

Date: 3/30/2010

I. Course Name: Introduction to Geographic Information Systems

Course Prefix and Number: GIS 130

Credit Hours and Contact Hours: 3 credit hours and 4 contact hours

Catalog Description including pre- and co-requisites:

This is an introductory level geospatial technology course designed to introduce students to the concepts and theories of geographic information systems (GIS) and the practice of geospatial analysis. This course consists of a lecture component and a laboratory component. Students will learn to apply GIS concepts through hands-on exercises designed to explore and analyze spatial data. Students will use leading geospatial software used by numerous professions including natural resources conservation and sustainability, business management, criminal justice, and community planning. (also listed as CON 130)

II. Course Outcomes and Objectives

Learning Outcomes:

1. Students will convey a basic, practical understanding of GIS concepts, techniques and real world applications
2. Students will identify how GIS is utilized in different occupations
3. Students will demonstrate how to import geospatial data into a GIS and be able to interact and perform basic analysis on this geospatial data.
4. Students will demonstrate basic skills necessary to utilize a Desktop GIS Package.
5. Students will demonstrate basic cartographic skills, which clearly communicate spatial relationships based on statistics and content stored in databases.

Relationship to Academic programs and curriculum:

This course will be offered as an elective for all conservation and horticulture degree programs. It may also be taken as a general elective college wide.

College competencies addressed by the course:

_____ writing

_____ ethics and values

_____ oral communication

_____ citizenship

__X__ reading

__X__ global concerns

_____ mathematics

__X__ information resources

__X__ problem solving

__X__ professional competency

__X__ computer literacy

III. Methods of Instruction

Types of Course materials:

Students will use a textbook for the class and have access to the GIS software in the computer lab.

Methods of instruction:

There will be both lecture and hands-on lab instruction using the GIS software.

Assessment measures:

Students will be assessed using quizzes and exams. They will also be required to complete laboratory projects using the GIS software and will be assessed on the projects.

Methods of Evaluation:

Students will be evaluated using written quizzes and exams. They will also be required to demonstrate their proficiency with the GIS software by completing a series of laboratory projects.

IV. General Outline of Topics covered

Lecture topics to be covered include, but are not limited to:

1. Introduction to GIS; GIS data.
2. Coordinate and reference systems.
3. Introduction to maps: concept of scale, accuracy, and standards.
4. Map composition, design, classification and symbolization.
5. An overview of data types and sources.
6. Planning and preparing: the analytical process using GIS.
7. Working with spatial and attribute data.

8. Understanding spatial data models (raster and vector): advantages, limitations.
9. Creating and editing spatial data.
10. Spatial modeling.

Laboratory topics to be covered include, but are not limited to:

1. Data source and file management.
2. Introduction to ESRI ArcGIS: exploring a GIS map, exploring ArcGIS Desktop.
3. Referencing data to real locations: understanding coordinate systems, working with map projections.
4. Creating map symbology: working with map symbols and labels, symbolizing features based on attributes, classifying data, mapping density and proportion.
5. Organizing Geographic Data: exploring geographic data, organizing geographic data.
6. Exploring and downloading online GIS data.
7. Querying and managing spatial and attribute data.
8. Working with different coverages, including images.
9. Creating and editing spatial data: editing feature shapes, editing feature attributes, creating new features and attributes, joining and linking attribute data.
10. Working with geoprocessing and modeling tools: creating and using models.