IT-2031: SERVER-SIDE WEB DEVELOPMENT

Cuyahoga Community College

Viewing: IT-2031 : Server-Side Web Development

Board of Trustees:
January 2026

Academic Term:
Fall 2026

Subject Code
IT - Information Technology

Course Number:
2031

Title:
Server-Side Web Development

Catalog Description:
Capstone course for Programming and Development majors. Advanced server-side programming course. Create server-side, database-driven websites using a current language and supporting frameworks in combination with markup, style sheets and client-side scripting.

Credit Hour(s):
3

Lecture Hour(s):
2

Lab Hour(s):
2

Requisites

Prerequisite and Corequisite
IT-2310 Web Programming, and IT-2352 Database Systems; and IT-2651 Object-Oriented Programming.

Outcomes

Course Outcome(s):
Use a current web programming framework to design and create a dynamic server-side website.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.
Cultural Sensitivity: Demonstrate sensitivity to the beliefs, views, values, and practices of cultures within and beyond the United States.

Objective(s):
1. Create a website that responds to client requests.
2. Read and respond to get and put information from the client request.
3. Demonstrate an understanding of a model-view-controller approach to generating dynamic server-side websites.
4. Address cultural sensitivity in website design.

Course Outcome(s):
Use client-side programming techniques in combination with server-side programming.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Demonstrate an understanding of the client-server model as it applies to web programming.
2. Include markup, styles, and client-side scripting in a dynamic response.

Course Outcome(s):

Design and write programs applying critical thinking and appropriate programming techniques as they apply to a web programming framework.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Create a user-interface using framework provided objects.
2. Inherit or implement framework classes or interfaces to create server-side responses.
3. Create variables.
4. Call framework-provided methods.
5. Use collections.
6. Design algorithms with the appropriate control structures.

Course Outcome(s):

Apply database manipulation language techniques to create dynamic database-driven web requests and responses.

Essential Learning Outcome Mapping:

Quantitative Reasoning: Analyze problems, including real-world scenarios, through the application of mathematical and numerical concepts and skills, including the interpretation of data, tables, charts, or graphs.

Objective(s):

1. Connect to a database.
2. Retrieve records from a database.
3. Display records using a combination of server-side and client-side techniques.
4. Update records in a database.

Methods of Evaluation:

1. Class participation and discussion
2. Oral and/or written reports
3. Homework assignments
4. Comprehensive projects
5. Quizzes
6. Objectives examinations
7. Other methods deemed appropriate by the department

Course Content Outline:

1. An overview of the Server-Side framework
    a. Introduction to the IDE and Text Editor ecosystem
    b. The MVC (Model-View-Controller) pattern
    c. Framework implementation of MVC d. State in a web application
    d. Types of middleware: Static-file, Routing, CORS, Authentication, Authorization, and Error Handling
    e. Templating syntax, template helpers, and CSS frameworks
2. Building Applications
    a. Service configuration and dependency injection
    b. Application configuration and environment variables
    c. Request processing pipeline
    d. Securing an application

   e. Publishing and deploying an application
   f. Manually test and debug a web application
3. Build a data-driven MVC web application
   a. Object-Relational Mapping (ORM)
   b. Database context/abstraction layer
   c. Connection strings and database credentials
   d. Database Migrations
   e. SQL: select, insert, update, and delete
4. Controllers and Routing
   a. Default routing configuration
   b. Code a controller and controller actions using URL parameters
5. Views and Templating
   a. Code blocks and inline expressions
   b. Inline loops and conditional statements
   c. Create controllers that return views
6. HTTP Responses
   a. Response objects and subtypes (JSON, HTML, Status Codes)
   b. Returning Response objects
   c. Passing data to views (Context objects/dictionaries)
7. Sessions and Cookies
   a. Framework methods to handle state
   b. Configuring an application to work with session state
   c. Working with session state within a controller
   d. Using JSON/Serialization to store session state
8. Data Validation
   a. Model binding and data validation
   b. Formatting validation messages with CSS
   c. Client and Server-side validation
9. Responsible Website design
   a. User considerations
   b. Ethics in data and design

Religious Accommodation

Before reviewing the course schedule, students should carefully review the following religious accommodation policy and other required instructional policies:

Religious Accommodation:

Students seeking an accommodation for absences permitted under Ohio's Testing Your Faith Act must provide the instructor with written notice of the specific dates for which the student requires an accommodation and must do so not later than fourteen (14) days after the first day of instruction. Please submit requests for accommodations at this link: https://portal2.tri-c.edu/ReligiousAccommodation/ Religious Accommodation Form. Students with questions about their religious accommodations under Ohio's Testing Your Faith Act may contact the College's Office of General Counsel and Legal Services by phone at 216.987.4856 or via email at legal@tri-c.edu.

Other Required Instructional Policies:

https://www.tri-c.edu/student-resources/curriculum/documents/syllabus-part-b.pdf

Weekly Schedule

	Topics
Week 1	Understanding Server-Side Applications
Week 2	Using Development Tools and Language Features
Week 3	Working with MVC Patterns
Week 4	Understanding Full-Stack Development
Week 5	Understanding the Core Platform
Week 6	Routing and Dependency Injection
Week 7	Working with Platform Features
Week 8	Managing Data in MVC Applications

Week 9	Consuming Web Services
Week 10	Building Controllers and Managing Routes
Week 11	Using Views and Templates
Week 12	Handling HTTP Responses
Week 13	Using Sessions and Cookies
Week 14	Managing Data Validation
Week 15	Building Accessible Applications
Week 16	End-to-End Application Development

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Required/Recommended Readings

Readings will be from one of the textbooks, as selected by the individual instructors.

Resources for the Instructor

Delamater, M. & Murach, J. *Murach's ASP.NET Core MVC*. Fresno, CA: Mike Murach & Associates, Inc., 2020.

Peres, Ricardo. *Modern Web Development with ASP.NET Core 3*. 2nd. Birmingham, UK: Packt Publishing, 2019.

Esposito, Dino. *Programming ASP.NET Core*. Pearson Education, Inc., 2018.

Lock, Andrew. *ASP.NET Core in Action*. 2nd. Shelter Island, NY: Manning Publications Co., 2021.

Additional Resources for the Instructor

Cultural Sensitivity for eCommerce Websites: https://understandingecommerce.com/the-importance-of-cultural-sensitivity-for-ecommerce-websites/

Ethically Aligned Design: https://standards.ieee.org/content/dam/ieee-standards/standards/web/documents/other/ead1e.pdf

Top of page

Key: 5437