GIS 52 Course Outline as of Fall 2021

CATALOG INFORMATION

Dept and Nbr: GIS 52 Title: ADVANCED GIS
Full Title: Advanced Geographic Information Systems (GIS)
Last Reviewed: 10/10/2016

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
This is an advanced project-based course where the student will apply fundamental and intermediate concepts in Geographic Information Systems (GIS) to a specific project utilizing GIS technology and industry standard software. Students should come prepared with a project topic, scope, goals and objectives, and data sources. An oral presentation of the project will be made at the completion of the course.

Prerequisites/Corequisites:
Course Completion of GIS 51 and GIS 54

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: This is an advanced project-based course where the student will apply fundamental and intermediate concepts in Geographic Information Systems (GIS) to a specific project utilizing GIS technology and industry standard software. Students should come prepared with a project topic, scope, goals and objectives, and data sources. An oral presentation of the project

will be made at the completion of the course. (Grade Only)
Prerequisites/Corequisites: Course Completion of GIS 51 and GIS 54
Recommended:
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Demonstrate advanced skills in Geographic Information Systems (GIS) analysis
2. Prepare layouts, reports, charts and graphs to support the GIS project presentation
3. Prepare and present a professional level GIS project

Objectives:
Upon completion of this course, the student will be able to:
1. Research and acquire GIS data
2. Edit, query and analyze geographic and tabular data
3. Perform advanced spatial analysis using GIS technology
4. Customize software for spatial analysis queries
5. Create project layouts and query information using GIS techniques
6. Prepare and present a professional level GIS project with supporting data

Topics and Scope:

I. Introduction to research methods
   A. Development of a research question
   B. Literature review
   C. Stages of a project
   D. Scientific writing format
   E. Publishing results
   F. Professional liability and ethics
II. Data development
   A. Data collection for research

B. Basic descriptive vs. inferential statistical methods
C. Analysis plan
D. Geographic data collection
E. Data editing and reduction cycles
F. Data summarization
G. Data flow

III. Model selection
A. Analysis type
B. Data compatibility
C. Pilot study
D. Final model(s)
E. Validity check

IV. Project summarization
A. Charts, tables, graphs, diagrams
B. Data compatibility
C. Slides as an outline
D. Map as a document

V. Project publication/documentation
A. Citing references
B. Documenting data sources
C. Listing errors and disclaimers
D. Ensuring data integrity
E. Meeting legal requirements

VI. Formal presentation
A. Know your audience, data and design
B. Content, relevance, format, timing, forum

Laboratory Topics and Scopes

I. ESRI Virtual Campus -- Two to three relevant topical mini courses that include readings, summary and online exam submitted at the end of each mini-course.
A. Performing spatial interpolation
B. Creating prediction surfaces

II. Majority of remaining laboratory time is spent in providing one on one student interaction in the areas of project assistance and software support.

Assignment:

1. Textbook reading (10-30 pages per week)
2. Research reports (2-4) including data acquisition, editing and analyzing data from outside sources using the internet and Global Positioning Systems (GPS)
3. Lab assignments (2-3)
4. Project map(s) (1-3)
5. Oral project presentations: progress and final

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Research reports	Writing 20 - 30%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

ESRI mini courses and lab assignments	Problem solving 10 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Demonstration of GIS related technology and its use, presentation of project progress	Skill Demonstrations 20 - 30%

Exams: All forms of formal testing, other than skill performance exams.

Oral presentation of final research project and map(s)	Exams 20 - 50%

Other: Includes any assessment tools that do not logically fit into the above categories.

None	Other Category 0 - 0%

Representative Textbooks and Materials:
GIS Fundamentals, A First Text on Geographic Information Systems (5th). Bolstad, Paul. Eider Press: 2016
Lining Up Data in ArcGIS: A Guide to Map Projections (2nd). Maher, Margaret. ESRI Press: 2013
Modeling Our World: the ESRI Guide to Geodatabase Concepts (2nd). Zeiler, Michael. ESRI Press: 2010 (classic)
An Introduction to Scientific Research Methods in Geography (2nd). Montello, D. Sage Publications Inc.: 2012
Selected Articles and Scholarly Publications