Module Specification

Principles of Programming for Engineers

Version: 2023-24, v1.0, 14 Jun 2023

Contents

Part 1: Information

Module title: Principles of Programming for Engineers

Module code: UFME3M-15-1

Level: Level 4

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: University Centre Weston

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 also the principles of elementary procedural programming. This module will introduce and develop the practical and professional skills required for designing and implementing 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 and industrial practice.

Outline syllabus: Programming language principles

Sequence, selection, iteration

Data structures, pointers

Data-types, data manipulation

Development tools: Compilers, linkers

Specification and design techniques

Industry Standards for design, development and testing

Part 3: Teaching and learning methods

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.

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.

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 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 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.

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

Assessment tasks:

Portfolio (First Sit)
Description: Portfolio consisting of a digital logbook and code reviews
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3

Portfolio (Resit)

Description: Digital logbook entries of programming exercises and code reviews

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electro-mechanical Engineering {Apprenticeship-UCW}[UCW] BEng (Hons) 2023-24