Module Descriptor

Title	Modern Web Development		
Session	2025/26	**Status**	Published
Code	COMP10089	**SCQF Level**	10
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Rebecca Redden		

Summary of Module

Proficiency in developing across all levels of a modern web stack is essential for many software professionals, not just limited to web developers. This module provides students with an opportunity to develop and test web applications using modern full-stack development methodologies. While understanding the basics of specifying structure (HTML), presentation (CSS), and behaviour (JavaScript) is fundamental, it represents only a fraction of what makes up modern web applications.

Guided by developments in the field and current market demands, this module is designed to familiarise students with the latest tools, technologies, and frameworks crucial for developing scalable, reliable, and fast web applications. It will touch upon the entire development process, from integrating databases to building user interfaces and selecting a suitable deployment strategy, preparing students for real-world scenarios.

As of the latest version of this descriptor, the module will focus on the MERN stack consisting of MongoDB, Express.js, React, and Node.js

The detailed syllabus will be based on the technologies used, but common themes that are being covered will include:

- Web Stacks (MERN, LAMP, MEVN, Serverless) and a comparison thereof.
- Architectural Styles and Frameworks: n-tier architectures and common web design patterns (e.g. MVC, MVVM).
- Server-side development: Implementation of server-side logic based on the selected stack, working with databases as well as scalability and performance considerations.
- Front End Development: Implementation of responsive and reactive user interfaces using front-end frameworks and libraries.
- Application Programming Interfaces (APIs): Design, implementation and consumption of APIs in client/server-side applications as well as REST and GraphQL principles
- Development and Deployment Practices including selecting hosting options and platforms, monitoring and logging as well as testing (end-to-end and unit) of web apps.
- Security Practices including authentication and authorization mechanisms, OWASP Top Ten vulnerabilities and mitigation strategies and secure authentication methods and session management techniques.

- Emerging Trends such as Progressive web applications (PWAs) and their benefits, Integration of AI and machine learning in web applications and an exploration of the future of web development and industry trends

This module will work to develop a number of the key 'I am UWS' Graduate Attributes to make those who complete this module:

- Universal: analytical; critical thinker; and collaborative
- Work Ready: problem-solver; digitally literate; knowledgeable
- Successful: autonomous; resilient; and transformational

Module Delivery Method	**On-Campus**[1] ☐	**Hybrid**[2] ☒	**Online**[3] ☐	**Work -Based Learning**[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☒ Lanarkshire ☐ London ☐ Paisley	☒ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
L1	Design, develop and deploy a responsive, reliable, and secure full-stack web application using appropriate methodologies and technologies
L2	Evaluate the advantages and disadvantages of using different software stacks and implementation concerns in regard to architectural styles, APIs, and security to inform development of modern web applications
L3	Demonstrate a detailed understanding of the interactions and inner workings the various layers that make up a stack for web applications
L4	N/A
L5	N/A

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Employability Skills and Personal Development Planning (PDP) Skills	
SCQF Headings	**During completion of this module, there will be an opportunity to achieve core skills in:**
Knowledge and Understanding (K and U)	**SCQF 10** Demonstrate a critical understanding of specialised subject areas and technological developments within web development
Practice: Applied Knowledge and Understanding	**SCQF 10** Practise the use of web development methodologies and technologies at a professional level in areas that may include a degree of novelty
Generic Cognitive skills	**SCQF 10** Identify problems, analyse results, and interpret common error messages to solve problems in a logical manner.
Communication, ICT and Numeracy Skills	**SCQF 10** This subject area is entirely computer based so ICT skills feature heavily in the practice of the subject area.
Autonomy, Accountability and Working with Others	**SCQF 10** Exercise autonomy and initiative to implement independently web applications at a professional level.

Prerequisites	**Module Code** COMP07009 COMP07XXX COMP09XXX	**Module Title** Introduction to Web Development Database Systems DevOps Or equivalent
	Other	
Co-requisites	**Module Code**	**Module Title**

Learning and Teaching	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture / Core Content Delivery	24
Laboratory / Practical Demonstration / Workshop	24

Independent Study	152
Please select	
Please select	
Please select	
TOTAL	200

Indicative Resources

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Whilst foundational textbooks will provide essential underpinning for the module, students will primarily rely on online resources and documentation for current technologies, reflecting the dynamic nature of the web development landscape.

Using the MERN stack, books would include:

Brown, E. (2019) Web Development with Node and Express. O'Reilly Media.

Frain, B. (2020) RESPONSIVE WEB DESIGN WITH HTML5 AND CSS - THIRDEDITION : develop future-proof responsive... websites using the latest html5 and css techniques. S.L.: Packt Publishing Limited.

Herron, D. (2020) Node.js Web Development. Packt Publishing Ltd.

Vasan Subramanian and Springerlink (Online Service (2019) Pro MERN Stack : Full Stack Web App Development with Mongo, Express, React, and Node. Berkeley, Ca: Apress.

(N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the Student Attendance and Engagement Procedure, Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code.

Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on

inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	**Computing**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☐ **Yes** ☒ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Business & Applied Computing
Moderator	Henry Hunter
External Examiner	A Jindal
Accreditation Details	
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1.01

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Portfolio of Practical Work in the form of providing a working web application implementation and code to a set of given requirements including a demonstration. (50%)
Assessment 2
Workbook/Laboratory notebook/Diary/Training log/Learning Log documenting the approach taken by the student's implementation demonstrating understanding and rationale for decisions made throughout the development process, including but not limited to design and planning (Front-End), implementation strategies (Back-end), security measures, deployment procedures and accessibility considerations. (50%)
Assessment 3
(N.B. (i) Assessment Outcomes Grids for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An indicative schedule listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**

Portfolio of Practical Work	☒	☐	☒	☐	☐	50	

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Workbook/Laboratory notebook/Diary/Training log/Learning	☐	☒	☒	☐	☐	50	

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	hours

Change Control

What	**When**	**Who**
Attendance and Engagement Procedure and Equality and Diversity	17/1/25	F.Valentine