

# **GISC-2435 Programming for Geographic Information Systems**

## **TARRANT COUNTY COLLEGE DISTRICT MASTER SYLLABUS**

### **COURSE DESCRIPTION**

Focuses on the use of programming languages to customize and expand the capability of GIS applications. Instruction will include object oriented and component programming. Students will also design their own Graphical User Interface (GUI).

Prerequisite: COSC-1436

### **COURSE TYPE**

Technical

### **COURSE GOALS AND LEARNING OUTCOMES**

End-of-Course Outcomes: Describe and understand basic programming for GIS applications; and perform programming for GIS customizations.

Learning outcomes are linked to SCANS requirements. Specific SCANS requirements are linked to the class schedule.

Upon successful completion of this course, students will:

1. Demonstrate an understanding of the customization modes for GIS software by
  - a. identifying the tasks a customized tool can perform (1a, 1b, 2c);
  - b. identifying the programming language a customized tool uses (1a, 1b, 2c);
  - c. describing the processes used within a customized tool (1a, 1b, 2c);
  - d. evaluating the efficiency of a customized tool (1a, 1b, 2c).
2. Design custom tools for GIS applications by
  - a. conceiving of an idea for a custom tool (1a, 1b, 2c);
  - b. selecting the processes required by the custom tool (1a, 1b, 2c);
  - c. developing a pseudo code outline of the process (1a, 1b, 2c);
  - d. selecting the appropriate programming language for the application (Modelbuilder, Python, VB.Net, C++) (1a, 1b, 2c);
  - e. creating the programming code for the application (1a, 1b, 2c);
  - f. evaluating the application's execution (1a, 1b, 2c);
  - g. revising the programming code as necessary (1a, 1b, 2c);
  - h. analyzing the results (1a, 1b, 2b, 2c);
  - i. preparing a report on the tools' parameters and uses (1a, 1b, 2b, 2c).
3. Create internet based map applications by
  - a. conceiving of an idea for a web based map (1a, 1b, 2c);

- b. selecting the geographic datasets to be displayed on the map (1a, 1b, 2c);
  - c. developing an outline of the tasks the map will perform (1a, 1b, 2c);
  - d. creating the programming code for the application (KML, ASP.NET, Silverlight) (1a, 1b, 2c);
  - e. evaluating the application's execution (1a, 1b, 2b, 2c);
  - f. revising the programming code as necessary (1a, 1b, 2c);
  - g. examining the results (1a, 1b, 2c);
  - h. preparing a report on the tools' parameters and uses (1a, 1b, 2b, 2c).
4. Present a final GIS database project by
- a. conceiving a topic for the presentation (1a, 1b, 1c, 2a, 2b, 2c, 2e);
  - b. identifying the components of the project (1a, 1b, 2b, 2c);
  - c. collecting GIS databases for the project (1a, 1b, 2b, 2c);
  - d. creating the code for the project (1a, 1b, 2b, 2c);
  - e. building the application (1a, 1b, 2b, 2c);
  - f. creating a presentation (1a, 1b, 2b, 2c);
  - g. demonstrating the project to the other students (1a, 1b, 1c, 2a, 2b, 2c, 2e).

## **COURSE ASSESSMENT**

Student success is measured by a variety of assessment techniques aligned with course goals and learning outcomes. Individual faculty members are responsible for designing evaluation instruments to measure student mastery of course goals and learning outcomes and indicating the nature of such evaluation instruments in the instructor's class requirements.

## **STUDENT ACCESSIBILITY RESOURCES**

Any student with a documented disability needing academic accommodations is required to contact the Student Accessibility Resources (SAR) Office located on each campus to schedule an appointment with the Coordinator of SAR. All discussions are confidential. Because SAR accommodations may require early planning and are not provided retroactively, students are encouraged to contact SAR as early in the semester as possible. SAR is responsible for approving and coordinating all disability-related services. TCC professors will honor requests for accommodation when they are issued by SAR.

## **SCHOLASTIC DISHONESTY**

Students are responsible for adhering to the TCCD policy on scholastic dishonesty as stated in the online student handbook at [www.tccd.edu](http://www.tccd.edu).

## **RESOURCES**

For additional information regarding the student handbook, academic calendar, course evaluations, attendance policy, SCANS skills, Core Competencies, etc., see [www.tccd.edu](http://www.tccd.edu).