

Geography and Geographic Information Science

M.S. in Geography (<http://und-public.courseleaf.com/graduateacademicinformation/departmentalcoursesprograms/geography/geog-ms>)

M.A. in Geography (<http://und-public.courseleaf.com/graduateacademicinformation/departmentalcoursesprograms/geography/geog-ma>)

Certificate in Geographic Information Science (GISc)

The Geography department offers a graduate certificate in Geographic Information Science (GISc). GISc is the foundation of Geographic Information Systems (GIS), which integrate spatial data sets in the form of digital maps, digital aerial photos, satellite imagery, and global positioning system (GPS) coordinates. The goal of GISc is to model landscapes digitally and to enable the characterization of spatial and temporal processes.

Certificate students must be admitted to UND as either full or part-time graduate students. Application for admission must be made to the UND School of Graduate Studies. The certificate is designed to serve:

1. non-geography graduate students currently pursuing a graduate degree from UND, and
2. non-degree-seeking professionals already holding a graduate and/or baccalaureate degree who seek to "re-tool."

The courses taken in a previously completed GISc certificate program may be applied to a Master's degree in Geography.

Admission Requirements

1. A baccalaureate degree from an accredited university.
2. A GPA of at least 2.75 in all undergraduate work.

Certificate Requirements

Successful completion of the 12-credit GISc Certificate requires the following:

1. Completion of the nine credits of core courses (see below).
2. Completion of at least three credit hours of elective courses (see below).
3. A minimum grade point average of 3.00.
4. Completion time of no more than five years.

5. Required Core Courses

GEOG 471 & 471L	Cartography and Visualization and Cartography and Visualization Laboratory	3
GEOG 474 & 474L	Introduction to Geographic Information Systems (GIS) and GIS Laboratory	3
GEOG 574	Advanced Techniques in Geographic Information Systems	3

Elective Courses

Select one of the following:		
GEOG 377 & 377L	Quantitative Applications in Geography and Spatial Analysis Laboratory	3
GEOG 475	Digital Image Processing	
GEOG 476	Selected Topics in Geographic Information Systems	
GEOG 575	Seminar in Remote Sensing	
GEOG 591	Directed Study in Geographical Problems	

Total Credits 12

Courses

GEOG 500. Graduate Studies in Geography. 1 Credit.

An overview of contemporary research in geography. Includes a field trip and discussions on the differences between graduate and undergraduate education, as well as strategies for successful completion of a graduate degree.

GEOG 501. Geographic Thought Through Time. 2 Credits.

Required of all graduate students. A scholarly examination of the scope and content of geography from its inception to the present.

GEOG 521. Advanced Physical Geography. 3 Credits.

An investigation of an advanced topic in physical geography. May be repeated if a different topic is examined. Prerequisite: Instructor consent. Repeatable.

GEOG 537. Graduate Cooperative Education. 1-3 Credits.

Practical experience of applying advanced concepts of geography. Experience will vary from student to student and must be coordinated with co-op host. Prerequisites: MS/MA students must have minimum of 12 graduate credits and permission of department chair or co-op coordinator.

GEOG 551. Advanced Human Geography. 3 Credits.

An investigation of an advanced topic in human geography. May be repeated if a different topic is examined. Prerequisite: Instructor consent. Repeatable.

GEOG 574. Advanced Techniques in Geographic Information Systems. 3 Credits.

An advanced course designed to extend GIS knowledge and experience and to prepare students to become effective GIS analysts. The course follows a hands-on, problem-solving approach that integrates the interests and analytical needs to participating students. Prerequisite: GEOG 474 or an equivalent approved by the department.

GEOG 575. Seminar in Remote Sensing. 3 Credits.

A seminar in the analysis of remote sensing techniques as applied to contemporary research problems in geography. Prerequisite: GEOG 475 or consent of instructor.

GEOG 576. Field Methods and Analysis in Geography. 3 Credits.

An advanced, intensive approach to the measuring and mapping of cultural and physical features of the earth in the field. Familiarization with the practical problems involved in data collection techniques in rural as well as urban areas and transfer of the pattern of phenomena of an area to a scale suitable for mapping.

GEOG 578. Geographic Research and Writing. 3 Credits.

Required of all graduate students. Orientation to methods of research and communication in geography. Emphasis upon research design, identification of bibliographic and geographic source materials, communication skills, and proposal writing. Prerequisite: Graduate standing. S.

