Module Specification

Computer Architecture

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Part 1: Information

Module title: Computer Architecture

Module code: UFCEXR-10-1

Level: Level 4

For implementation from: 2026-27

UWE credit rating: 10

ECTS credit rating: 5

College: College of Arts, Technology and Environment

School: CATE School of Computing and Creative Technologies

Partner institutions: UWE Bristol International College

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 acts as an introduction to microprocessor-based systems. Its purpose is to provide the necessary background and understanding thereby enabling students to analyse, design and build microprocessor-based systems for use within their specialised programme areas.

Features: UWEBIC Module Code: IY464

Educational aims: This module aims to provide students with a foundational understanding of microprocessor-based systems, equipping them with the knowledge and skills necessary to analyse, design, and implement basic computer architectures. It introduces key concepts such as number systems, assembly language programming, digital logic, and processor operations, enabling students to explore the relationship between hardware and software in computing systems. The module supports the development of problem-solving and analytical skills essential for further study in computer science, software engineering, and related disciplines, while fostering an appreciation of the underlying principles that govern modern computing technologies.

Outline syllabus: Introductory concepts: Number systems, conversions and representations

Introduction to assembly language programming

Instruction types

Input / Output and the Stack

Subroutines

Data Transfer

Digital electronic circuits

Logic Circuits

Memory and peripheral devices Structure of a processor

Embedded systems

Part 3: Teaching and learning methods

Teaching and learning methods: Teaching on this module will combine structured input with interactive classroom exercises to introduce and reinforce key concepts in computer architecture. Input sessions will provide the theoretical foundation, while active practice will focus on applying theoretical principles through guided examples and problem-solving activities. These sessions will encourage active participation and discussion, helping students to consolidate their knowledge and develop analytical skills.

Students will engage in both individual and collaborative problem-solving tasks designed to simulate real-world challenges in microprocessor-based system design. Working in pairs or small groups will enable peer learning and the exchange of ideas, while individual exercises will ensure that each student develops confidence in applying concepts independently. Practical work will be integrated where appropriate, allowing students to explore the relationship between hardware and software through hands-on activities that complement theoretical learning.

Formative feedback will be embedded throughout the module, particularly during classroom exercises and practical sessions. Module tutors will provide real-time guidance and constructive feedback to help students identify areas for improvement and build towards success in the summative assessment. Opportunities for informal feedback during collaborative tasks will further support learning, ensuring that students are well-prepared to meet the module's learning outcomes.

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

MO1 Design a microprocessor-based system architecture, including memory and peripheral devices, and justify the design choices made.

MO2 Demonstrate the integration of hardware and software using an appropriate assembly language.

MO3 Demonstrate an understanding of the properties, functions and operations of a simple processor unit and its related digital logic sub-systems.

Hours to be allocated: 100

Contact hours:

Independent study/self-guided study = 70 hours

Face-to-face learning = 30 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/index.html

Part 4: Assessment

Assessment strategy: The assessment for this module will take the form of a collaborative project in which students design and implement an embedded system to meet a defined project brief. This will culminate in a written submission of approximately 1,500 words and a 15-minute group presentation with Q&A.

To support students in achieving these outcomes, formative activities will be embedded throughout the module. Scaffolding will be provided through structured workshops, and feedback on draft submissions. Opportunities for tutor-led Q&A and collaborative problem-solving will ensure students can refine their technical understanding and presentation skills before the final assessment.

The reassessment task will be equivalent to the original assessment task. Groups of students undertaking reassessment will be formed where possible to complete the assessment collaboratively. If no suitable group can be created, the student(s) may be assessed via an individual project of reduced scope, which still provides opportunities to demonstrate attaining all learning outcomes.

Assessment tasks:

Presentation (First Sit)
Description: Project to deliver an embedded system designed to fulfil a project brief (approximately 1500 words written submission and 15 minutes of presentation and Q&A).
Weighting: 100 %

Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3

Presentation (Resit)
Description: Project to deliver an embedded system designed to fulfil a project brief (approximately 1500 words written submission and 15 minutes of presentation and Q&A).
Weighting: 100 %
Final assessment: Yes
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Computer Science {with International Year One} [UWEBIC] BSc (Hons) 2026-27

Software Engineering {with International Year One} [UWEBIC] BSc (Hons) 2026-27

Cyber Security and Digital Forensics {with International Year One}[UWEBIC] BSc (Hons) 2026-27

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