

# GSS

## Geospatial Science

### GSS 509: Digital Cartography

Maps portray spatial relationships among selected phenomena of interest and increasingly are used for analysis and synthesis. Cartography is the knowledge associated with the art, science, and technology of maps. Digital computer cartography still follows the same fundamental principles and still requires a broad understanding of graphicacy as a language (as well as numeracy and literacy). This course will provide an introduction to cartographic principles, concepts, software and hardware necessary to produce good maps, especially in the context (and limitations) of geographic information systems (GIS).

*3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated for credit.*

### GSS 513: GIS Fundamentals I

This course provides the basic concepts underlying modern geographic information science and technology. Emphasis is placed on the principles of GIS for collecting, storing, characterizing, and maintaining data and computer-based techniques for processing and analyzing spatial data. The course includes three hours of lecture, in class exercises and homework projects each week. This is a computer based class with the majority of students work involving GIS computer software. Prerequisite: working knowledge of spreadsheet software

*3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated 1 times FOR credit.*

### GSS 517: Geospatial Narratives: Deep Mapping for Humanities and Social Sciences

Building on formal methods in qualitative reasoning, spatial and temporal representation and geospatial science, this course will explore state-of-the-art methods for humanities and social sciences students to visualize and drill down data. Hands-on exercises of deep mapping will cover how to collect, analyze and visualize quantitative and qualitative data, spatial data, images, video, audio, and other representations of places and artifacts in humanities and social sciences. This course will also discuss models of reasoning about events, actions and changes that are spatially contextualized. Only GSS517 or GSS513/ GEO513 will count the Graduate Certificate.

*3 credits, Letter graded (A, A-, B+, etc.)*

### GSS 523: Geodatabase and Design

Concepts of geodatabase design and management in geographic information systems (GIS), SQL statements, geographic data types and functions, data entry, and techniques of geographic information structure applications.

*Prerequisite: GSS513 or equivalent  
3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated for credit.*

### GSS 525: GIS Fundamentals II

GIS Fundamentals II will introduce the applied use of Geographic Information Systems (GIS) which is now used extensively in analytical studies. The course emphasizes the applications of GIS in solving real-world problems. Students are expected to gain an understanding of GIS theory, methodology and most importantly application. Students are also expected to demonstrate abilities of spatial thinking, spatial analysis, and be able to solve practical spatial problems utilizing a GIS.

*Prerequisite: GSS513 or equivalent  
3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated for credit.*

### GSS 526: GIS Project Management

This course will enable students to address issues unique to a GIS operation such as: identify implementation issues for a GIS project or program; be prepared to assist in decision making procedures that involve management; incorporate strategies for success in your workplace; understand some of the legal issues about the use of GIS data; and be aware of the GIS industry outlook for employment and education.

*Prerequisite: GSS513 or equivalent  
3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated for credit.*

### GSS 550: Applied Spatial Analysis

The specific focus is on spatial data analysis, such as the analysis of autocorrelation, principles of geostatistics and analysis methods that are relevant in the fields of public health, environmental/earth science and social science. An important aspect of the course is to gain hands-on experience in applying these techniques with GIS and spatial analytical software, and essential methodological and practical issues that are involved in sophisticated spatial analyses. 3 credits.

*3 credits, Letter graded (A, A-, B+, etc.)*

### GSS 554: Geospatial Science for the Coastal Zone

The use of spatial data is becoming increasingly critical in the decision management process and planning of the

coastal zone. This course will use GIS and Remote sensing tools to collect and analyze data for intergrating into the management, planning, and monitoring of the coastal geomorphology and ecosystems. Offered in Fall.

*3 credits, Letter graded (A, A-, B+, etc.)*

### GSS 555: GIS and Remote Sensing

This course provides a basic overview of the technology by which aircraft and satellite data are produced and utilized in analyses to answer questions within a geographic context. Students will learn to identify sources of remotely sensed imagery appropriate for common applications; acquire, manipulate, and interpret aerial photographs and satellite imagery/data; and incorporate remote sensing data into Geographic Information Systems.

*Prerequisite: GSS513 or equivalent  
3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated for credit.*

### GSS 570: Geospatial Narratives: Deep Mapping for Humanities and Sciences

Course will present special interest topics or recent software enhancements in the rapidly developing field of Geospatial Science. The course will include a mixture of core geospatial techniques and recently released methodology. Course will include a diversity of Geospatial topics including discipline specific topics relevant to majors in physical sciences, social sciences, business and engineering.

*1-3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated for credit.*

### GSS 575: Geospatial Teaching Practicum

The teaching practicum provides teaching experience, carried out under faculty supervision. Student will work with a faculty member as assistant in a regularly scheduled course and student will be assigned a specific role to assist in teaching the course. The student will meet with the instructor on a regular basis to discuss intellectual and pedagogical matters relating to the course.

*0-3 credits, S/U grading  
May be repeated 3 times FOR credit.*

### GSS 587: Geospatial Research

This course is intended to provide graduate students in the Geospatial Science program an opportunity to obtain research experience. A written report is required. Prerequisite: Permission of instructor 1-3 credits, Letter graded (A, A-, B+, etc.)

*1-3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated 1 times FOR credit.*

**GSS 588: GIS Internship**

The GIS Internship is designed to provide students experience in the real workplace. Interns are expected to function as a GIS professional and work within the existing host facility structure or on a free standing project. Interns will complete assigned tasks by hosting facility such as GIS data entry, data retrieval, GPS field work, documentation, or general GIS facility duties. These activities will be monitored by both a representative of the host facility and the instructor.

*Prerequisites: GSS513, GSS525 or equivalents, and consent of Instructor  
3 credits, Letter graded (A, A-, B+, etc.)  
May be repeated for credit.*