

Course Description**GIS2045 | Intermediate GIS Technology | 4.00 credits**

This course teaches intermediate-level concepts of Geographic Information Systems (GIS). The student will acquire an understanding of discrete geocoding and georeferencing, data input, working with spatial databases, and data creation. At the end of the course, the student will be able to perform intermediate-level operations in GIS software. Prerequisite: GIS 1040.

Course Competencies

Competency 1: The student will demonstrate an understanding of the geoprocessing functions used in GIS analysis by:

1. Using data queries to extract features
2. Clipping features
3. Dissolving features
4. Merging features
5. intersecting layers
6. Joining layers
7. Automating geoprocessing

Competency 2: The student will demonstrate an understanding of spatial analysis by:

1. Buffering points for proximity analysis
2. Conducting a site suitability analysis
3. Apportioning data for non-coterminous polygons
4. Processing raster map layers
5. Creating a hill shade raster layer
6. Creating a kernel density map
7. Extracting raster value points
8. Conducting a raster-based site suitability study
9. Building a risk index

Competency 3: The student will demonstrate an understanding of 3D analysis by:

1. Creating 3D scenes
2. Creating a TIN from contours
3. Draping features onto a TIN
4. Navigating through scenes; e) creating a fly- through animation
5. Adding 3D effects and 3D symbols
6. Editing 3D objects
7. Performing a line-of-sight analysis

Competency 4: The student will demonstrate an understanding of mapping the most and the least by:

1. Selecting the different categories available
2. Controlling which values are displayed
3. Limiting values to display
4. Mapping quantities
5. Choosing classes
6. Creating a map series
7. Creating charts

Competency 5: The student will demonstrate an understanding of mapping density and finding what's inside by:

1. Displaying density for analysis
2. Creating dot density maps

3. Creating a density surface
4. Overlaying datasets for analysis
5. Finding what's partially inside

Competency 6: The student will demonstrate an understanding of spatial statistics and hotspots by:

1. Identifying hotspots
2. Finding the mean center of geographic distribution
3. Identifying the central feature of geographic distribution
4. Calculating the geographic dispersion of data

Competency 7: The student will demonstrate an understanding of how to convert data into GIS formats by:

1. Converting shapefiles to geodatabase feature class
2. Exporting tabular data from a spreadsheet
3. Importing spreadsheet into GIS software
4. Importing selected features into an existing layer

Competency 8: The student will demonstrate an understanding of how to publish GIS content online by:

1. Publishing shapefiles online
2. Creating a layer using a .CSV file
3. Publishing 2D maps
4. Creating a simple web app using a template
5. Sharing applications

Learning Outcomes:

- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Use computer and emerging technologies effectively