MODULE SPECIFICATION

Part 1: Information			
Module Title	Electromechanical Systems Integration		
Module Code	UFMEEA-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

Educational Aims: See Learning Outcomes.

Outline Syllabus: The syllabus may include but not be limited to the following:

MECHANICAL ELEMENTS:
Acceleration, Velocity, Torque, Inertia; Mechanical transmission; Gearboxes, pulley, belt and chains; Linear and Rotary bearings; Machine screws and Splined shafts.

SYSTEMS INTEGRATION:
Rotary and linear electric motors, gearboxes ,shafts integration.

SYSTEMS MODELLING and CONTROL:
Open, close loop control; Novel controllers; System performance measures; Controllers PC and PLC and Embedded; Software for control, Languages and Platforms.

Examples of mechatronic systems may include:
Robots and Machine tools; Car Engine management system; Aircraft actuators from fly by wire.

Teaching and Learning Methods: A combination of formal lectures, presentations and laboratory sessions will be used as the teaching approach. It is expected that the student will carry out independent study outside the formal sessions.

Scheduled learning includes lectures and laboratory practical sessions.

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

Part 3: Assessment

Component A:
The three-hour end of semester exam is used to independently test ability of the students in controlled conditions.

Component B:
The written assignments based on laboratory work are to assess student's ability to model and analyse the characteristics of real systems from real time observations. More over it is expected that the student can provide detailed and cogent arguments about their findings and conclusions. There are three assignments and the expected outcome for each is a 3000 word group report and a 500 word individually written critique of the work carried out.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		50 %	Written Assignment
Examination - Component A	✓	50 %	Exam (3 hours) (Final assessment)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		50 %	Written Assignment
Examination - Component A	✓	50 %	Exam (3 hours) (Final assessment)

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**
Create mathematical and computer aided models for complex systems	MO1
Establish the fitness for purpose of complex mechatronic systems and propose test procedures for simple systems	MO2
Select actuators, mechanical elements, control elements and software to perform specific tasks efficiently	MO3
The characterising attributes of a mechatronics system	MO4
Understand the specific issues related to the integration of mechanical, electronic and software elements	MO5
Use the modelling skills acquired in this module for investigation of complex mechatronic systems	MO6
Propose a mechatronics solution for electromechanical system	MO7
Communication skills	MO8
Progression to independent learning	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
	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/ufmeea-15-m.html	

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