

GEOG 0091B - INTERMEDIATE GEOSPATIAL DESIGN

Catalog Description

Prerequisite: Completion with a grade of "C" or better or concurrent enrollment in GEOG 90 or 91A

Hours: 18 lecture

Description: Builds on basic principles of beginning GIS Design, creating and editing maps, organizing GIS data for spatial analysis, and producing map layouts. (CSU)

Course Student Learning Outcomes

- CSLO #1: Compare and contrast different geographic coordinate systems, map projections and datums used in GIS.
- CSLO #2: Evaluate effective map design based on cartographic principle and use of scale.
- CSLO #3: Convert and incorporate GPS data, CAD data, other databases or tables into the GIS using software techniques.
- CSLO #4: Develop metadata as part of data dictionary; explain attributes and value codes.

Effective Term

Fall 2021

Course Type

Credit - Degree-applicable

Contact Hours

18

Outside of Class Hours

36

Total Student Learning Hours

54

Course Objectives

1. Use the GIS platform and basic features, such as adding map layers.
2. Apply effective symbology and labels for desired map design.
3. Define good database design.
4. Create file "geodatabase" or equivalent from scratch.
5. Edit existing geographic features; edit attribute tables.
6. Project data for display, define a projection using software.
7. Advanced queries, buffer features, overlay data, calculate attribute values through exercises.
8. Dissolve or merge features.
9. Perform spatial joins.
10. Export data; publish web maps.
11. Create map layout (adding title, north arrow, labels, inset maps, etc.).

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)

- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Classroom Discussions
 - Example: Students must show that they are engaged in class discussion about the various functions (classifying data) and overall concepts of map output (such as how attributes & values selected) create different maps.
- Problem Solving Examinations
 - Example: Display in class how to work with attribute tables by joining/merging merge data by Unique ID, query data, symbolize, etc.
- Projects
 - Example: The class will be provided with data and a common project for each student to create a final map product.
- Skill Demonstrations
 - Example: Display geoprocessing results in a simple map product.

Repeatable

No

Methods of Instruction

- Lecture/Discussion
- Distance Learning

Lecture:

1. Instructor demonstrates difficult tutorial skills and concepts and then assigns students real-world scenarios to create and edit geographic data.
2. While the software will frequently "project" the data on-the-fly into another matching geographic map projections, the instructor demonstrates how GIS layers will not align if that projections doesn't occur. Students must determine the base projections, then create a projection file. The instructor will point out small differences in DATUMS and will also create alignments problems, thus those elements must match as well.

Distance Learning

1. Instructor demonstrates how to edit data, such as thematic layer attribute tables, like roads and rivers, using the industry standard online GIS software (ArcGIS). The instructor creates lectures to explain how layers (roads, rivers, etc.) can be modified. Additional step may need to be taken with processing tools to modify layers, which the instructor demonstrates. The lecture will be delivered through a slide lecture presentation and worksheets, which student will complete after watching the slideshow on a LMS platform.

Typical Out of Class Assignments Reading Assignments

1. Read about map design specific to choropleth maps, comparing and contrasting pros & cons, such as simple to view but distort truth based on area size (e.g. 2012 election) or classification scheme errors or distortions and be prepared to discuss in class.
2. Read through

Geoprocessing section, complete exercises regarding theory and skills. Also, synthesize text material with any related assignment to "transfer" these skills sets and be prepared to discuss in class.

Writing, Problem Solving or Performance

1. Using real-world data, create a Geodatabase and import existing data into newly created format. 2. Using Geoprocessing / geospatial tools, student will buffer, dissolve, union layers to simplify or modify output to meet specific objectives, for example to combine zip codes or find intersection of zip code and census tracts.

Other (Term projects, research papers, portfolios, etc.)

1. Standard term project using real-world data (election results data)

Required Materials

- GIS Tutorial 1 for ArcGIS Pro: A Platform Workbook
 - Author: Wilpen Gorr
 - Publisher: ESRI Press
 - Publication Date: 2017
 - Text Edition: 1st
 - Classic Textbook?:
 - OER Link:
 - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.