



## **Module Specification**

### **Programming for Engineers**

Version: 2021-22, v3.0, 26 Apr 2022

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## Part 1: Information

**Module title:** Programming for Engineers

**Module code:** UFMFGT-15-1

**Level:** Level 4

**For implementation from:** 2021-22

**UWE credit rating:** 15

**ECTS credit rating:** 7.5

**Faculty:** Faculty of Environment & Technology

**Department:** FET Dept of Engineering Design & Mathematics

**Partner institutions:** None

**Delivery locations:** Frenchay Campus, Gloucestershire College

**Field:** Engineering, Design and Mathematics

**Module type:** Standard

**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 also 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 programming knowledge to undertake coding tasks encountered elsewhere in the programme.

**Outline syllabus:** Programming language principles

Sequence, selection, iteration

Data structures, pointers

Data-types, data manipulation

Development tools: Compilers, linkers

Specification and design techniques

Professional and legal issues: Ethics. Intellectual property. Product liability

Industry Standards for design, development and testing

### **Part 3: Teaching and learning methods**

**Teaching and learning methods:** Learning material will be delivered through a set of lectures and structured laboratory exercises. Students will start from "step by step" laboratory exercises and progress to problem based learning culminating in design and implementation of a complete system. 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** Apply fundamental programming principles and a system approach to the design, development and testing phases of software development.

**MO2** Develop and document computer code to meet appropriate codes of practice and industry standards in relation to software development.

**MO3** Create appropriate software based solutions to a variety of mathematical and engineering problems.

**MO4** Use a variety of information sources including technical literature to inform software development applications.

**Hours to be allocated:** 150

**Contact hours:**

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

**Reading list:** The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/lists/0603024F-8707-BA62-9C8A-FEC843AFA9CF.html) via the following link <https://uwe.rl.talis.com/lists/0603024F-8707-BA62-9C8A-FEC843AFA9CF.html>

## **Part 4: Assessment**

**Assessment strategy:** Students complete an ongoing digital logbook to evidence the software development process. the logbook forms part of a portfolio submission alongside a more detailed code review exercise.

This component of assessment is designed to provide regular support and feedback as students develop their knowledge and skill in developing code applying these skills to engineering application.

An examination provides the controlled conditions to assess understanding of underlying programming principles and practice.

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

**Assessment components:**

**Examination (Online) - Component A (First Sit)**

Description: Online examination: 4 hours

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

**Portfolio - Component B (First Sit)**

Description: Digital logbook entries of C-programming exercises and code reviews

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO4

**Examination (Online) - Component A (Resit)**

Description: Online examination: 4 hours

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

**Portfolio - Component B (Resit)**

Description: Digital log book entries

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested: MO2, MO3, MO4

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Electronic Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2021-22

Electronic Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2021-22

Electronic and Computer Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2021-22

Electronic and Computer Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2021-22

Electronic and Computer Engineering {Apprenticeship-GLOSCOLL} [Sep][FT][GlosColl][5yrs] BEng (Hons) 2021-22

Electronic and Computer Engineering [Sep][PT][GlosColl][5yrs] BEng (Hons) 2021-22

Robotics [Sep][SW][Frenchay][4yrs] BEng (Hons) 2021-22

Robotics [Sep][FT][Frenchay][3yrs] BEng (Hons) 2021-22

Electronic Engineering {Apprenticeship-GLOSCOLL} [Sep][FT][GlosColl][5yrs] BEng (Hons) 2021-22

Mechatronics {Apprenticeship-UCW} [Sep][FT][UCW][3yrs] FdSc 2021-22

Electronic Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2020-21

Electronic Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2020-21

Robotics {Foundation}[Sep][SW][Frenchay][5yrs] BEng (Hons) 2020-21

Robotics {Foundation}[Sep][FT][Frenchay][4yrs] BEng (Hons) 2020-21