

**Course Description****GIS1040 | Introduction to GIS Technology | 4.00 credits**

This course is introductory and first in a sequence of Geographic Information Systems (GIS) courses that make up the new CCC in Geographic Information Systems Technology. The course is also being added as a new elective option for the AS in Information Systems Technology.

**Course Competencies:**

**Competency 1:** The student will demonstrate an understanding of Geographic Coordinate Systems and Geographic Information Systems by:

1. Differentiating between different models of the shape of the earth
2. Describing the characteristics of global coordinate systems and datums
3. Comparing different map projections
4. Detailing the characteristics of the Cartesian coordinate system
5. Detailing the UTM and State Plane coordinate systems
6. Defining geographic information systems (GIS)
7. Describing the need for GIS

**Competency 2:** The student will demonstrate an understanding of how to perform map creation activities by:

1. Adding geographic layers to a GIS application
2. Manipulating data files that do not align correctly
3. Symbolizing each layer appropriately
4. Marking map features as needed
5. Adding map components such as legends, titles, scale bars, and north arrows
6. Publishing the complete map in paper and electronic formats

**Competency 3:** The student will demonstrate an understanding of how to set the appropriate geographic coordinate system for a map in the GIS application by:

1. Comparing geographic coordinate systems and projected coordinate systems
2. Aligning data sets with different coordinate systems
3. Displaying the layer based on the XY coordinate values
4. Determining the correct coordinate system by researching metadata or questioning sources
5. Assigning and coordinating the data set and overwriting existing coordinate system information

**Competency 4:** The student will demonstrate an understanding of how to navigate map interface in GIS applications by:

1. Opening map windows, menus, and tools
2. Turning map layers on and off
3. Reordering layers in a map
4. Changing layer names
5. Examining layers properties
6. Displaying the content of the active data frame
7. Importing geographic data layer into GIS. Application
8. Understanding different data sets included in data frames

**Competency 5:** The student will demonstrate an understanding of how to work with geodatabases by:

1. Building a geodatabase file
2. Modifying an attribute table. 3. Joining tables
3. Creating centroid coordinates in a table
4. Aggregating data

**Competency 6:** The student will demonstrate an understanding of examining spatial data by:

1. Examining metadata
2. Using different map projections
3. Studying vector data formats
4. Exploring sources of vector maps
5. Downloading and processing tabular data
6. Exploring sources of raster maps

**Competency 7:** The student will demonstrate an understanding of spatial adjusting features by:

1. Digitizing polygon features
2. Using advanced editing tools
3. Digitizing point features
4. Digitizing line features

**Competency 8:** The student will demonstrate an understanding of geocoding addresses by:

1. Geocoding data by ZIP Code
2. Geocoding data by street address
3. Correcting source addresses using interactive rematch
4. Correcting street reference layer addresses
5. Using an alias table

**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