# GIS 2045 Intermediate GIS Technology

Course Description: 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. (3 hr. lecture, 2 hr. lab)

## Course Competency

### 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.
7. Automating geoprocessing

### Learning Outcomes

- Computer / Technology Usage

## 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 hillshade raster layer.
6. Creating a kernel density map.
7. Extracting raster value points.
8. Conducting a raster-based site suitability study.

### Learning Outcomes

- Numbers / Data
- Computer / Technology Usage

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

- Communication
- Computer / Technology Usage
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.
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.

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

- Communication
- Critical thinking
- Communication
- Computer / Technology Usage
- Numbers / Data
- Computer / Technology Usage
- Computer / Technology Usage
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.

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

- Communication
- Computer / Technology Usage

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