

# ESCI 180: INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS

## Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2021
Credits:	4
Total Contact Hours:	144
Lecture Hours :	36
Lab Hours:	108
Hours Arranged:	0
Outside of Class Hours:	72
Strongly Recommended:	ENGL 101; basic computing skills such as the use of the Windows computer system or ITIS 099.
Transferable to CSU:	Yes
Transferable to UC:	Yes - Approved
Grading Method:	Standard Letter, Pass/No Pass

## Catalog Course Description

An introductory GIS course that will teach the theory and usage of Geographic Information Systems in a number of fields including business, resource management, Earth Sciences, and urban planning. Recommended for anyone using spatial data in their profession. 36 lecture hours, 108 lab hours.

## Course Objectives

- Present the basic geographic concepts of earth size, dimensions, earth-sun relations, geoid, and graticule that form the basis for computerized GIS.
- Present the history and purpose of maps, and the science of cartography.
- Present the basics of map projections, scales, map fundamentals, and uses.
- Teach students how to navigate using a paper map and compass.
- Present the concepts of accuracy and precision in maps and data in relation to GIS.
- Review various techniques of satellite imaging, aerial photography, and other forms of remote sensing that provide GIS data inputs.
- Teach a basic understanding of current publicly available online GIS applications such as Google Earth® and Geotracker® that are used in science, business, and government.
- Present the basic concepts of GIS, geo-processing, and geo-spatial data.
- Teach a basic understanding of the program ArcGIS®, available sources of GIS data, and be able to complete a beginning level mapping and spatial analysis project using ArcGIS®.

## Major Course Content

1. History, purpose, and types of maps
2. Overview of various remote sensing technologies

3. Overview of the physical earth and coordinate systems
4. Basic outdoor navigation with map and compass
5. Survey of Current GIS Applications used in Science, Business and Government
6. Introduction to modern GIS systems
7. Introduction to Esri ArcGIS
8. Overview of spatial data and geoprocessing
9. Overview of map design and map layout

## Lab Content

1. Use basic map and compass to learn outdoor navigation
2. Use GIS software to create map layers and demonstrate cartographic principles
3. Use computers to collect, manipulate, display and analyze data
  - a. digitize map features
  - b. label features
  - c. code features with colors, patterns or symbols
  - d. find distances
  - e. select features based on spatial relationships
  - f. Clip and buffer features to perform spatial analysis
4. Download and analyze data from the Internet.Census Bureau demographic data, TIGER files
5. US Geological Survey earthquake data
  - a. Scanned images
6. Use GPS devices to collect data, and analyze data with GIS

## Suggested Reading Other Than Required Textbook

Learn to use: <http://www.arcgis.com>

## Examples of Required Writing Assignments

See attached final project file.

## Examples of Outside Assignments

Students are also expected to spend time researching and compiling data for their final project subjects. This includes background research of written and electronic materials as well as finding relevant data for their project. Make a map over the web using ArcGIS.com.

## Instruction Type(s)

Lecture, Lab, Online Education Lecture, Online Education Lab