GEOGRAPHIC INFORMATION SCIENCE (GIS)

GIS 2610   Map Use and Interpretation   3 s.h.
The use of maps, aerial photography, and satellite imagery to depict physical and cultural landscapes. Topics include map elements and how to locate, read, and interpret maps and remotely-sensed imagery.
Prereq.: none.

GIS 2611   Geospatial Foundations   3 s.h.
An overview of geospatial science and technology, including introductory concepts in spatial analysis, Geographic Information Systems, remote sensing, and GPS. The class provides a survey of theoretical geospatial topics as well as their applications.

GIS 2611H   Honors Geospatial Foundations   3 s.h.
An overview of geospatial science and technology, including introductory concepts in spatial analysis, Geographic Information Systems, remote sensing, and GPS. The class provides a survey of theoretical geospatial topics as well as their applications in a computer lab setting.
Prereq.: none.

GIS 3701   Introduction to Geographic Information Science   3 s.h.
Introduction to the principles of collection, storage, manipulation, retrieval, analysis and visualization of spatial data in a computer environment. Credit will not be given for GIS 3701 if a student has already received credit for GIS 5810.
Prereq.: GIS 2611.

GIS 3702   Introduction to Remote Sensing   3 s.h.
Analysis and interpretation of earth features from both airborne and satellite observation platforms. Topics include photogrammetry, digital data manipulation, multispectral imagery analysis, and interpretation of environmental features. Credit will not be given for GIS 3702 if a student has already received credit for GIS 5805.
Prereq.: GIS 2611.

GIS 3712   Thematic Map Design and Symbolization   3 s.h.
An introduction to cartographic design. Emphasis is on composition elements and the construction and perception of point, line, and area map symbols. The use of color, statistical techniques, and animated maps are also explored.
Prereq.: GEOG 2610 or GEOG 2611 or GEOG 2626 or GEOG 2640.

GIS 3781   Geographic Information Sciences Application for the Social Sciences   3 s.h.
Applications of Geographic Information Science (GIS) techniques for the social sciences in disciplines such as economics, sociology, anthropology, political science, and urban/cultural geography, as distinct from physical or environmental sciences. Focus is on the integration of a spatial perspective in social research, analysis and policy development and how GIS can be useful for collecting and analyzing both qualitative and quantitative data.
Prereq.: GIS 2611.

GIS 3782   GIS Applications for the Natural Sciences   3 s.h.
Applications of Geographic Information Science (GIS) techniques for the natural sciences in disciplines such as physical geography, geology, biology, ecology, natural hazards, environmental monitoring, planning and infrastructure, water resources, climate change, and energy. Topics range from spatial data quality, data conversion, database design, data management, analysis, and visualization.
Prereq.: GIS 2611.

GIS 3783   Geographic Information Science Applications to Urban and Regional Studies   3 s.h.
The application of Geographic Information Systems (GIS) to issues involved in urban and regional studies, such as economic development, housing development and redevelopment, neighborhood rehabilitation, city planning, rural planning, zoning decisions, and transportation planning. The course is designed to provide planners and developers with an analytical skill set for collecting and analyzing both qualitative and quantitative spatial data. Two hours of lecture each week and two structured hours of lab each week.
Prereq.: GIS 2611.

GIS 4801   Advanced Geographic Information Science   3 s.h.
A continuation of Introduction to Geographic Information Science focusing on theory and application of advanced techniques in spatial data handling, GIS modeling, and spatial analysis. Credit will not be given for GEOG 4801 if a student has already received credit for GIS 5811.
Prereq.: GIS 3701.

GIS 4802   Advanced Remote Sensing   3 s.h.
Advanced digital image processing methods and algorithms. Themes include high-resolution multi-spectral imaging systems, SAR interferometry, and hyperspectral imaging systems, in addition to topics such as geometric corrections, atmospheric corrections, image enhancement, image segmentation and shape analysis and change detection. Designed to support graduate research efforts.
Prereq.: GIS 3702.