

GEOGRAPHIC INFORMATION SYSTEMS AND REMOTE SENSING ESSENTIAL CURRICULUM

Unit I: Introduction to Geospatial Technologies

Goal: The student will demonstrate the ability to explain ArcMap and its functions.

Objectives – The student will be able to:

- a. Explore the ArcMap window and its components.
- b. Discuss spatial data:
 - Raster data
 - Vector data.
- c. Set bookmarks and use zooming techniques.
- d. Open and save an ArcMap document.
- e. Use the identify features and selects features tools.
- f. View tabular data.
- g. Discuss geospatial technologies.

Unit II: Manipulating ArcMAP

Goal: The student will demonstrate the ability to manipulate and analyze census data using a GIS.

Objectives – The student will be able to:

- a. Open, sort, and select specific data in an attribute table.
- b. Use “Find” and “Identify” tools.
- c. Query data using “Select by Location” and “Select by Attribute” functions.
- d. Edit in layout view.
- e. Print in map layout view.

Unit III: Exploring and Identifying Maps and Map Features

Goal: The student will demonstrate the ability to collect and manipulate data from a variety of sources to display in a GIS.

Objectives – The student will be able to:

- a. Explain the history of mapping.
- b. Use coordinate systems and locators.
- c. Differentiate various map projections and identify elements:
 - Map coordinate systems
 - Map scales
 - Map types and map essentials.

Unit IV: Remote Sensing

Goal: The student will demonstrate the ability to manipulate remote sensing data to identify features and analyze data.

Objectives – The student will be able to:

- a. Identify and practice creating remote sensing and aerial photography.
- b. Build data layers from aerial photography.
- c. Identify and practice creating remote sensing and satellite imagery.
- d. Identify features using imagery.

Unit V: Global Positioning System (GPS) Technology

Goal: The student will demonstrate the ability to explain the operation of the Global Positioning System (GPS).

Objective – The student will be able to use GPS device technology to apply problem-solving skills for:

- Geocaching
- Location based analysis techniques
- Data collection methods and techniques.

Unit VI: Surface Analysis

Goal: The student will demonstrate the ability to use spatial analysis to conduct surface analysis.

Objectives – The student will be able to:

- a. Differentiate simple and kernel density.
- b. Interpolate using IDW, Spline, and Kriging.
- c. Practice and apply surface analysis tools and techniques:
 - Mapping distance
 - Mapping density
 - Interpolation
 - Analyzing surfaces
 - Creating grid statistics.