Module Specification

Advanced Web Development

Version: 2024-25, v1.0, 02 Jun 2023

Contents

Part 1: Information

Module title: Advanced Web Development

Module code: UFCE3Q-30-3

Level: Level 6

For implementation from: 2024-25

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: School for Higher and Professional Education

Delivery locations: Not in use for Modules

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module aims to provide students with a deep understanding of advanced web development techniques, tools, and methodologies. It builds upon previous web development and programming concepts learned in earlier years and enhances students' skills in designing, implementing, and maintaining complex, responsive, and scalable web applications.

Features: Not applicable

Educational aims: In The Advanced Web Development module aims to provide students with a comprehensive understanding of advanced web development concepts, tools, and technologies, enabling them to create sophisticated web applications for various devices and platforms. The module focuses on enhancing problem-solving and critical thinking abilities by applying advanced programming techniques to address complex web development challenges. Students will learn the importance of web standards, best practices, accessibility guidelines, and web application security principles to create inclusive, user-friendly, and secure web experiences.

Additionally, the module aims to foster effective collaboration, communication skills, and a mindset of continuous learning and adaptability by exposing students to current and emerging trends in web development. Students will be equipped with practical skills and knowledge necessary for deploying, maintaining, and monitoring web applications in production environments, ultimately preparing them for careers in web development and related fields.

Outline syllabus: Compulsory coverage will include:

Advanced HTML Techniques such as HTML5 APIs

Advanced CSS techniques such as CSS pre-processors, CSS Frameworks

Front-End JavaScript Frameworks and Libraries (e.g. React, Angular, Vue.js)

Back-end Web Development with Node.js and Express

Responsive Web Design and Performance Optimisation

Advanced Database Management – SQL Database (e.g. MySQL)

Web and Service-Oriented Architectures

Software Design Patterns and Software Architectures

Web Application Deployment and Maintenance – version control, testing, continuous integration and deployment,

Optional topics will vary but may include:

Advanced Database Management – NoSQL Database (e.g. MongoDB, Couchbase)

Web Application Security – authentication, authorisation, secure coding practices, web vulnerability prevention (XSS, CSRF, SQL Injection)

Emerging trends and technologies – progressive web apps, web components, micro-frontends, serverless architectures, etc.

Part 3: Teaching and learning methods

Teaching and learning methods: Lectures will introduce curriculum topics and provide demonstrations of tools and techniques.
Tutorials will combine structured programming tasks with the development of the assessed coursework application. Support and feedback on the development approach will be provided by tutors.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Analyse and evaluate web standards, communication protocols and emerging technologies, demonstrating the ability to apply object-oriented and/or functional programming techniques in web application development.

MO2 Recognise and apply common software patterns, and web architectures in practice.

MO3 Demonstrate proficiency in using contemporary tools, techniques, and web frameworks throughout the web development project lifecycle, in a language of the student's choice.

MO4 Employ effective development methods, testing strategies and software documentation practices to create and critique web applications, showcasing an understanding of the importance of these practices in the development process.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Computer-based activities = 48 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://rl.talis.com/3/uwe/lists/F04721D0-1589-FFBD-4AF7-99F8BAC7D92A.html

Part 4: Assessment

Assessment strategy: The module assessment strategy comprises an individual set of exercises and group project assessed via portfolio.

The set exercises focus on evaluating students' understanding of advanced development concepts, their ability to apply them practically, and their problem-solving skills. Students will complete a set of exercises to build a web application alongside relevant documentation to critically evaluate the application's design, implementation, performance and adherence to web standards and best practices.

For the group assignment, (the portfolio) students will work in teams to design, develop and deploy a web application demonstrating their ability to collaborate effectively and apply advanced web development techniques in a real-world context.

The group assessment also includes an oral presentation and demonstration of the application, during which students must critically evaluate the team's development process, the final product and the challenges encountered.

The resit strategy remains the same as the first sit. Students will complete a comparable set of exercises to the first sit for the portfolio. For the portfolio, the submissions can be scaled to allow for smaller groups.

Assessment components:

Set Exercise (First Sit)
Description: This individual assessment focuses on evaluating students' understanding of advanced development concepts, their ability to apply them practically, and their problem-solving skills.

Students will complete a set of exercises to build a web application alongside relevant documentation to critically evaluate the application's design, implementation, performance and adherence to web standards and best practices.
Weighting: 30 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1

Portfolio (First Sit)
Description: For this group assignment, students will design, develop and deploy a web application demonstrating their ability to collaborate effectively and apply advanced web development techniques in a real-world context. The assessment includes an oral presentation and demonstration of the application, during which students must critically evaluate the team's development process, the final product and the challenges encountered.
Weighting: 70 %
Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO2, MO3, MO4

Set Exercise (Resit)
Description: This individual assessment focuses on evaluating students' understanding of advanced development concepts, their ability to apply them practically, and their problem-solving skills.

Students will complete a set of exercises to build a web application alongside relevant documentation to critically evaluate the application's design, implementation, performance and adherence to web standards and best practices.
Weighting: 30 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1

Portfolio (Resit)

Description: For this group assignment, students will design, develop and deploy a web application demonstrating their ability to collaborate effectively and apply advanced web development techniques in a real-world context. The assessment includes an oral presentation and demonstration of the application, during which students must critically evaluate the team's development process, the final product and the challenges encountered. Where necessary, this resit assessment will be scaled to allow for smaller groups.

Weighting: 70 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested: MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Information Technology {Top-Up} [SHAPE] BSc (Hons) 2024-25

Information Technology {Top-Up} [Frenchay] BSc (Hons) 2024-25