

**GIS 54 Course Outline as of Fall 2016****CATALOG INFORMATION**

Dept and Nbr: GIS 54

Title: DATA ACQUISITION IN GIS

Full Title: Data Acquisition in Geographic Information Systems (GIS)

Last Reviewed: 11/14/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	4.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	4.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	6.00		Contact Total	105.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 210.00

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:**

Develop skills in the acquisition, conversion, integration, analysis, management, storage and drafting of geospatial and attribute data for Geographical Information Systems (GIS).

**Prerequisites/Corequisites:**

Course Completion of GIS 51

**Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Develop skills in the acquisition, conversion, integration, analysis, management, storage and drafting of geospatial and attribute data for Geographical Information Systems (GIS). (Grade Only)

Prerequisites/Corequisites: Course Completion of GIS 51

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>			Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>			Effective:	Inactive:
<b>IGETC:</b>	<b>Transfer Area</b>			Effective:	Inactive:
<b>CSU Transfer:</b>	Transferable	Effective:	Spring 2009	Inactive:	
<b>UC Transfer:</b>		Effective:		Inactive:	

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

Upon completion of this course, the student will be able to:

1. Identify appropriate sources of geospatial and attribute data for GIS.
2. Collect data in the field using GPS technology.
3. Capture attribute data from public and proprietary sources.
4. Hand digitize data from aerial and remote sensing imagery or maps.
5. Integrate Computer Aided Drafting (CAD), Raster, Triangular Irregular Network (TIN), Vector and point data in a GIS project.
6. Validate and prioritize GIS data and data layers based on accuracy, precision and other factors.
7. Prepare written, formatted and diagrammatic summaries of various data sources.
8. Describe data in narrative fashion for scientific reports and transmission to clients.

### **Topics and Scope:**

- I. Data science and the theory of data
- II. Data as discrete numbers vs. data as information
  - A. Classifications of data
  - B. Spatial vs. non-spatial data
- III. Global positioning systems (GPS)
  - A. Basic concepts and mechanics
  - B. Signals and signal interpretation
  - C. Field collection
  - D. Office processing
- IV. Coordinate systems and datums
  - A. Coordinate system selection - geographic or projected
  - B. Coordinate system transformations
  - C. Realizations vs. epochs
- V. Data types, formats and field collection methods
  - A. Field diagrams and field notebooks
  - B. Electronic data loggers

- C. Mobile mapping and data dictionaries
- VI. Acquisition of existing geospatial and attribute data sets from related GIS sources
  - A. Data from collaborating professionals
  - B. Third party data vendors
  - C. Online data websites: public, private and governmental
- VII. Acquisition of existing geospatial and attribute data from remote sensing
  - A. Signal characteristics
  - B. Signal interpretation
  - C. Image characteristics
  - D. Image interpretation
- VIII. Raw Data vs. Processed Data
  - A. Validation: QC/QA, analysis, summarization
  - B. Management: conversion, management & storage
- IX. Metadata and data documentation
  - A. Importance
  - B. Style Sheets
- X. Integration, summarization and delivery of GIS data and GIS deliverables
- XI. Topics III thru X mentioned above will also be studied by means of field laboratory exercises and laboratory reports during the laboratory portion of the course

### Assignment:

1. Reading assignments averaging 30-50 pages per week.
2. Online tutorials with quizzes (8-16)
3. Lab reports/GPS skill demonstrations (8-16)
4. One Midterm exam
5. One final exam

### 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.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing  
0 - 0%

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

Lab reports, online tutorial exercises

Problem solving  
40 - 50%

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

Operate GPS receivers, proper acquisition of data

Skill Demonstrations  
30 - 40%

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

Quizzes, mid-term exam and final exam, including: multiple choice, completion, true-false, short answer, short essay, and/or oral presentation

Exams  
20 - 30%

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

Class Participation

Other Category  
0 - 10%

**Representative Textbooks and Materials:**

Integrating GIS and the Global Positioning System, Karen Steede-Terry, 1st Edition, ESRI Press, 2000 (classic)

Integrated Geospatial Technologies: A Guide to GPS, GIS, and Data Logging, Jeff Thurston et al., 1st Edition Wiley Publications, 2003 (classic)

The Visual Display of Quantitative Information, Tufte, Edward R. Graphics Press, 2nd edition, 2001 (classic)

Envisioning Information, Tufte, Edward R. Graphics Press, 1990 (classic)