

# GEOGRAPHIC INFORMATION SYSTEMS

Geographic Information Systems (GIS) provides students with a way to understand the world. By learning computer mapping science and technology, students will be able to apply these concepts and skills to fields such as environmental science, urban and regional planning, utilities management, and natural resources.

GIS programs prepare students for either the growing GIS workforce or for baccalaureate study. The GIS Associate of Applied Science is a two-year program designed to prepare graduates for entry-level positions. The one-year certificate has helped many who have already completed a bachelor's degree to supplement their professional credentials with GIS technology and problem solving. The Geospatial Science Associate of Science offers students a broad background in GIS, geospatial science, and geography with courses designed to transfer to four-year institutions offering baccalaureate programs in these fields. The specific emphasis of the program is the fully online Bachelor of Science in Geography and Geospatial Science offered through Oregon State University.

See the [Geographic Information Systems page](#) for program and contact information.

## Degrees and Certificates

### Career and Technical Education

#### Associate of Applied Science

- [Geographic Information Systems - Associate of Applied Science \(AAS\)](#)

#### One-Year Certificate of Completion

- [Geographic Information Systems - One-Year Certificate of Completion \(CC1\)](#)

### Transfer

#### Associate of Science

- [Geospatial Science \(OSU Transfer\) Emphasis - Associate of Science \(AS\)](#)

## Courses

### GEOG 101 Introduction to Geospatial Science & GIS (4 Credits)

Introduces science underlying geospatial technologies including geographic information systems, global positioning systems, satellite and unmanned aerial systems imagery, and cartography. Introduces how geospatial technology can be used with the scientific method to investigate questions in a broad range of fields including the sciences, social sciences, and humanities.

### GEOG 211 Cartography (4 Credits)

Develops skills needed to produce maps with ArcGIS software. Outlines cartographic principles and map use. Emphasizes mapping techniques within a geographic information system (GIS). Intended for students enrolled in GIS or unmanned aerial systems programs.

### GEOG 265 Geographic Information Systems (4 Credits)

Introduces students to principles and practice of geographic information systems (GIS), while providing experience using ArcGIS and Spatial Analyst software. Develops both theoretical understanding of GIS and experience in accessing GIS datasets. Covers raster and vector GIS.

### GEOG 266 ArcGIS (4 Credits)

**Recommended preparation:** or to be taken with GEOG 265.

Provides working knowledge of ArcGIS software. Covers designing and developing a geographic information system database, performing spatial analysis, creating maps, and generating a report with software.

### GEOG 267 Geodatabase Design (4 Credits)

**Recommended preparation:** GEOG 266.

Covers fundamentals of creating, using, editing, and managing spatial and attribute data in ArcGIS. Explores data migration; data loading; topology rules; use of subtypes, attribute domains, and relationship classes. Includes creating, editing, and analyzing geometric networks.

### GEOG 273 Spatial Data Collection (4 Credits)

Provides the skills to collect location information for integration with a geographic information system (GIS). Focuses on proper use of the Global Positioning System receivers and data collection. Intended for students enrolled in the second year of GIS or UAS programs or similar academic preparation. (See program director for details.)

### GEOG 275 GIS Capstone (4 Credits)

**Recommended preparation:** GEOG 285.

Provides a capstone experience to the Geographic Information Systems (GIS) program. Presents criteria to complete the project, including project planning, designing and developing a GIS database, collecting and editing data, performing spatial analysis, creating maps, generating reports, and presenting project output. (See instructor for details.)

### GEOG 280 Co-op Work Experience GIS (1-3 Credits)

**Prerequisites:** Instructor approval.

Provides experience in which students apply previous GIS classroom learning in an occupational setting. Credits depend on the number of hours worked. Repeatable for credit. P/NP grading.

### GEOG 284 GIS Customization (4 Credits)

Customize ArcGIS software with a current programming language. Publish content to the internet and servers.

### GEOG 285 Data Conversion and Documentation (4 Credits)

**Recommended preparation:** GEOG 266.

Covers techniques to collect and to convert data between formats, projections, and coordinate systems. Cultivates research and experimentation with data and enhances problem-solving skills. Emphasizes metadata use, which allows the data user to determine whether a particular data set is suitable for its proposed use.

### GEOG 286 Remote Sensing (4 Credits)

Introduces theory and methods of remote sensing with satellite imagery. Covers use of SPOT, Landsat, and QuickBird images with ArcGIS and IMAGINE analysis software. Perform digital analysis, including preprocessing, image classification, and image evaluation. Intended for students enrolled in the second year of GIS or UAS programs or similar academic preparation. (See program director for details.)

### GEOG 287 Spatial Analysis (4 Credits)

**Recommended preparation:** GEOG 266.

Explores analytical capabilities of geographic information systems. Covers techniques to locate and to describe features and moves to advanced techniques based on higher-level spatial objects. Use the ArcGIS Spatial Analyst extension to analyze raster datasets in the lab.