

BUTTE COLLEGE

COURSE OUTLINE

I. CATALOG DESCRIPTION

GEOG 21 - GIS Data Capture

3 Unit(s)

Prerequisite(s): NONE

Recommended Prep: NONE

Transfer Status: CSU

34 hours Lecture

51 hours Lab

This course covers design and implementation of geographic databases for Geographic Information Systems (GIS) data capture and management. Included are essential concepts and practices of relational database management systems, with specific application to GIS. Data is captured using Global Positioning Systems (GPS) and mobile GIS methods. GIS digitizing and editing are also covered.

II. OBJECTIVES

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

- A. Identify the sources of existing spatial data and manipulate that data to one's needs.
- B. Evaluate the quality and reliability of existing GIS data.
- C. Convert digital and hard copy GIS data to needed formats.
- D. Choose and apply appropriate projections and scales for given GIS data sets.
- E. Access appropriate GIS data sets from the Internet.
- F. Capture and manipulate data using GPS.

III. COURSE CONTENT

A. Unit Titles/Suggested Time Schedule

Lecture

<u>Topics</u>	<u>Hours</u>
1. Introduction and Overview	2.00
2. Data: The heart of GIS	3.50
3. Creating Digital Spatial Data	3.50
4. Acquiring Existing Digital Data	4.00
5. Accessing Spatial Data Sources	4.00
6. Converting Data	3.00
7. Scanning Hardcopy Data	4.00
8. Tabular Databases	3.00
9. Using GPS Data	4.00
10. Managing Spatial Data	3.00
Total Hours	34.00

Lab

<u>Topics</u>	<u>Hours</u>
1. Discovering data sources	3.00
2. Creating data sources	6.00
3. Finding existing data	6.00

4.	Manage and manipulate data	6.00
5.	Use of various types of data sets	6.00
6.	Converting data sets	6.00
7.	What to do with hard copy data	6.00
8.	Collect data using GPS	6.00
9.	Making non-spatial, spatial	6.00
	Total Hours	51.00

IV. METHODS OF INSTRUCTION

- A. Lecture
- B. Class Activities
- C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- D. Discussion
- E. Demonstrations
- F. Problem-Solving Sessions

V. METHODS OF EVALUATION

- A. Exams/Tests
- B. Quizzes
- C. Papers
- D. Oral Presentation
- E. Demonstration
- F. Homework
- G. Lab Projects

VI. EXAMPLES OF ASSIGNMENTS

- A. Reading Assignments
 - 1. Read the chapter "Representing Spatial Objects," and prepare to discuss how the geometry of a collected objects are displayed, how network and topology models are represented, and how recent initiatives are standardized.
 - 2. Read an article, from a popular or peer reviewed publication, about the current status of geo-data acquisition, particularly focusing on the use of mobile devices and digital video. Prepare an oral presentation for in class discussion.
- B. Writing Assignments
 - 1. Write a 750 word paper on the particular importance of projection and scale as it associated with the scope of a particular mapping project.
 - 2. Write a 500 word critique on the article: Free and Open Source Software for GIS Education, as it relates to government and industrial use of open source GIS software and other GIS products such as ESRI's ArcView.
- C. Out-of-Class Assignments
 - 1. Complete one of the three ESRI Virtual Campus courses: Working with Coordinate Systems in ArcGIS, Basics of Map Projection, Using Lidar Data, Exploring Spatial Patterns in Your Data, and present your certificate of completion for assignment credit.
 - 2. Visit a public or private agency and observe the GIS application process, and present an oral report concerning their workflow of a GIS project.

VII. RECOMMENDED MATERIALS OF INSTRUCTION

Textbooks:

- A. Decker, Drew. GIS Data Sources. 1st Edition. John Wiley & Sons, 2001.

B. Yeh, A., Shi, W., Leung, Y. Advances in Spatial Data Handling and GIS. 1st Edition. Springer
Berlin Heidelberg, 2014.

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