Module Specification

Embedded Systems Development 1

Version: 2024-25, v4.0, 08 Mar 2024

Contents

Part 1: Information

Module title: Embedded Systems Development 1

Module code: UFMFPQ-15-3

Level: Level 6

For implementation from: 2024-25

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: This module will introduce the students to study the role of hardware and software in developing the functional behaviour of embedded systems. The module also will provide an introduction to hardware analysis, software requirements, and design methodologies. Great emphasis is placed on the modelling of the behaviour.

Features: Not applicable

Educational aims: The aim of this module is to introduce and explain the concepts, tools and techniques necessary for the development of real-time and embedded systems.

Outline syllabus: Indicative syllabus content:

Hardware of modern embedded systems

Complex Input and Output structures

Complex interrupt controllers

Modern communication systems used in Embedded Systems

Concurrent Systems

Modelling of behavior of Embedded Systems

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be delivered using lectures to support individual and small group laboratory work

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

MO1 Choose and use appropriate software design methods for concurrent and control systems development

MO2 Design and develop a computer system for an embedded application.

MO3 Explore and integrate considerations and issues relating to embedded systems such as hardware choice, software tools, safety, reliability, power consumption

MO4 Investigate and understand the role of real time operating system in embedded systems

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 0

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/index.html

Part 4: Assessment

Assessment strategy: Assessment of this module consists of:

A group design project involving development and application of code to an embedded electronics system and assessed through a group report.

A group demonstration of the outputs from the design project followed by individual questions.

Resit Strategy will be the same as the first sit.

Resit deliverable(s) will be scaled appropriately to group size and task complexity

Assessment tasks:

Report (First Sit)
Description: Final report (Max. 2500 words + programme code as appropriate) documenting processes undertaken, design strategies and evidence of output produced. Report will contain individual statements from team members to justify their contributions (no more than 250 words).
Weighting: 50 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO4

Presentation (First Sit)
Description: Group demonstration and individual questions (25 minutes total)
Weighting: 50 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested: MO1, MO3, MO4

Report (Resit)

Description: Final report (Max. 2500 words + programme code as appropriate) documenting processes undertaken, design strategies and evidence of output produced. Report will contain individual statements from team members to justify their contributions (no more than 250 words).

Resit deliverable(s) will be scaled appropriately to group size and task complexity

Weighting: 50 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO2, MO3, MO4

Presentation (Resit)

Description: Group demonstration and individual questions (25 minutes total)

Resit deliverable(s) will be scaled appropriately to group size and task complexity

Weighting: 50 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested: MO1, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Electronic and Computer Engineering [SHAPE] BEng (Hons) 2024-25

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Electronic and Computer Engineering [SHAPE] BEng (Hons) 2024-25

Electronic and Computer Engineering [SHAPE] BEng (Hons) 2024-25

Electronic and Computer Engineering [SHAPE] BEng (Hons) 2024-25

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

Electronic and Computer Engineering [Frenchay] BEng (Hons) 2022-23