STUDENT AND ACADEMIC SERVICES

MODULE SPECIFICATION

Part 1: Information			
Module Title	Embedded Real Time Control Systems		
Module Code	UFMFTC-15-M	Level	Level 7
For implementation from	2019-20		
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: The module describes in detail a high performance digital signal processing controller and how to use it in real time embedded applications.

Educational Aims: In addition to the Learning Outcomes the educational experience may explore, develop, and practise but not formally assess the following:

Understanding of the need for high level professional and ethical conduct.

Outline Syllabus: This module includes topics such as:

The architecture of a high performance digital signal processor controller (DSC).

Processor's peripherals involved in real time system control applications.

The DSC design flow.

Combining hardware and software to achieve optimal control implementations in embedded applications.

Use a front-end DSC integrated development environment.

Programming, debugging and Implementing DSP and control algorithms in hardware.

Use a predefined digital control library to shorten the design cycle (filter library, control library etc).

Teaching and Learning Methods: Scheduled Learning in the form of lectures, tutorials, demonstrations and independent learning laboratory work.

Independent Learning will include directed reading, tutorial exercises, general reading of trade journals, academic papers and other texts.

Part 3: Assessment

The module will be assessed in two components.

Component A consists of one assessment
A1. A formal exam (180 minutes).

Component B consists of one assessment
B1. Lab-based project: students have to design; test and document a real time embedded system and demonstrate it in the lab at the end of term.

Formative assessment will be provided in laboratory sessions and tutorials

First Sit Components	Final Assessment	Element weighting	Description
Project - Component B		50 %	Lab-based coursework
Examination - Component A	✓	50 %	Exam (180 minutes)
Resit Components	Final Assessment	Element weighting	Description
Project - Component B		50 %	Coursework
Examination - Component A	✓	50 %	Exam (180 minutes)

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
A comprehensive knowledge and understanding of mathematical models used in digital control and digital signal processing,	MO1
An understanding of basic DSP structure and the ability to use it in real time applications.	MO2
The ability to use development tools to design, program, implement and test real time systems.	MO3
The competencies involved in problem identification, analysis, design development of a DSP based system.	MO4
Knowledge and understanding of DSP development systems for designing and testing a real time application.	MO5
Competence in using technical literature and the ability to obtain documentation from various sources.	MO6

Contact Hours		
	Independent Study Hours:	
	Independent study/self-guided study	126
	Total Independent Study Hours:	126
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	24
	Total Scheduled Learning and Teaching Hours:	24
	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/ufmftc-15-m.html

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