

GIS: Introduction and Principles



Objectives

Description

This course is designed for students who are beginning their study of the rapidly growing profession of Geographic Information Systems (GIS). GIS is used worldwide for analyzing geography and for making and publishing maps on the web. GIS is an essential technology for connecting scientists with social and business leaders, in government agencies and corporations and non-profits.

While learning the techniques of map making, students in this course will be exposed to new ways of thinking about the geography of the physical landscape and human social and policy issues. Each week, a hands-on lab exercise will guide students through the process of integrating data into maps that communicate geographic ideas and concepts. Progressively more sophisticated labs provide practical demonstration of the principles of geography, such as how coordinate systems are designed, how to manipulate map distortion, and what kinds of map symbols are best for various types of data layers.

Students will learn how use ArcGIS software (created by Esri, Inc). ArcGIS is the global leader in computerized geography and is used in nearly every federal, state, county, and city agency, and increasingly in businesses and non-profit organizations. Evergreen will assign a license to the ArcGIS software (at no cost) to use for this course. The license also provides access to massive libraries of online data, and methods for collaboration, through sharing of maps in interactive apps and story maps.

This course is the first required course of the GIS Certification sequence, and satisfies the prerequisites for students who wish to continue taking the GIS courses that lead to the Evergreen GIS Certificate.

There are no required textbooks for this class, but there will be weekly reading and videos will be assigned.

Credit Policy

4 credits will be awarded if students meet the following requirements.

All assignments posted on Canvas are fully completed **AND**

You must get a 70% in the class to receive credit in the class.

A faculty evaluation is required from each student.

Course point breakdown:

- 8 assignments worth 7 points each: 56 points possible
 - Some assignments will have 'Mastery Extra Credit' worth additional points.
- 8 quizzes worth 3 points each: 24 points possible
- A final project worth 20 points

There are 100 points for the course. 1 point = 1% toward your final grade. With the mastery extra credit, it is possible to get more than 100% in this class. Late assignments will make obtaining credit much harder.

Homework: You can expect 2 to 6 hours of homework per week for this class. You generally will not need to be in the CAL to work on homework, but you will need a computer and a good internet connection.

Course Schedule

Each Week will consist of:

- Lecture on module concepts
- Individual work time to complete Lab exercises. Lab exercise work through has been recorded and can be watched in class.
 - Students will be expected to submit individual labs but they can be worked on collectively. They will require out-of-class time to finish (Homework).
- A canvas quiz on the weekly concepts

A final project will be completed utilizing concepts from the class.

Assignments are due at 11:59 PM on the Monday after they were assigned.

LATE policy: A 5% deduction in grade will be applied PER DAY the assignment is late.

Tentative Schedule (subject to change)

Module	Focus Of Class
1	What is GIS?: <ul style="list-style-type: none">• Course Introduction• History of GIS• Exploring online maps• Getting started with ArcGIS Online• Data Management
2	Elements of Mapping: <ul style="list-style-type: none">• Principles of Map Making• Cartography• Scale and Symbols and Marginalia

	<ul style="list-style-type: none"> • LOST (Legend, Orientation, Scale, Title)
3	<p>Data Models and Map Reading:</p> <ul style="list-style-type: none"> • Data model types • Reading maps • XY location data • Map symbology
4	<p>Coordinate Reference Systems:</p> <ul style="list-style-type: none"> • Geographic Coordinate Systems (GCS) • Projected Coordinate Systems (PCS) • Coordinate conversions and uploading location data
5	<p>Editing:</p> <ul style="list-style-type: none"> • Vector data • Points, Lines, Polygons • Creating new features • Modifying existing features and attribute values
6	<p>Census Data:</p> <ul style="list-style-type: none"> • Population and demographic data • Geocoding • Environmental Justice • Intro to Arcade expressions
7	<p>Mapping in the Third Dimension:</p> <ul style="list-style-type: none"> • Elevation and photogrammetry • Creating slide "fly-throughs" • 3D symbology
8	<p>Time:</p> <ul style="list-style-type: none"> • Satellite imagery • Temporal data • Online image archives • Change animation

Evergreen GIS Certificate

The two fall GIS courses are the first in a seven-course sequence that makes up the Evergreen GIS Certificate. Please see [Certificate in Geographic Information Systems](#) for more information on the certificate sequence. The complexity of the classes increases, culminating in a summer class where students will design their own geospatial research project.

Homework in the courses can average between 2 to 10 hours per week depending on the class and assignment. Also please plan now for financial aid for the final summer course. The certificate represents significant work as it is a robust education in the geospatial sciences. You will have developed materials for an impressive GIS portfolio along the way that will greatly enhance future employment possibilities.