MODULE SPECIFICATION

Part 1: Information			
Module Title	Programming for Engineers		
Module Code	UFMFGT-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

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.

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

Teaching and Learning Methods: 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

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

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	25 %	Online examination (2 hours)
Portfolio - Component B		75 %	Digital logbook entries of C-programming exercises and code reviews
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	25 %	On-line exam (2 hours)
Portfolio - Component B		75 %	Digital log book entries

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**
Apply fundamental programming principles and a system approach to the design, development and testing phases of software development.	MO1
Develop and document computer code to meet appropriate codes of practice and industry standards in relation to software development.	MO2
Create appropriate software based solutions to a variety of mathematical and engineering problems.	MO3
Use a variety of information sources including technical literature to inform software development applications.	MO4

Contact Hours	**Independent Study Hours:**	
	Independent study/self-guided study	114
	Total Independent Study Hours:	114
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	36
	Total Scheduled Learning and Teaching Hours:	36
	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/lists/0603024F-8707-BA62-9C8A-FEC843AFA9CF.html	

Part 5: Contributes Towards
This module contributes towards the following programmes of study: