



Course Syllabus

GISC 1302- Understanding Geographic Information Systems

Catalog Description: Theory and application of geographic information science (GIS). Includes an overview of the general principles of GIS and practical experience in its use. Geographic Information Systems (GIS) is a computer-based, data processing tool for gathering, storing, manipulating, analyzing, and displaying spatial data. Understanding Geographic Information Systems is designed to give students entry-level proficiency. This class enables the student to develop the fundamental skills, knowledge, and experience. The class combines classroom lecture along with the hands-on experience to give the students practical knowledge of GIS.

Lecture Hrs. – 1, Lab Hrs. – 2

Prerequisites: DFTG-1358

Semester Credit Hours: 3
Lecture Hours per week: 3
Contact Hours per Semester: 48
State Approval Code:

Course Subject/Catalog Number: GISC 1302

Course Title: Understanding Geographic Information Systems

Course Rationale: Provide the student with basic knowledge of the Geographic Information System program from ArcCatalog through collecting data, creating maps, working with tables, creating geodatabases and digitizing.

Instructional Goals and Purposes: The purpose of this course is to introduce the students to the hardware and software components of a Geographic Information System and GIS applications. Topics include data structures and basic functions, methods of data capture and sources of data, and the nature and characteristics of spatial data and objects.

Learning Objectives: Upon completion of this course, the student will be able to accomplish the following competencies:

1. Discuss the history, purpose and parts of a map
SCANS (1a-i, 1a-ii, 1a-iv, 1c-I, 2c-i, 2c-ii, 2c-iii)
2. Obtain and evaluate data
SCANS (1a-i, 1a-ii, 1a-iv, 1b-i, 1b-ii, 1b-iii, 1b-iv, 1b-v, 1ci, 1c-iv, 1c-v, 2a-i, 2a-iii, 2b-ii, 2c-i, 2c-ii, 2c-iii, 2c-iv, 2e-i, 2e-ii)
3. Create a personal geodatabase
SCANS (1a-i, 1a-ii, 1a-iv, 1b-ii, 1b-iii, 1b-v, 1c-i, 1c-iv, 1c-v, 2a-i, 2a-iii, 2b-ii, 2c-i, 2c-ii, 2c-iv, 2e-i, 2e-ii, 2e-iii)
4. Digitize a point, polygon and line layer
SCANS (1a-i, 1a-ii, 1a-iv, 1b-i, 1b-ii, 1b-iii, 1b-v, 1c-i, 1c-iv, 1c-v, 2a-i, 2a-iii, 2b-ii, 2c-i, 2c-ii, 2c-iv, 2e-i, 2e-ii, 2e-iii)
5. Create a map using ArcGIS
SCANS (1a-i, 1a-ii, 1a-iv, 1b-ii, 1b-iii, 1b-v, 1c-i, 1c-ii, 1c-iv, 1c-v, 2a-i, 2a-iii, 2b-ii, 2c-i, 2c-ii, 2c-iii, 2c-iv, 2e-i, 2e-ii, 2e-iii)
6. Demonstrate the implementation and management of a GIS project
SCANS (1a-i, 1a-ii, 1a-iv, 1a-v, 1b-ii, 1b-iii, 1b-v, 1c-i, 1c-ii, 1c-iii, 1c-iv, 1c-v, 2a-i, 2a-iii, 2b-ii, 2c-i, 2c-ii, 2c-iii, 2c-iv, 2e-i, 2e-ii, 2e-iii)

Course Grade:

Quizzes and Assignments	25%
Tests	50%
Final Exam	25%
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Final Grade	100%

Texts, Materials, and Supplies:

Flash drive-mass storage device

Contact course instructor for more information

Secretary of Labor's Commission on Achieving Necessary Skills (SCANS)

1. BASIC SKILL COMPETENCIES

A. Basic Skills

- i. **Reading:** Locate, understand and interpret written information in prose and in documents such as manuals, graphs and schedules.
- ii. **Writing:** Communicate thoughts, ideas, information and messages in writing, and create documents such as letters, directions, manuals, reports, graphs, and flow charts.
- iii. **Arithmetic & Mathematical Operations:** Perform basic computations and approach practical problems by choosing appropriately from a variety of mathematical techniques.
- iv. **Listening:** Receive, attend to, interpret, and respond to verbal messages and other cues.
- v. **Speaking:** Organize ideas and communicate orally.

B. Thinking Skills

- i. **Creative Thinking:** Generate new ideas.
- ii. **Decision Making:** Specify goals and constraints generate alternatives, consider risks and evaluate and choose the best alternative.
- iii. **Problem Solving:** Recognize problems and devise and implement plan of action.
- iv. **Visualize ("Seeing Things in the Mind's Eye"):** Organize and process symbols, pictures, graphs, objects, and other information.
- v. **Knowing how to learn:** use efficient learning techniques to acquire and apply new knowledge and skills
- vi. **Reasoning:** Discover a rule or principle underlying the relationship between two or more objects and apply it when solving a problem.

C. Personal Qualities

- i. **Responsibility:** Exert a high level of effort and persevere toward goal attainment.
- ii. **Self-Esteem:** Believe in one's own self-worth and maintain a positive view of oneself.
- iii. **Sociability:** Demonstrate understanding, friendliness, adaptability, empathy, and politeness in group settings.
- iv. **Self-Management:** Assess oneself, set personal goals, monitor progress, and exhibit self control.
- v. **Integrity & Honesty:** Choose ethical courses of action.

2. WORKPLACE COMPETENCIES

A. Resources:

- i. **Time:** Select goal-relevant activities, rank them, allocate time, and prepare and follow schedules.
- ii. **Money:** Use or prepare budgets, make forecasts, keep records, and make adjustments to meet objectives.
- iii. **Material & Facilities:** Acquire, store, allocate, and use materials or space efficiently.
- iv. **Human Resources:** Assess skills and distribute work accordingly, evaluate performance and provide feedback.

B. Interpersonal Skills:

- i. **Participate as Member of a Team:** Contribute to group effort.
- ii. **Teach Others New Skills.**
- iii. **Serve Clients/ Customers:** Work to satisfy customers' expectations.
- iv. **Exercise Leadership:** Communicate ideas to justify position, persuade & convince others, responsibly challenge existing procedures & policies.
- v. **Negotiate:** Work toward agreements involving exchange of resources, resolve divergent interests.
- vi. **Work with Diversity:** Work well with men and women from diverse backgrounds.

C. Information:

- i. **Acquire and Evaluate Information.**
- ii. **Organize and Maintain Information.**
- iii. **Interpret and Communicate Information.**
- iv. **Use computers to process information.**

D. Systems:

- i. **Understand Systems:** Know how social, organizational and technological systems work and operate effectively with them.
- ii. **Monitor & Correct Performance:** Distinguish trends, predict impacts on system operations, and diagnose deviations in systems' performance.
- iii. **Improve or Design Systems:** Suggest modifications to existing systems and develop new or alternative systems to improve performance.

E. Technology

- i. **Select Technology:** Choose procedures, tools or equipment including computers and related technologies.
- ii. **Apply Technologies to Task:** Understand overall intent and proper procedures for setup and operation of equipment.
- iii. **Maintain and Troubleshoot Equipment:** Prevent, identify, or solve problems with equipment, including computers and other technologies.