

SOUTHEAST COMMUNITY COLLEGE
CONSTRUCTION MANUFACTURING AND TECHNOLOGY DIVISION
Geographic Information Systems Technician Program
Revision Date: August 22, 2022

I. CATALOG DESCRIPTION

Course Number: GIST1120
Course Title: Spatial Analysis and Modeling
Prerequisite(s): GIST1110
Catalog Description: An introduction to problem-solving and decision-making using geospatial analysis techniques. Students will learn to effectively solve spatial problems and make decisions by working with a variety of data and methods using the spatial analysis tools in GIS software.

Credit Hours: 3
Class Hours: 45
Lab Hours: 0
Total Contact Hours: 45

II. COURSE OBJECTIVES: *Course will:*

- A. Introduce students to the basic principles and concepts of spatial analysis and modeling.
- B. Examine techniques for finding relationships between geospatial data.
- C. Utilize spatial analysis tools to select features by location; prepare data for analysis; detect and quantify patterns and analyze spatial data.
- D. Show how to utilize available tools to create desired outcomes.
- E. Present methods for identifying, describing, examining, and modeling patterns in spatial data.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

- A. Student Learning Outcomes: *Student will be able to:*
 - 1. Prepare data for use in analysis.
 - 2. Determine an appropriate approach to solving a problem or answering a question using geospatial tools and methods.
 - 3. Run geoprocessing tools
 - 4. Organize the data sets resulting from analysis.
 - 5. Present the results of a geospatial analysis using appropriate terminology and visualizations.
- B. General Education Learning Outcomes (GELOs)
 - 1. GELO #3: Critical Thinking & Problem Solving
Outcome 1: Collect, identify, interpret and analyze data.

IV. CONTENT/TOPICAL OUTLINE (*CID may provide more detailed information*)

- A. Joining, relating and preparing data for analysis
- B. Geoprocessing vector data and using spatial analyst
- C. Mapping where things are and mapping the most and least
- D. Mapping density and finding what's inside
- E. Finding what's nearby
- F. Mapping change
- G. Measuring geographic distribution
- H. Analyzing patterns
- I. Identifying clusters

- J.** Final project
- V. INSTRUCTIONAL MATERIALS**
 - A.** Required Text(s): Allen, David W., *GIS TUTORIAL 2-Spatial Analysis Workbook*, (Refer to CID and/or instructor for current edition)
 - B.** Other Sources: Internet and computer access
- VI. METHODS OF PRESENTATION/INSTRUCTION**
 - A.** Methods of presentation typically include a combination of the following:
 - 1.** Module overviews
 - 2.** Video presentations
 - 3.** Readings and resources
- VII. METHODS OF EVALUATION**
 - A.** Methods of evaluation, although determined by the individual instructor, traditionally includes a combination of the following:
 - 1.** Assignments
 - 2.** Discussions
 - 3.** Projects
 - 4.** Quizzes/Exams