South Central College

GIS 2841 Intermediate GIS

Course Outcome Summary

Course Information

Description This course is a continuation of GIS 2840 Introduction to Geographic Information Systems, with emphasis placed on continued learning of the manipulation and management of spatial data and understanding of relationships between features and database attributes. In addition, this course will cover the development of web mapping components that can be used to communicate information to those who need access to spatial data via the internet. The primary software used in this course will be ESRI's ArcGIS suite. (Prerequisite: GIS 2840)

Total Credits 4

Total Hours 96

Types of Instruction

Instruction Type	Credits/Hours
Lecture	2/32
Lab	2/64

Pre/Corequisites

GIS 2840 Introduction to GIS

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Examine ArcGIS Data Connections and Retrieval Methods

Learning Objectives

Develop Personal Geodatabases
Develop Open Database Connectivity Connections to Data
Import and symbolize CAD Drawings
Import and symbolize feature class data
Import and symbolize Raster data

2. Explain Relationship of Features within Geodatabases

Learning Objectives
Develop Data field relationships
Create feature class domains
Utilize feature class topologies
Utilize coordinate systems within geodatabases

3. Examine Importance of Metadata

Learning Objectives
Evaluate metadata software packages
Identify metadata key components
Determine metadata fields to data relationships
Develop feature class metadata

4. Create and Edit Data in ArcGIS

Learning Objectives
Perform feature class vector data editing
Perform raster data editing
Create and edit attribute tables
Join attribute data from multiple feature classes

5. Utilize Spatial Data analysis tools

Learning Objectives
Query spatial data using SQL commands
Manipulate spatial data attributes
Develop query reports using MS Excel and Access
Develop query reports using Crystal Reports
Import queried data as new feature classes

6. Develop Proficiency with Spatial Analyst Extension

Learning Objectives
Identify spatial relationships between feature class entities
Identify spatial analysis feature class queries
Develop spatial analysis feature class queries
Develop maps of feature class analysis results

7. Develop Proficiency with Raster Analysis

Learning Objectives
Examine raster data formats
Develop raster data queries
Symbolize raster data queries

8. Develop Proficiency with 3D Anlyst Extension

Learning Objectives
Identify data analysis needs for 3D analysis
Develop 3D data model for analysis
Develop a map of 3D analysis results

9. Practice Standard Cartographic Requirements

Learning Objectives
Examine the communication role of maps
Acquire standard cartographic development techniques
Develop multiple format cartographic displays

10. Develop GIS Data Models

Learning Objectives
Examine ArcGIS Model Builder
Develop data manipulation models
Edit data manipulation models

11. Develop GIS Web Maps

Learning Objectives

Compare working web applications
Identify GIS web needs
Identify GIS web use
Develop simple maps for web publication

12. Practice GIS use within Local and State Government

Learning Objectives

Describe roles of GIS within city government
Describe roles of GIS within county government
Describe roles of GIS within state government

13. Develop Proficiency with Linear Referencing Models

Learning Objectives

Understand linear referencing models
Develop linear referencing models
Map linear refencing attribute and graphic relationships
Understand database connectivity relationships as used in linear referencing models

14. Transform Data Between Multiple Coordinate Systems

Learning Objectives

Understand commonly used coordinate system variables
Assign relative coordinate systems to feature class data
Project feature class data to multiple coordinate systems

15. Utilize Web Data Sources for Map Development and Analysis

Learning Objectives

Research commonly used web sites for useful GIS data
Download and manipulate GIS data for lab projects
Understand formating issues of common GIS data sets found on the web

16. Identify GIS Project Development Processes

Learning Objectives

Identify project parameters
Prepare GIS project organizational chart
Identify data needs
Identify resources

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

This material can be made available in alternative formats by contacting the Academic Support Center at 507-389-7222.