

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

GIS-224 Introduction to Geographic Information Systems (GIS)

Credits: 3

Term Offered: All Terms

Course Type(s): MEBP, SS.SV, TL

Provides both the theoretical and methodological background for proficient use of geographic information systems (GIS). A multidisciplinary integration of theories and applications pertinent to both natural and social science research. Lectures and discussions will introduce the conceptual and methodological platform that is necessary to design, implement, and interpret GIS research. Weekly lab exercises will develop problem-solving skills and emphasize common research techniques in GIS. Students will also learn field techniques of spatial data collection. In sum, demonstrates how both GIS tools and a geographic perspective may be applied to a broad range of social and ecological research problems. Not open to students who have taken GIS-250.

GIS-235 GIS Applications in Homeland Security

Credits: 3

Prerequisite(s): GIS-224

Term Offered: All Terms

Course Type(s): None

Introduces students to the basic theories in geographic information systems (GIS). It provides students with a hands-on practical approach to analyze homeland security related data. Students will develop a skill set to map homeland security data and perform spatial analytical tasks. Also listed as HLS-235.

GIS-298 Special Topics in Geographic Information Systems

Credits: 3

Prerequisite(s): GIS-224

Course Type(s): None

The study and application of GIS to a particular subject.

GIS-299 Independent Study in Geographic Information Systems

Credits: 3

Course Type(s): None

Conduct a geographic information systems (GIS) research project with a faculty member. Prior permission of the directing professor and department chair is required to take this course.

GIS-324 Spatial Data

Credits: 3

Prerequisite(s): GIS-224

Term Offered: All Terms

Course Type(s): None

Provides an introduction to the collection of various types of spatial data relevant to many GIS applications and basic database management for organization of the data. Students will be introduced to various data-collection techniques through a combination of lectures, discussions, readings, and hands-on experience in the field.

GIS-325 Spatial Analysis

Credits: 3

Prerequisite(s): GIS-224

Term Offered: Spring Term

Course Type(s): None

Focus will be the analysis of spatial data, culminating in an applied research project. For this intermediate level course, it is expected that students have successfully completed an introductory course in Geographic Information Systems (GIS). Students will learn the theory and practical application of spatial analysis methods for a variety of disciplines. The methods applied in this course include, but may not be limited to, geoprocessing, overlay analysis, spatial statistics and interpolation, terrain modeling, and map algebra. These methods will be applied to analyze contemporary social and environmental problems.

GIS-335 Advanced Geographic Information Systems and Homeland Security

Credits: 3

Prerequisite(s): GIS-235 or HLS-235

Term Offered: Spring Term

Course Type(s): None

Students will build upon the skills and information learned in GIS-235 Geographical Information Systems and Homeland Security to demonstrate advanced techniques in the analysis of spatial data to help the homeland security enterprise prevent, mitigate, respond to, and recover from intentional, natural, and accidental threats. Also listed as HLS-335.

GIS-336 Marine Applications of Geographic Information Systems

Credits: 3

Term Offered: Fall Term

Course Type(s): EX3, MEBP

Students learn mapping technologies for coastal and marine planning. Techniques are then applied to coastal community for a service learning project in fulfillment of the Experiential Education graduation requirement. Services are provided in partnership with a community, and may include projects such as coastal zone planning or participatory workshops to many community resources.

GIS-337 Fundamentals of Remote Sensing

Credits: 3

Term Offered: Fall Term

Course Type(s): MEBP

Students learn the fundamentals of remote sensing technologies and of their application to environmental mapping and analysis. This course introduces concepts of light radiation behavior and detection, satellite and airborne imaging systems, image processing and classification, mapping, and map analysis. Students will apply this knowledge through a hands-on term project of their own design.

GIS-400 Research Methods in GIS

Credits: 3

Prerequisite(s): GIS-224

Course Type(s): None

Participants in this seminar will, with the instructor's guidance, 1) plan all aspects of their own discipline-specific research, 2) acquire all of the necessary data, 3) build and populate a spatial database for their data, 4) create a GIS to import, manipulate, and analyze their data, and 5) present their completed project.

GIS-489 GIS Internship

Credits: 1-3

Term Offered: All Terms

Course Type(s): EX1

Supervised practical experience in geographic information systems. Repeatable for credit. Departmental approval is required to take this course.

GIS-499 Independent Study in Geographic Information Systems

Credits: 3

Prerequisite(s): GIS-224 and prior permission of the directing professor and department chair is required to take this course

Term Offered: All Terms

Course Type(s): None

Conduct a geographic information systems (GIS) research project with a faculty member.