits)  
 GEOG 112 Landscapes: Physical Systems (4 credits)  
 GEOG 113 World Geography (4 credits)  
 GEOG 221 Computer Skills in Geography (4 credits)  
 GEOG 321 Geographic Information Systems (4 credits)  
 GEOG 421 Applied Geographic Information Systems (4 credits)  
 GEOG 422 GIS Customization and Programming (4 credits)  
 GEOG 480 Seminar in Geography (4 credits)

*Plus eight credits from the following methods courses:*

GEOG 223 Remote Sensing (4 credits)  
 GEOG 322 Geographical Analysis (4 credits)  
 GEOG 330 Geography for Business and Planning (4 credits)  
 GEOG 331 Conservation Geography (4 credits)  
 GEOG 478 Experiential Learning (4 credits) *or* GEOG 494 Research (4 credits)

*Plus:*

IDTH 220 Statistics I (4 credits)

### **Minor in Geography**

Eight credits in core courses  
 Eight credits in methods courses  
 Eight elective geography credits

### **Minor in Geographic Information Systems (GIS)**

This minor is only available to non-geography majors.  
 GEOG 221 Computer Skills in Geography (4 credits)  
 GEOG 321 Geographic Information Systems (4 credits)  
 GEOG 421 Applied Geographic Information Systems (4 credits)

*Plus eight credits from the following methods courses:*

GEOG 223 Remote Sensing (4 credits)  
 GEOG 322 Geographical Analysis (4 credits)  
 GEOG 330 Geography for Business and Planning (4 credits)  
 GEOG 331 Conservation Geography (4 credits)  
 GEOG 422 GIS Customization and Programming (4 credits)  
 GEOG 478 Experiential Learning (4 credits) *or* GEOG 494 Research (4 credits)

### **Teacher Licensure**

Elementary Education with a Specialty in Social Studies (5-8)  
 Co-major in Social Studies (5-12) and a Co-major in Secondary Education  
*See Education*

### **GEOG 111 Human Geography (4 credits)**

This course explores the effects of social, economic, environmental, political, and demographic change from a geographic perspective. It introduces students to a broad range of topics, including the effects of population growth, human impact on the environment, economic development, and globalization. Offered every semester. This course fulfills the Social Analysis and Human Diversity requirements in the core curriculum.

**GEOG 112 Landscapes: Physical Systems (4 credits)**

This course asks why the natural environment looks and acts the way it does and addresses the interrelationships between climate, soils, water, landforms, and the biosphere. The emphasis of the course is on natural processes with some discussion of how humans interact with their surroundings. Exercises from a lab manual written specifically for this course provide hands-on experiences through inquiry-based learning and GIS. This course fulfills the second-level Computer Competency requirement in the core curriculum.

**GEOG 113 World Geography (4 credits)**

A country-by-country study of the world. The goal of this course is to emphasize whatever best explains the character of each country. This may be population, economics, resources, or any aspect of nature or humanity that gives an insightful understanding of each country. Offered every semester. This course fulfills the Social Analysis and Human Diversity requirements in the core curriculum.

**GEOG 221 Computer Skills in Geography (4 credits)**

A course with an emphasis on useful computing, especially computer-generated maps. Topics include the basic operation of a computer, editors and word processing, spreadsheets, databases, graphics, thematic maps, map design, and cartography. An applications-oriented course that teaches the use of ArcGIS. Offered every semester. This course fulfills the second-level Computer Competency requirement in the core curriculum.

**GEOG 223 Remote Sensing (4 credits)**

The principles and techniques of remotely sensed data are presented including photographic and digital sensing. The applicability of these techniques to land use analysis and environmental studies will be emphasized. Students will become familiar with aerial photography and digital imagery interpretation through inquiry-based learning and GIS. This course fulfills the second-level Computer Competency requirement in the core curriculum. Offered alternate years.

**GEOG 230 Weather and Climate (4 credits)**

The causes and consequences of weather and climate, from global-scale processes of climate dynamics, the greenhouse effect and El Niño to regional and local-scale processes of fronts, thunderstorms, hurricanes and tornadoes. Students are introduced to weather map analysis and simple forecasting and observational techniques.

**GEOG 231 Global Migrations (4 credits)**

A broad study of the history of human migrations from the earliest to modern times, and an examination of migration issues, such as why people migrate, where they come from and where they go. Part of the course will focus on the experiences of local immigrant groups: Somali, Hmong, Latino, and others.

