

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

GIS-101 Maps and Geospatial Technology 4 credits, Fall/Winter/Spring

This course provides an overview of the concepts and principles of geospatial technology using lab activities to explore maps, geospatial data, and geospatial software. Major themes include maps and cartography, geographic information systems, spatial data, global navigation satellite systems, remote sensing, terrain analysis, web maps, and the geospatial industry.

GIS-201 Introduction to Geographic Information Systems 4 credits, Summer/Fall

This course explores fundamental geographic information systems (GIS) concepts utilizing hands-on application through various laboratory exercises with industry-standard ArcGIS software. The class explores basic map principles, cartographic design, geodesy, and geospatial data manipulation while exploring ArcGIS Online to create, display, query, relate, classify, and analyze spatial data to create maps and answer geographic questions.

GIS-202 GIS Applications 4 credits, Winter

This class follows the introductory course as a continuation of Geographic Information Systems (GIS). Topics explored include working with geodatabases, topology, vector and raster analysis, and creating and editing data. Students also practice key GIS project management processes, workflows, and best practices through an analysis project. Recommended Prerequisites: GIS-201

GIS-205 Cartography and Map Making 3 credits, Winter

Explores basic cartographic design principles and how to apply them to produce high quality maps using ArcGIS Pro software. Introduces cartographic terminology, principles, and map-making tools. Significant themes include visual representation and communication; how to turn geographic data into effective maps for print and the web; how to critique maps; map design and elements; and color, fonts, labels, and symbols for maps.

Prerequisites: GIS-201

GIS-232 Data Collection & Application 4 credits, Spring

This course introduces data collection techniques and application of those techniques. This course explores different techniques to collect spatial and attribute data. The class focuses on GPS (Global Positioning System) data collection using a combination of recreational/mapping-grade GPS units and standard mobile devices (with embedded GPS) used in industry. The class will emphasize the capabilities and strengths of each type of data collection equipment.

GIS-236 Programming for GIS 4 credits, Winter

An introduction to computer programming and Object Oriented Programming (OOP) with Python. Covers basic computer programming concepts including data types, loops, control structures, functions, classes, and program development. Use Python for problem solving by creating basic scripts for more advanced object-oriented programs.

GIS-238 GIS Web Mapping

4 credits, Not Offered Every Term

This class is an introduction to interactive map making using ArcGIS Online. Topics for online map making will be explored including web cartography, interactive map elements, mobile data collection, geospatial data from community science, and ArcGIS Online apps. Students will get the chance to create interactive map products.

Recommended: Familiarity with GIS software and applications

GIS-260 GIS and The Environment

4 credits, Fall/Winter/Spring/Summer

This course covers environmental science and how GIS is used in the field. Each week, a new topic will be explored, including climate change, wildfires, demography for public policy, water resource management, and more.

GIS-270 GIS Capstone

4 credits, Spring

The Geographic Information Systems (GIS) Capstone course is the culmination of the Geographic Information Systems Technology (GIS) Certificate. Working with the instructor, students begin the course by researching and proposing a project. After developing a project plan and working through the analysis necessary, students will present their findings in an oral and written presentation. Additionally, scenario-based assignments will reinforce the project-based analysis process. Throughout the course, portfolio building strategies are explored with an emphasis on developing a professional portfolio demonstrating their work as preparation for entering the GIS profession.

GIS-280 GIS/CWE

2-6 credits, Fall/Winter/Spring/Summer

Cooperative work experience. Provides students with on-the-job work experience in the field of geographic information systems. This class is intended for students who are completing their Geographic Information Systems (GIS) Technology Certificate. Required: Student Petition.

Prerequisites: GIS-201

Corequisites: CWE-281

GIS-286 Remote Sensing

4 credits, Spring

This course is an introduction to the science of remote sensing. The course explores the techniques used to acquire, interpret, and process remotely sensed data. It provides a historical analysis of the technology, the interpretation of remotely sensed data, and the use of remote sensing data in GIS. Students explore applications of remote sensing using real-world examples and data.