

BUTTE COLLEGE

COURSE OUTLINE

I. CATALOG DESCRIPTION

NR 70 - Geospatial Data Applications

2 Unit(s)

Prerequisite(s): NONE

Recommended Prep: AB 25

Transfer Status: CSU

17 hours Lecture

51 hours Lab

This course is an introduction to applied Geographical Information Systems (GIS) and provides the knowledge and practical experience necessary to develop skills in the acquisition of Global Positioning System's (GPS) data and its application to (GIS) for presentation and use in precision agriculture, field biology/botany, natural resources and park-land management, as well as heavy equipment operation. No previous GIS experience is assumed.

II. OBJECTIVES

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

- A. Use various types of GPS and GIS equipment and software
- B. Acquire and store digital GPS data
- C. Locate waypoints using maps and GPS equipment
- D. Convert GPS data and digital maps from one form to another
- E. Apply appropriate projection for a given objective
- F. Map engineered grades, landmarks and boundaries
- G. Map migration corridors, and temporal home and transitional ranges of wildlife
- H. Compile information from GPS data, aerial and topographical maps to analyze and present spatial configurations of natural resources

III. COURSE CONTENT

A. Unit Titles/Suggested Time Schedule

Lecture

<u>Topics</u>	<u>Hours</u>
1. Introduction	2.00
2. ArcGIS Desktop	2.00
3. Getting started with maps and data	2.00
4. Displaying data	2.00
5. Getting information about features	2.00
6. Analyzing feature relationships	2.00
7. Presenting data	3.00
8. Summary and Testing	2.00
Total Hours	17.00

Lab

<u>Topics</u>	<u>Hours</u>
1. Introduction	3.00
2. ArcGIS Desktop	3.00
3. Exploring ArcMap	3.00

4.	GPS data acquisition and adding data to ArcMap	3.00
5.	Symbolizing features and rasters	3.00
6.	Mapping Density	3.00
7.	Using Dynamic Labels	3.00
8.	Preparing data for analysis	3.00
9.	Analyzing Spatial data	3.00
10.	Projecting data in ArcMap	3.00
11.	Creating Features	3.00
12.	Editing features and attributes	3.00
13.	Making maps from templates	3.00
14.	Making maps for presentations	6.00
15.	Project presentations	6.00
	Total Hours	51.00

IV. METHODS OF INSTRUCTION

- A. Lecture
- B. Instructor Demonstrations
- C. Group Discussions
- D. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- E. Multimedia Presentations
- F. Hands on computer based activities using GIS software and the Internet

V. METHODS OF EVALUATION

- A. Oral Presentation
- B. Homework
- C. Performance Examinations
- D. Essays and research papers

VI. EXAMPLES OF ASSIGNMENTS

- A. Reading Assignments
 - 1. Read a peer-reviewed journal article about the use of GIS for wildlife management. Be prepared to discuss in class.
 - 2. Read an article on using GIS in the management of a forest in California. Evaluate the benefits of GIS as opposed to historical methods.
- B. Writing Assignments
 - 1. Write a 1 – 2 page synopsis on the use of GIS in mapping of soil types in an agricultural field.
 - 2. Write a three page report on mapping vegetation types on serpentine outcroppings in northern California.
- C. Out-of-Class Assignments
 - 1. Collect GPS data points of features around your city and map them using GIS software.
 - 2. Using GPS data points provided by your instructor, map winter and summer home ranges, and migration corridors of wildlife for a final project using GIS software.

VII. RECOMMENDED MATERIALS OF INSTRUCTION

Textbooks:

- A. Ormsby, T.J. Getting to Know ArcGIS Desktop. 3rd Edition. ESRI Press, 2013.

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