South Central College

GIS 2840  Introduction to Geographic Information Systems (GIS)

Course Outcome Summary

Course Information

Description
This course covers the theory and use of computer software for the collection, analysis, and communication of geographic information. This course will use ArcGIS software, which was developed by Environmental Systems Research Institute, Inc. (ESRI) as a tool to create, manage and manipulate spatial data within a GIS. (Prerequisite: None)

Total Credits: 4
Total Hours: 96

Types of Instruction

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Pre/Corequisites

None

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. **Explore ArcGIS**
   - Learning Objectives
     - Describe GIS data concepts
     - Describe the structure of ArcGIS desktop software
     - Find and connect to spatial data
     - Search for spatial data and maps

2. **Manipulate ArcMap**
   - Learning Objectives
3. **Examine ArcCatalog**
   Learning Objectives
   - Describe GIS data management
   - Find and connect to data
   - Document database with metadata
   - Create GIS project and data shortcuts

4. **Evaluate Spatial Data**
   Learning Objectives
   - Investigate spatial data integrity
   - Investigate attribute data integrity
   - Manage raster datasets in a geodatabase
   - Add specialized datasets to a geodatabase

5. **Create Geodatabases**
   Learning Objectives
   - Create and modify features
   - Utilize projected and geographic coordinate systems
   - Add and edit attribute data, annotation, and dimensions
   - Check data for errors

6. **Create Features**
   Learning Objectives
   - Add data to a map
   - Organize layers
   - Set spatial extents and scale
   - Identify and locate features
   - Use attributes to symbolize features
   - Create custom symbols

7. **Modify Features**
   Learning Objectives
   - Utilize the editor toolbar
   - Clip features
   - Merge features
   - Enhance features
   - Correct Geometric feature deficiencies

8. **Review Cartographic Techniques**
   Learning Objectives
   - Utilize standard cartographic practices
   - Compare map scale to reference scale
   - Use a variety of colors during map development
   - Utilize standard cartographic symbology

9. **Create Reports, Graphs and Maps**
   Learning Objectives
   - Create customized graphs
   - Create customizable reports using Crystal Reports
   - Create perspective views
   - Insert Graphs and Reports into map layouts

10. **Join and Relate Tables**
Learning Objectives
Join MS Access data to feature class data
Join MS Excel tables to feature class data
Add fields and calculate attribute values
Relate attribute tables to feature class data

11. Select Features by Location
Learning Objectives
Select subset features by attribute value
Select features based on location
Select features by multivariable queries
Select features based on other features

12. Examine Methods to Analyze Spatial Data
Learning Objectives
Create paths and corridors
Allocate areas to centers
Model flow
Prepare raster surfaces
Prepare TIN surfaces

13. Prepare Data for Analysis
Learning Objectives
List data preparation tasks
Extract a portion of a dataset
Overlay geographic datasets
Use standard SQL syntax

14. Analyze Spatial Data
Learning Objectives
Measure distances between features
Query spatial data by specific values
Report spatial data relationships
Calculate spatial distances and areas

15. Practice Georeferencing
Learning Objectives
Add raster data to maps
Fit raster to known spatial references
Assign coordinate system to raster data
Rectify raster data

16. Prepare Feature Class Symbology
Learning Objectives
Manipulate feature class symbology
Create Custom feature symbology
Convert feature symbology to feature class annotation
Reference feature class annotation to map scale

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
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