**GEOG 241 Geography of Minnesota (4 credits)**

Minnesota is a land rich with diversity. In this course, students will explore the state's people, landscapes, natural resources, rural issues, economic opportunities, and many other aspects of Minnesota. The course will examine regional and topical issues to develop an understanding of what makes Minnesota unique. This will be accomplished through class discussions, hands-on activities, and readings.

**GEOG 295, 296 Topics (2 credits)****GEOG 297, 298 Topics (4 credits)**

The subject matter of these courses will vary from year to year, but will not duplicate existing courses. Descriptions of these courses are available in the Searchable Class Schedule on Murphy Online,

<https://banner.stthomas.edu/pls/banner/prod/bwckschd>.

**GEOG 321 Geographic Information Systems (4 credits)**

A sequel to GEOG 221, the theme of this course is how to perform data analysis using Geographic Information Systems. Specific topics include spatial database operations, buffers, map overlay and address matching. The course illustrates the principles of Geographic Information Systems using a variety of real-world applications from demography to environmental studies. This course fulfills the second-level Computer Competency requirement in the core curriculum. Usually offered spring semester.

Prerequisite: A minimum grade of C- in GEOG 221 or consent of instructor

**GEOG 322 Geographical Analysis (4 credits)**

This course uses quantitative methods to explore questions of geographic concern. It focuses on collecting, organizing, analyzing and presenting spatial data. Statistical methods are applied in a real-world context - in the spheres of population, production, pollution, and climate change. This course fulfills the second-level Computer Competency requirement in the core curriculum. Offered alternate years.

Prerequisite: A minimum grade of C- in GEOG 221 or consent of instructor

**GEOG 330 Geography for Business and Planning (4 credits)**

Geographic techniques for business and planning applications include demographic analysis of customer characteristics, consumer's geographic behavior, trade areas, patterns of retailing, store location problems, site appraisals, optimal routing, and marketing.

## Geography

### GEOG 331 Conservation Geography (4 credits)

This course uses basic Geographic Information Systems (GIS) to study a wide range of conservation issues. GIS is ideal platform for exploring the relationships between the economic, political and environmental processes shaping our landscapes. Typical class projects include locating the best lands in Minnesota for carbon sequestration projects and helping the Minnesota Nature Conservancy target valuable forest habitat for conservation purchases.

Prerequisite: A minimum grade of C- in GEOG 221 or consent of instructor

### GEOG 340 Geography of the U.S. and Canada (4 credits)

What does the notion of “America” mean? How is this different from other global regions? This course examines the historical creation and expansion of North America from European, African and Asian influences. It then explores the contemporary geography of the continent: different cultural regions, economic characteristics, political variations, and places both special and commonplace that help define the North American experience. Usually offered alternate years.

### GEOG 384 Field Study in Geography (4 credits)

A geographic analysis through field experience. Includes study-abroad courses.

Prerequisite: consent of instructor

### GEOG 421 Applied Geographic Information Systems (4 credits)

A sequel to GEOG 321, this project-based course is designed around individual student interests to utilize advanced ArcGIS functions and analysis. Principles of geographic information systems will be implemented in a wide variety of applications. This course fulfills the second-level Computer Competency requirement in the core curriculum. Usually offered fall semester.

Prerequisite: GEOG 321 or consent of the instructor

### GEOG 422 GIS Customization/Programming (4 credits)

This course is an introduction to customization and programming based on Python for Geoprocessing in ArcGIS, and is designed for geography students. Basic concepts of object-oriented programming and scripting will be presented. Students will develop skills in customization techniques to explore, manipulate, and model spatial data using the Geoprocessor methods.

Prerequisite: Enrollment in the GIS program and a minimum grade of C- in GEOG 321, or consent of instructor

### GEOG 430 Urban Geography (4 credits)

This course will focus on themes in the development of contemporary cities with special attention to patterns and trends within the Twin Cities metropolitan area e.g. ethnicity, housing, transportation, historical evolution, and urban growth. Usually offered alternate years.

Prerequisite: GEOG 111 or 113 or consent of instructor

### GEOG 475, 476 Experiential Learning (2 credits)

### GEOG 477, 478 Experiential Learning (4 credits)

See the description of these courses at the beginning of the “Curricula” section of this catalog.

### GEOG 480 Seminar in Geography (4 credits)

The seminar explores the nature of geography as a discipline. The areas to be covered: history of geographic thought, the position of geography relative to the arts and sciences, different ways of interpreting geographical phenomena, and geography as a vocational and academic career. Research projects will cover these themes and be tailored to the student’s interests. Usually offered alternate years.

