

# GEOGRAPHIC INFORMATION SYSTEMS (GIS)

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Also see Environmental Conservation (ENVC).

The Geographic Information Systems (GIS) classes are designed to provide students with software knowledge to manage information or attributes that have a geographic reference point attached. Different attributes and types of information can be displayed as maps. This allows analyzing data with respect to its spatial relationships. Geographic Information Systems are software and hardware that electronically manage these spatial data sets on virtual or real maps. Their use is revolutionizing spatial analysis in forestry, fish and wildlife, population studies, land-use planning, marketing, and other fields that involve the integration of information and geography. Advanced uses integrate GPS data management with mapping and displaying software.

GIS software is used by real estate agents, city and county administrations, natural resource managers, fish and wildlife managers, sales analysts, utility companies, and environmental managers.

## Micro-Certificate

A certificate in Geographic Information Systems is granted upon completion of the following requirements with 2.0 GPA or above: GIS 101, 102, 105, 106, and 202 or 203. GIS courses must be taken in this sequence. For further information, contact the Department Chair of Environmental Conservation or the Admissions Office.

## Course Descriptions

### **GIS 101 Introduction to Geographic Information Systems (5)**

Principles and conceptual overview of GIS software, its use and applications in natural resource management with hands-on experience using Arcview. Computer and spreadsheet familiarity necessary.

### **GIS 102 Geographic Information Systems II (5)**

Continuation of GIS 101. GIS application in natural resource management. Includes data creation by digitizing, coordinating management, map projections and map aesthetics using ArcGIS software. Prerequisite: GIS 101.

### **GIS 105 Introduction to Global Positioning Systems (GPS) (2)**

Introduction to global positioning systems (GPS) and their use in natural resources and agriculture.

### **GIS 106 Advanced Global Positioning Systems (2)**

Continuation of GIS 105. Global Positioning Systems (GPS) data management. Integration of GPS data into mapping software and displaying with Google Earth and ArcGIS. Prerequisite: GIS 105 or concurrent enrollment, or Department Chair approval.

### **GIS 202 Introduction to Remote Sensing (5)**

Principles and conceptual overview of remote sensing instruments and how data and images are used to monitor and evaluate the condition and distribution of the earth's surface features. Prerequisite: GIS 101.

### **GIS 203 Advanced GIS Project (5)**

Using ArcGIS, create individual GIS projects from inter-tidal marine habitat data or other pre-approved data sets. Covers formulating a research question for analysis, conducting background research, map development and layout, and presenting the results in a research paper. Prerequisite: GIS 102.