Course Number and Title: GIS 230 Geospatial Web Application and Development

Campus Location:
Stanton

Effective Date:
2020-51

Prerequisite:
GIS 120, ITN 180 or concurrent

Co-Requisites:
None

Course Credits and Hours:
3.00 credits
2.00 lecture hours/week
3.00 lab hours/week

Course Description:
The course introduces the design and development of web-based geospatial applications, the publication and maintenance of geospatial services, and the basic maintenance and optimization of geospatial servers. The course also includes an introduction to browser and mobile-enabled interactive applications.

Required Text(s):
Obtain current textbook information by viewing the campus bookstore - https://www.dtcc.edu/bookstores online or visit a campus bookstore. Check your course schedule for the course number and section.

Additional Materials:
None

Schedule Type:
Classroom Course

Disclaimer:
None

Core Course Performance Objectives (CCPOs):

1. Describe geospatial server configuration. (CCC 4; PGC 1, 3, 5, 6, 7, 8)
2. Design, build, and maintain a web-based geospatial application. (CCC 1, 2, 6; PGC 1, 2, 3, 6, 8)
3. Publish and maintain geospatial resources to a web service. (CCC 1, 2, 4, 6; PGC 1, 2, 3, 5, 6, 7, 8)
4. Describe the process of developing a mobile mapping application. (CCC 1, 2, 3, 4, 5, 6; PGC 1, 2, 3, 5, 6, 7, 8)
5. Demonstrate professional and ethical conduct as expected in industry. (CCC 4; PGC 7, 8)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

Measurable Performance Objectives (MPOs):
Upon completion of this course, the student will:

1. Describe geospatial server configuration.
    1. Recognize the benefits of web-based geospatial applications.
    2. Describe the roles of a web-based geospatial server system.
    3. Identify the platforms available for web-based geospatial applications.
    4. Identify the components of a web-based geospatial server system.
    5. Describe the basics of design, configuration, and optimization of a web-based geospatial server system.
2. Design, build, and maintain a web-based geospatial application.
    1. Identify the various programming languages used to develop a web-based application, such as HTML5, CSS, and JavaScript.
    2. Describe the process of creating a basic web application using an application program interface (API).
    3. Locate resources to support customization of web-based geospatial applications.
    4. Compare and contrast the various programming languages used to develop web-based applications.
    5. Use existing templates or content building tools to design and build basic web-based geospatial application.
    6. Employ methods to customize existing templates or content building tools.
    7. Design and build a unique geospatial web application.
3. Publish and maintain geospatial resources to a web service.
    1. Identify the different types of web services.
    2. Describe methods to access geospatial web services.
    3. Identify standards for geospatial web services.
    4. Describe the structure of a geospatial web service.
    5. Modify configuration settings for a geospatial web service.
    6. Publish data resources to geospatial web services.
4. Describe the process of developing a mobile mapping application.
    1. Identify the benefits of mobile applications.
    2. Identify the components of a mobile mapping application.
    3. Describe methods to deploy mobile applications to mobile devices.
5. Demonstrate professional and ethical conduct as expected in industry.
    1. Identify the need for self-discipline and time management in technical industries.
    2. Communicate and function effectively as a member of a team.
    3. Apply professional and ethical responsibilities under the GIS Certification Institute's Code of Ethics and Rules of Conduct.

Evaluation Criteria/Policies:
Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	**–**	**100**	**=**	**A**
83	**–**	**91**	**=**	**B**
75	**–**	**82**	**=**	**C**
0	**–**	**74**	**=**	**F**

Students should refer to the Student Handbook - https://www.dtcc.edu/handbook for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

Final Course Grade:
Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Summative: Exams (4-6) (equally weighted)	20%
Summative: Labs (4-8) (proportionally weighted to be determined)	50%
Summative: Final Project	10%
Formative (Homework, In-Class Activities, Discussion Boards)	20%
TOTAL	100%

Core Curriculum Competencies (CCCs are the competencies every graduate will develop):

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):

1. Apply knowledge, techniques and skills of geography and geospatial technologies such as geographic information systems (GIS), Global Navigation Satellite System (GNSS), and remote sensing (RS).
2. Employ cartographic design principles to develop effective visual representations of geospatial data, including maps, graphs and diagrams.
3. Design and implement GIS systems using common geospatial software and hardware to acquire, store, manage, analyze and visualize spatial data for a variety of disciplines.
4. Utilize geospatial techniques and common analytical methods to solve problems.
5. Evaluate and employ effective data management and database design techniques.
6. Apply fundamental concepts of programming, application development, geospatial information technology and related technologies.
7. Integrate a commitment to address professional and ethical responsibilities, including a respect for accuracy standards and diversity.
8. Recognize the need for and an ability to engage in self-directed continuing professional development.

Disabilities Support Statement:
The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the disabilities services - https://www.dtcc.edu/disabilitysupport web page or visit the campus Advising Center.