MODULE SPECIFICATION

Part 1: Information			
Module Title	Control		
Module Code	UFMFV7-15-2	Level	Level 5
For implementation from	2018-19		
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		
Contributes towards			
Module type:	Standard		
Pre-requisites	Engineering Mathematics 2018-19		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
Overview: Control Engineering is a subject that spans and incorporates many disciplines of engineering. This module is designed to provide a solid foundation of knowledge, with practical exercises to form the link between the theory and techniques and the real engineering world. **Educational Aims:** See Learning Outcomes. **Outline Syllabus:** Introduction to system modelling and the use of transfer functions. Developing models from first engineering principles, and using the Laplace operator “s”. Cross discipline examples. System classification by order. System time responses and behaviour. Introduction to Closed loop feedback control, the use and manipulation of Block diagrams. Use of the “s” plane as a means of representing the system. Root locus plots.

Frequency response analysis and the relationship with the transfer function (system identification).

Modifying behaviour and the design of standard controllers

Use of computer software for simulation and design of control systems

Introduction to State space techniques and non-linearity

Teaching and Learning Methods: Large group lecture supported by small group tutorial/laboratory sessions. Study time outside of contact hours will be spent on going through exercises and example problems.

Lab sessions (small groups) will provide a design opportunity to link the abstract theoretical concepts and techniques to real engineering tasks.

Scheduled learning includes lectures, tutorials and laboratory classes.

Independent learning includes hours engaged with essential reading, assignment preparation and completion etc.

Student contact time (in hours): (Module runs in one semester only):
Contact: 36
Assimilation and skill development: 64
Coursework preparation: 25
Exam preparation: 25
Total: 150

Part 3: Assessment

Component A:
Assessed via end of semester Exam, which is a summative assessment. Formative assessments (not contributing to module mark) are provided via support in tutorial/lab sessions. End of semester exam is two hours.

Component B:
Assignment based on laboratory work and design exercise. Formative assessments (not contributing to module mark) are provided via support in tutorial sessions.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Practical Skills Assessment - Component B		50 %	Assessment of practical work
Examination - Component A	✓	50 %	End of semester exam (2 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Practical Skills Assessment - Component B		50 %	Assessment of simulated practical work
Examination - Component A	✓	50 %	Exam (2 hours)

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will be able to:

	Module Learning Outcomes
MO1	Understand the principles and methods used in control engineering across disciplinary boundaries
MO2	Demonstrate an understanding and knowledge of the key mathematical principles needed to properly analyse control systems
MO3	Apply and integrate knowledge from other engineering disciplines
MO4	Classify, identify and describe the performance of systems using analytical methods and modelling tools
MO5	Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of control engineering problems
MO6	Show cognitive skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis
MO7	Demonstrate skills in problem formulation and decision making, interpreting experimental results

Contact Hours

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
Total Scheduled Learning and Teaching Hours:	36
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/ufmfv7-15-2.html