



MODULE SPECIFICATION

Part 1: Information			
Module Title	Group Design and Integration Project		
Module Code	UFMFV8-15-3	Level	Level 6
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
<p>Educational Aims: In addition to the learning outcomes, students will improve their skills in decision making, team management and broaden their understanding of related disciplines.</p> <p>Outline Syllabus: Review of VHDL and C languages and constructs. Review of programmable devices including timing, drive strength, use of component libraries etc. CPU selection issues. Creating the co-design environment and design management. Use of modelling and coding guidelines. Design verification and formal verification through simulation and testing, test pattern generation. Controlling the synthesis and compilation processes, optimisation. Timing. Constraints imposed by target hardware. Vendor specific issues. Hardware testing and debugging, faults, fault simulation, problems. Software testing and debugging. Use of Intellectual Property (IP) in a co-design context, design for reuse. Project Management tools, code maintenance and review. Safety critical and safety related systems. Selection of operating systems.</p>

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System booting and power-up.
User interface design, user needs and the role of aesthetics.

Teaching and Learning Methods: This module integrates many facets of the students learning in a multi-disciplinary design and development project. A combination of seminars and demonstrations are used to present core topics from the syllabus.

Laboratory sessions are used for team meetings, development work and familiarisation with the specialist software and test equipment.

Laboratory sessions will be the primary time when part-time students can work with full-time student team members.

Scheduled learning includes lectures, seminars, demonstration, practical classes.

Independent learning includes hours engaged with essential reading, further team meetings and laboratory based development work undertaken outside the scheduled classes. Students will be expected to use some of this time to maintain the management tools used as part of the group coursework.

Contact: 36 hours
Assimilation and skill development: 72 hours
Undertaking Coursework: 21 hours
Exam preparation: 21 hours
Total: 150 hours

Part 3: Assessment

The assessments are designed to strengthen the student's skills in managing a design and development project that requires the integration of both software and hardware components. It develops the student's professional practice in areas which have not been covered in previous modules.

The core assessment is through a team based design and implementation exercise. It is expected that students will build on project management skills gained at level 2. Students will be required to utilise, and be assessed on, industry standard development tools and code management systems. They must ensure a full audit trail of their design and implementation, including minutes of meetings and code reviews. A code review meeting will be observed during which each individual team member will be assessed as to their understanding of the process and their performance during the meeting. This will form the controlled assessment.

Teams are provided with clear guidelines which permit the allocation of different marks for each member in the group project along with the potential to sack team members.

Assessments will be conducted in line with the SEEC guidelines for the level in conjunction with the discipline specific outcomes listed above and referenced from the IET Handbook of Learning Outcomes for Accredited Programmes. Where a learning outcome is assessed more than once this is in both an individual and a group context.

Formative assessment will be given in the form of ongoing feedback and guidance during the laboratory sessions.

The observed code review, component A, is normally expected to take 1 hour.

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First Sit Components	Final Assessment	Element weighting	Description
Group work - Component B		75 %	Group submission in the form of a report, portfolio or wiki not to exceed the equivalent of 12,000 words in conjunction with a demonstration (0.5hr typically).
Group work - Component A	✓	25 %	Observed code review (team meeting)
Resit Components	Final Assessment	Element weighting	Description
Report - Component B		75 %	Reflective report (2000 words)
Presentation - Component A	✓	25 %	Individual Presentation (0.5 hr)

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
	Use management techniques relevant to the decision making and project management processes within a design and development context	MO1
	Demonstrate the application of engineering design processes in the context of hardware/software co-design and the development of real-time systems	MO2
	Show understanding of legal frameworks relating to intellectual property and legal requirements such as IEC 61508	MO3
	Critically analyse the design process and outcomes in the context of loosely specified problems	MO4
	Analyse and make appropriate use of technical literature, intellectual property and licensing in the development process	MO5
	Understand the contexts in which engineering knowledge can be applied through hardware/software co-design	MO6
	Perform hardware design and implementation utilising hardware description languages	MO7
	Perform software design and implementation in a safety critical embedded system, including the operating system	MO8
Demonstrate proficiency in the use of specialist test and measurement equipment such as logic analysers and digital capture techniques	MO9	
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

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	Total Scheduled Learning and Teaching Hours:	36
	Hours to be allocated	150
	Allocated Hours	150
Reading List	<i>The reading list for this module can be accessed via the following link:</i> https://uwe.rl.talis.com/modules/ufmfv8-15-3.html	

Part 5: Contributes Towards

This module contributes towards the following programmes of study: