# MODULE SPECIFICATION

| Part 1: Information | | | |
|---|---|---|---|
| Module Title | C Programming | | |
| Module Code | UFMFN7-15-1 | Level | Level 4 |
| For implementation from | 2020-21 | | |
| UWE Credit Rating | 15 | ECTS Credit Rating | 7.5 |
| Faculty | Faculty of Environment & Technology | Field | Engineering, Design and Mathematics |
| Department | FET Dept of Engin Design & Mathematics | | |
| Module type: | Standard | | |
| Pre-requisites | None | | |
| Excluded Combinations | None | | |
| Co- requisites | None | | |
| Module Entry requirements | None | | |

## Part 2: Description

**Educational Aims:** See Learning Outcomes

**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

Standards: IEC61508 MISRA C

**Teaching and Learning Methods:** 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.

Learning material will be delivered though 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.

**Part 3: Assessment**

The strategy will use individual exercises, logbooks, reports and demonstrations to develop and assess students' understanding of C-programming concepts through problem based exercises. The different components assessed are:

Component A: Final summative assessment will be an online examination on the DEWIS assessment platform. The examination will assess the students' understanding of programming concepts and design principles together with their awareness of professional and legal issues relating to the use of C Language as a development tool. The online examination will be of 2 hours duration.

Component B: Summative assessment is achieved through an individual Code Review process of the C-programming project together with the submission of a report showing the development process (B2) and a digital logbook of C-Programming exercises (B1). In addition, students will be assessed, through the presentation of a poster, of designing the solution to address a real-world problem during the scenario week (B3).

Resit Assessment Strategy: Students will be required to submit a report showing design and development process of a programming project and undergo a Code Review of code submitted.

Formative assessments will be used to provide oral feedback throughout laboratory sessions particularly with respect to the workshop exercises and logbook entries along with a set of DEWIS exercises for additional formative feedback purposes.

| First Sit Components | **Final Assessment** | **Element weighting** | **Description** |
|---|---|---|---|
| Examination (Online) - Component A | ✓ | 25 % | e-assessment (2 hours) |
| Set Exercise - Component B | | 37.5 % | Digital logbook entries of C-programming exercises |
| Report - Component B | | 37.5 % | Individual report showing design process for a programming exercise and Code Review |
| Resit Components | **Final Assessment** | **Element weighting** | **Description** |
| Examination (Online) - Component A | ✓ | 25 % | e-assessment (2 hours) |
| Report - Component B | | 75 % | Individual report showing design and development process of a programming project and undergo a Code Review of code submitted |

**Part 4: Teaching and Learning Methods**

Learning Outcomes

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

| Module Learning Outcomes | Reference |
|---|---|
| Develop a good understanding of engineering principles and needs to apply a systems approach to software design and development task | MO1 |
| Demonstrate an understanding of appropriate codes of practice and industry standards in relation to software development | MO2 |
| Develop an understanding of programming fundamentals through the design of simple control programmes and appropriate use of verification tools and techniques | MO3 |
| Demonstrate understanding and use of technical literature and other information sources | MO4 |

Contact Hours

| | |
|---|---|
| **Independent Study Hours:** | |
| Independent study/self-guided study | 46 |
| **Total Independent Study Hours:** | 46 |
| **Placement Study Hours:** | |
| Placement | 56 |
| **Total Placement Study Hours:** | 56 |
| **Scheduled Learning and Teaching Hours:** | |
| Face-to-face learning | 48 |
| **Total Scheduled Learning and Teaching Hours:** | 48 |
| **Hours to be allocated** | 150 |
| **Allocated Hours** | 150 |

Reading List

*The reading list for this module can be accessed via the following link:*

https://uwe.rl.talis.com/modules/ufmfn7-15-1.html

| **Part 5: Contributes Towards** |
| --- |
| This module contributes towards the following programmes of study:<br><br>Robotics {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2019-20<br>Robotics {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2019-20 |