Prerequisites: four geography courses, including one methods course

### GEOG 481 Advanced Field Study in Geography (4 credits)

A geographic analysis through field experience. Designed for advanced students in geography. Includes study-abroad courses.

Prerequisite: consent of instructor

### GEOG 483, 484 Seminar (2 credits)

### GEOG 485, 486 Seminar (4 credits)

See the description of these courses at the beginning of the “Curricula” section of this catalog.

### GEOG 487, 488 Topics (2 credits)

### GEOG 489, 490 Topics (4 credits)

The subject matter of these courses will vary from year to year, but will not duplicate existing courses. Descriptions of these courses are available in the Searchable Class Schedule on Murphy Online,

<https://banner.stthomas.edu/pls/banner/prod/bwckschd>.

### GEOG 491, 492 Research (2 credits)

### GEOG 493, 494 Research (4 credits)

See the description of these courses at the beginning of the “Curricula” section of this catalog.

GEOG 495, 496 Individual Study (2 credits)

GEOG 497, 498 Individual Study (4 credits)

See the description of these courses at the beginning of the “Curricula” section of this catalog.

## Geology (GEOL)

College of Arts and Sciences, Department of Geology

Owens Science Hall (OWS) 153, (651) 962-5241

Lamb (chair), Hickson, McGuire, Theissen

Geologists study the Earth, not as a static lump of rock, but as a dynamic, changing system with a long, deep, and rich history. The science of geology focuses on the processes that have sculpted and continue to shape the planet and its life. The Department of Geology seeks to provide a solid foundation in the Earth sciences for its majors, preparing them for a variety of career paths.

The geology curriculum has been designed to provide students with a solid core, but with sufficient flexibility to allow students with particular interests to pursue a more customized program. At the heart of this program is the field laboratory experience, a fundamental and basic component of a St. Thomas geoscience degree. Department faculty emphasize the fact that geology must be learned in the field and as a result offer field laboratory experiences in all courses that extend from a short afternoon trip to a multi-week field course on field methods and regional geology. Majors will visit many of the geologically significant localities throughout the upper Midwest as part of their program.

### Major in Geology (B.A.)

*Four credits from the following:*

GEOL 110 Geology of the National Parks (4 credits)

GEOL 111 Introductory Physical Geology (4 credits)

GEOL 113 The Earth's Record of Climate (4 credits)

GEOL 114 The Science of Natural Disasters (4 credits)

GEOL 115 Environmental Geology (4 credits)

*Plus:*

GEOL 211 Earth Materials (4 credits) *or* GEOL 310 Environmental Geochemistry (4 credits)

GEOL 260 Regional Geology and Geological Field Methods (4 credits)

GEOL 320 Sedimentology and Stratigraphy (4 credits)

GEOL 340 Fundamentals of the Lithosphere I (Petrology) (4 credits)

GEOL 360 Fundamentals of the Lithosphere II (Structural Geology) (4 credits)

GEOL 430 Advanced Earth History (4 credits)

*Plus twelve credits from the following (four credits of which must be at the 400-level):*

GEOL 130 Earth History (4 credits)

GEOL 211 Earth Materials (if not chosen above) (4 credits)

GEOL 220 Oceanography (4 credits)

GEOL 252 Earth Surface Processes and Geomorphology (4 credits)

GEOL 310 Environmental Geochemistry (4 credits) (if not chosen above)

GEOL 410 Hydrogeology (4 credits)

GEOL 460 Advanced Field Methods (4 credits)

GEOL 494 Research (4 credits)

*Note:* GEOG 321 Geographic Information Systems and geology courses offered at Macalester College may fulfill one of these courses with permission of chair

### Allied requirements

MATH 113 Calculus I (4 credits)

*or*

MATH 108 Calculus with Review I (4 credits) *and* MATH 109 Calculus with Review II (4 credits)

*Plus one of the following sequences:*

CHEM 111 General Chemistry I (4 credits) *and* CHEM 112 General Chemistry II (4 credits)

PHYS 111 Introduction to Classical Physics I (4 credits) *and* PHYS 112 Introduction to Classical Physics II (4 credits)

CHEM 111 General Chemistry I (4 credits) *and* PHYS 111 Introduction to Classical Physics I (4 credits)

*For students wishing to pursue careers in paleontology, geobiology, or geomicrobiology:*

BIOL 201 Diversity and Adaptation (4 credits) *and* BIOL 202 Genetics and Population (4 credits)

Biology may be substituted for one of the CHEM/PHYS sequences with permission of chair

*Strongly recommended for students considering graduate study:*

additional courses in the allied sciences and mathematics