MODULE SPECIFICATION

Part 1: Information			
Module Title	High Speed Electronic System Design		
Module Code	UFMFUN-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 provides a systematic view of the performance limitations related to high-speed electronic systems and their dependencies on the underlying technology choices. The key focus is how the interconnects (wires), all the way from system level to chip-level affect the system performance and how it will define the performance, reliability and the price of the end-product. The students will develop a thorough theoretical basis of the fundamental system level electrical issues and gain experience to design, simulate, and analyse electronic circuits.

Educational Aims: This module will extend and further develop the practical, theoretical and professional skills needed for designing and implementing complex digital systems for a wide range of applications.

Outline Syllabus: The syllabus includes the following topics:

Interconnect modelling: wires, Connectors, Vias, and Solder Bumps

Signal Integrity Issues in Electronic Systems

Power Supply Noise and Power Delivery Systems

EMC/EMI Fundamentals in Electronic Systems

Shielding and Electrostatic Discharge (ESD) Protection

Thermal Design in Electronic System

Production and Disposal of Electronic Systems

Teaching and Learning Methods: An initial set of structured laboratory exercises will extend the students understanding of the tools and techniques required, followed by a problem based exercise. These exercises will provide the basis for the assessed coursework and for the laboratory exams.

Part 3: Assessment

Summative assessment will be achieved through

(Component A). Will involve a presentation on a case study that will assess the student's ability to correctly understand and predict performance limitations factors in high speed electronic circuits. The presentation will be for 15 minutes followed by questions.

(Component B) Students will undertake a series of practical design, simulation and implementation tasks based on laboratory work. Students will select four tasks to submit as part of portfolio. Each task will lead to a short report (500 words) where students evaluate and reflect on their design solutions. The reports will form a portfolio (2,000 words).

Formative feedback will provided through verbal feedback during laboratory sessions and through tutorial exercises.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		75 %	Design portfolio (2,000 words)
Presentation - Component A	✓	25 %	Individual Presentation (15 minutes)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		75 %	Design portfolio (2,000 words)
Presentation - Component A	✓	25 %	Individual presentation (15 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
Use quantitative methods and appropriate computer software tools to design complex electronic systems from printed circuits board (PCB) level to higher levels	MO1
Explain and apply basic principles and design guidelines to complex electronic systems	MO2
Identify and manage cost drivers in the design and development of electronic systems and model the performance of electronic system	MO3
Apply analytical methods (i.e. circuit theory) and modelling techniques (i.e. electronic device models) to the identification, classification and description of electronic circuits and their performance in response to a range of externally applied stimuli.	MO4
Analyse systematically the key electrical phenomena at interconnection substrate levels defining the system signal integrity and robustness properties in order to define the future constraints to integration for consumer electronic products.	MO5

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/ufmfun-15-m.html

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Digital Electronic Systems Engineering {Apprenticeship} [Jan][PT][Frenchay][2yrs] MSc 2018-19