

**GIS TECHNOLOGY 2**  
**COURSE CODE: 5362**

**COURSE DESCRIPTION:** Geographical Information Systems (GIS) 2 is designed to enable/prepare students to use their knowledge of mapping and cataloging to complete numerous geospatial applications. They will learn techniques in displaying, managing, querying, symbolizing, and creating geospatial data. Students will learn the skills required to work on and/or build advanced GIS/RS projects.

**OBJECTIVE:** Given the necessary equipment, supplies, and facilities, the student will be able to successfully complete all of the following core competencies for a course granting one unit of credit.

**RECOMMENDED GRADE LEVELS:** 10–12

**COURSE CREDIT:** 1 unit

**PREREQUISITE:** GIS Technology 1

**COMPUTER REQUIREMENT:** One computer per student

**RECOMMENDED SOFTWARE:** ARCView© 9 and ARC-Editor

**RESOURCES:**

[www.mysctextbooks.com](http://www.mysctextbooks.com)

**A. SAFETY AND ETHICS**

1. Identify major causes of work-related accidents in offices.
2. Describe the threats to a computer network, methods of avoiding attacks, and options in dealing with virus attacks.
3. Identify potential abuse and unethical uses of computers and networks.
4. Explain the consequences of illegal, social, and unethical uses of information technologies (e.g., piracy; illegal downloading; licensing infringement; inappropriate uses of software, hardware, and mobile devices).
5. Differentiate between freeware, shareware, and public domain software copyrights.
6. Discuss computer crimes, terms of use, and legal issues such as copyright laws, fair use laws, and ethics pertaining to scanned and downloaded clip art images, photographs, documents, video, recorded sounds and music, trademarks, and other elements for use in Web publications.
7. Identify netiquette including the use of e-mail, social networking, blogs, texting, and chatting.

8. Describe ethical and legal practices in business professions such as safeguarding the confidentiality of business-related information.
9. Discuss the importance of cyber safety and the impact of cyber bullying.

## **B. EMPLOYABILITY SKILLS**

1. Identify positive work practices (e.g., appropriate dress code for the workplace, personal grooming, punctuality, time management, organization).
2. Demonstrate positive interpersonal skills (e.g., communication, respect, teamwork).

## **C. STUDENT ORGANIZATIONS**

1. Explain how related student organizations are integral parts of career and technology education courses.
2. Explain the goals and objectives of related student organizations.
3. List opportunities available to students through participation in related student organization conferences/competitions, community service, philanthropy, and other activities.
4. Explain how participation in career and technology education student organizations can promote lifelong responsibility for community service and professional development.

## **D. CUSTOMIZE THE DISPLAY OF GEOSPATIAL DATA**

1. Edit Layer Properties.
2. Create Layer Files.
3. Edit an attribute table by adding a new field with calculating values.
4. Perform relates and joins with data tables.

## **E. MANAGE, QUERY, AND SYMBOLIZE GEOSPATIAL DATA**

1. Label features.
2. Insert, copy, and paste data into new data frames.
3. Create graphs and reports from data.
4. Demonstrate how to analyze land use, population, and flood zone data.
5. Create geospatial data.
6. Symbolize a raster layer.
7. Resolve unmatched addresses while geocoding addresses.
8. Use dissolve features, hyperlink, spatially join data, and create buffer functions.

## **F. CREATE A GEOSPATIAL MODEL**

1. Create a geodatabase, import existing feature classes into a geodatabase, and import multiple feature classes to a geodatabase.
2. Plan and build a local data inventory.

## **G. CREATE, CHANGE, AND MANIPULATE REMOTELY SENSED IMAGE DATA**

1. View single band and multispectral images.
2. Perform various manipulations to an image including creating a subset of an image, mosaic two georeferenced images, and orthorectification.
3. Perform image analysis by orthorectifying non-georeferenced digital images to existing map features.
4. Use various tools in image analysis to extract land features from imagery data.
5. Categorize land cover types using image analysis tools.
6. Conduct vegetation analysis on imagery using image analysis tools
7. Evaluate areas of change in images.
8. Enhance an image by adjusting the brightness and contrast, adjusting the histogram, applying custom histogram stretches, sharpening and smoothing its appearance.
9. Convert an image from color IR to natural color by performing a resolution merge.

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