Module Specification

Programming for Engineers

Version: 2025-26, v3.0, 23 Apr 2025

Contents

Part 1: Information

Module title: Programming for Engineers

Module code: UFMFGT-15-1

Level: Level 4

For implementation from: 2025-26

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Engineering

Partner institutions: None

Field: Engineering, Design and Mathematics

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: Programming is a core component in the development of embedded and autonomous systems. This module will provide students with fundamental programming concepts and the principles of elementary procedural programming based on the C Programming language. This module will introduce and develop the practical and professional skills required for designing and implementing C programs for a wide variety of applications.

Features: Not applicable

Educational aims: The aim of this module is to ensure that students are equipped with the necessary software development and programming language skills to undertake coding tasks encountered elsewhere in the programme, including but not limited to embedded software development.

Outline syllabus: Software development process
Programming language principles
Sequence, selection, iteration
Data structures, pointers
Data-types, data manipulation
Software Integrated development environments
Specification and design techniques
Industry Standards for design, development, documentation and testing

Part 3: Teaching and learning methods

Teaching and learning methods: Learning material will be delivered through a set of lectures and guided software laboratory exercises. Students will start by practicing laboratory exercises, advancing in complexity and will progress to problem based learning culminating in design and implementation of a complete software solution for an open ended problem. Accompanying lectures and tutorial sessions will present the formal aspects of the module.

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

MO1 Create appropriate software solutions in a variety of mathematical and engineering applications.

MO2 Design, develop and document computer code in accordance with industry standards and best practices for software development.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

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/5AC75F62-5D2D-3001-F525-8E4690CD5FE7.html?lang=en-GB&login=1

Part 4: Assessment

Assessment strategy: Students complete a series of formative programming exercises while maintaining a digital logbook of exercises, as they are introduced to the key building blocks of programming, such as loops, arrays and functions. Students then bring together their learning of these programming principles to an open ended Mini Coursework, where they keep a Development Log which evidences that they have followed industry practice of design documentation and evidence of testing. The coursework is designed to assess a student's ability to integrate the building blocks of programming into a coherent and complex piece of software and meet an open ended design criteria.
Their work is then assessed at the end of the module, via a demonstration and viva (Examination), which tests authorship and understanding of the code they have developed and allows students an opportunity to show what functionality and features they have developed. The viva will also involve sharing their development log and discussing their testing process as well as assessing their designs and implementation of the code to evaluate the full software development process.
This mode of assessment is designed to provide regular support and feedback as students develop their knowledge and skill in developing software, applying these skills to engineering applications, while ensuring they do so according to industry practices and documentation.

The resit assessment has the same profile as the first sit assessment.

Assessment tasks:

Presentation (First Sit)
Description: Presentation and Viva (45 mins)

Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Presentation (Resit)
Description: Presentation and Viva (45 mins)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electrical and Electronic Engineering [Frenchay] BEng (Hons) 2023-24

Electronic Engineering [Frenchay] WITHDRAWN BEng (Hons) 2023-24

Electrical and Electronic Engineering {Foundation} [Frenchay] BEng (Hons) 2024-25

Robotics {Foundation} [Frenchay] BEng (Hons) 2024-25

Mechatronics Engineering {Foundation} [Frenchay] MEng 2024-25

Mechatronics Engineering {Foundation}[Frenchay] BEng (Hons) 2024-25

Robotics {Foundation} [Frenchay] BEng (Hons) 2024-25

Electrical and Electronic Engineering [Frenchay] BEng (Hons) 2023-24

Mechatronics Engineering {Foundation} [Frenchay] MEng 2024-25

Mechatronics Engineering {Foundation}[Frenchay] BEng (Hons) 2024-25

Robotics {Foundation} [Frenchay] BEng (Hons) 2024-25

Mechatronics Engineering [Frenchay] MEng 2025-26

Electronic and Computer Engineering {Apprenticeship-GLOSCOLL} [GlosColl] BEng (Hons) 2025-26

Electronic and Computer Engineering [GlosColl] BEng (Hons) 2025-26

Electronic and Computer Engineering [Frenchay] BEng (Hons) 2025-26

Robotics [Frenchay] BEng (Hons) 2025-26

Mechatronics {Apprenticeship-UCW} [UCW] FdSc 2025-26

Electrical and Electronic Engineering [Frenchay] BEng (Hons) 2025-26

Mechatronics Engineering [Frenchay] BEng (Hons) 2025-26

Robotics [Frenchay] BEng (Hons) 2025-26

Electrical and Electronic Engineering [Frenchay] BEng (Hons) 2025-26

Electrical and Electronic Engineering [Frenchay] BEng (Hons) 2025-26

Electrical and Electronic Engineering {Foundation} [Frenchay] BEng (Hons) 2024-25

Robotics {Foundation} [Frenchay] BEng (Hons) 2024-25