GEOG 591. Directed Study in Geographical Problems. 1-4 Credits.

Directed advanced research in a specialized field of geographic study. May be repeated up to a total of 9 credits. Prerequisite: Consent of instructor. Repeatable to 9 credits. F,S,SS.

GEOG 996. Continuing Enrollment. 1-12 Credits.

Repeatable. S/U grading.

GEOG 997. Independent Study. 2 Credits.

GEOG 998. Thesis. 1-6 Credits.

Repeatable to 6 credits.

Undergraduate Courses for Graduate Credit

GEOG 377. Quantitative Applications in Geography. 2 Credits.

Application of statistical and mathematical techniques to research topics in geography. Prerequisite: MATH 103 or consent of instructor. F.

GEOG 377L. Spatial Analysis Laboratory. 1 Credit.

Practical applications of statistical and mathematical techniques for geographic problems. Students work on projects which involve solving problems by spatial-oriented computations. Use of relevant statistical programs on computers are emphasized. Prerequisite: MATH 103. Corequisite: GEOG 377. F.

GEOG 421. Selected Topics in Physical Geography. 3 Credits.

An examination of an advanced physical geography topic chosen from field methods, biogeography, human impact on the environment, physiography, or others. Repeatable to nine credits if different topics are examined. Prerequisite: GEOG 121 or consent of instructor. Repeatable to 9 credits. F,S.

GEOG 453. Historical Geography. 3 Credits.

Using the spatial approach, landscape change is analyzed over time in various regions of the world using a variety of scales of study. Emphasis is placed upon the relationship of historical geography to historic preservation and tourism. On demand.

GEOG 457. Urban Geography and Planning. 3 Credits.

This course examines the internal workings of cities from political, economic, and social perspectives. Geographic approaches to urban analysis are discussed, as are various methods for contemporary urban planning. Students learn to view the city as a geographic phenomenon created by human effort. S.

GEOG 462. Geography of North America II. 3 Credits.

A regional analysis of the physical, cultural, and economic features of a selected region or group of regions within North America. May be repeatable to six credits if a different region is examined. Prerequisite: GEOG 262 or consent of instructor. On demand.

GEOG 463. Regional Geography. 2-3 Credits.

A regional and topical analysis of the physical and cultural features with emphasis on one continent or region. May be repeated up to nine credits provided different regions and approaches are involved. Repeatable to 9 credits. S.

GEOG 471. Cartography and Visualization. 2 Credits.

This course examines the art, science, and technology of cartography and visualization. It familiarizes students with basic cartographic principles and with GIS, both of which are applicable to a wide range of professional fields and academic disciplines. Students learn how maps are designed and used to accurately represent and effectively communicate spatial phenomena and relationships. The course also includes a discussion of selection of proper thematic mapping techniques. Corequisite: GEOG 471L. F.

GEOG 471L. Cartography and Visualization Laboratory. 1 Credit.

Students apply concepts learned in GEOG 471 to produce accurate, appropriate and well-designed maps using GIS software. Lab activities hone the ability of students to be informed producers and consumers of maps and provide hands-on experience that demonstrates how maps function as a communicative visual medium. Corequisite: GEOG 471. F.

GEOG 474. Introduction to Geographic Information Systems (GIS). 2 Credits.

An introductory course that examines the digital representation, manipulation, and analysis of geographic data, with emphasis on the analytical capabilities that GIS brings to bear on the solution of geographic problems. Prerequisites: GEOG 471 and 471L or equivalent or consent of instructor. Corequisite: GEOG 474L. F,S.

GEOG 474L. GIS Laboratory. 1 Credit.

Hands-on application of theory and methods associated with digital spatial data representation, manipulation, and analysis. Corequisite: GEOG 474. F,S.

GEOG 475. Digital Image Processing. 3 Credits.

A course focused on the concepts and principles involved in the use of digital remotely sensed data as they are applied to environmental monitoring and natural resource management. Emphasis is placed on algorithm development and 'hands-on' application of digital techniques to select imagery. Prerequisites: GEOG 374 and 374L. S.

GEOG 476. Selected Topics in Geographic Information Systems. 3 Credits.

An examination of a specific application area or set of techniques in GIS including, but not limited to, Business GIS, Environmental GIS, GIS Databases, GIS Scripting and Web-Based GIS. Repeatable to six credits if different topics are examined. Prerequisites: GEOG 474 and GEOG 474L, or instructor consent. Repeatable to 3 credits. On demand.