



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Integrated Electro-Mechanical Systems		
Module Code	UFMFSL-15-3	Level	Level 6
For implementation from	2020-21		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engineering Design & Mathematics		
Module Type:	Standard		
Pre-requisites	Design and Electromechanical Systems 2020-21		
Excluded Combinations	None		
Co-requisites	None		
Module Entry Requirements	None		
PSRB Requirements	None		

Part 2: Description
<p><b>Overview:</b> This course teaches the design of mechatronic systems which integrate mechanical, electrical, and control systems engineering. There are significant laboratory-based design experiences.</p> <p><b>Educational Aims:</b> See Learning Outcomes</p> <p><b>Outline Syllabus:</b> Topics covered in the course may include but not be limited to the followings:</p> <p>Controls Review and Introduction to LabVIEW programming on the myRIO;</p> <p>Low-level interfacing of software with hardware;</p> <p>Use of high-level graphical programming tools to implement real-time computation tasks;</p> <p>Digital logic;</p> <p>Analog interfacing and power amplifiers;</p>

## STUDENT AND ACADEMIC SERVICES

<p>Measurement and sensing;</p> <p>Electromagnetic and optical transducers;</p> <p>Control of mechatronic systems.</p> <p><b>Teaching and Learning Methods:</b> This module is supported by computer practical sessions. Study time outside of contact hours will be spent on worked exercises and example problems.</p> <p>Scheduled learning includes lectures, and tutorials to familiarise the learners with computer software.</p> <p>Independent learning includes hours engaged with essential reading, software, group project preparation and completion, etc. These sessions constitute an average time per level.</p> <p>Contact Hours:</p> <p>There are a total of 36 scheduled contact hours for lecturing and tutorials.</p> <p>Lectures/tutorials: 36 hours</p> <p>Self-directed learning : 75 hours</p> <p>Group Project: 63 hours</p> <p>Total hours : 150</p>
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### Part 3: Assessment

The module is examined through two components of assessment to create a balanced assessment that covers underpinning concepts and applications of the material covered.

The group work (Component B) will be assessed through an individual report based on experiments or simulations that have been carried out during the delivery of the module. The individual presentation (Component A) will be a pre-recorded individual presentation based on a real-engineering problem solving experience.

Resit Strategy:

The resit strategy will take the same format as the first sit assessment strategy.

First Sit Components	Final Assessment	Element weighting	Description
Presentation - Component A	✓	40 %	Pre-recorded presentation
Report - Component B		60 %	Investigations involving design and simulation task
Resit Components	Final Assessment	Element weighting	Description
Presentation - Component A	✓	40 %	Pre-recorded presentation
Report - Component B		60 %	Individual Report – 12 pages

### Part 4: Teaching and Learning Methods

## STUDENT AND ACADEMIC SERVICES

<b>STUDENT AND ACADEMIC SERVICES</b>															
Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:														
	<table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Formulate test procedures for performance measurement of mechatronic systems</td> <td>MO1</td> </tr> <tr> <td>Create an integrated design involving actuators, mechanical elements, control elements and software for the efficient performance of specific Mechatronic systems</td> <td>MO2</td> </tr> <tr> <td>Select sensors based on an understanding of their key characteristics</td> <td>MO3</td> </tr> <tr> <td>Use the modelling skills acquired in this module to investigate mechatronic systems</td> <td>MO4</td> </tr> <tr> <td>Identify constraints that impact on the design and operation of a mechatronic system including environmental and sustainability limitations, health and safety and risk assessment issues</td> <td>MO5</td> </tr> <tr> <td>Design and Implement an Electromechanical Solution within a team</td> <td>MO6</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Formulate test procedures for performance measurement of mechatronic systems	MO1	Create an integrated design involving actuators, mechanical elements, control elements and software for the efficient performance of specific Mechatronic systems	MO2	Select sensors based on an understanding of their key characteristics	MO3	Use the modelling skills acquired in this module to investigate mechatronic systems	MO4	Identify constraints that impact on the design and operation of a mechatronic system including environmental and sustainability limitations, health and safety and risk assessment issues	MO5	Design and Implement an Electromechanical Solution within a team	MO6
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Contact Hours	<b>Independent Study Hours:</b>														
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<b>Hours to be allocated</b>	150														
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Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p><a href="https://uwe.rl.talis.com/modules/ufmfsl-15-3.html">https://uwe.rl.talis.com/modules/ufmfsl-15-3.html</a></p>														

### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

- Mechanical Engineering (Mechatronics) {Top-Up} [Sep][PT][AustonSingapore][2yrs] BEng (Hons) 2019-20
- Mechanical Engineering (Mechatronics) {Top-Up} [Feb][PT][AustonSingapore][2yrs] BEng (Hons) 2019-20
- Mechanical Engineering (Mechatronics) {Top-Up} [May][PT][AustonSingapore][2yrs] BEng (Hons) 2019-20
- Mechanical Engineering (Mechatronics) {Top-Up} [Sep][PT][AustonSriLanka][2yrs] BEng (Hons) 2019-20
- Mechanical Engineering (Mechatronics) {Top-Up} [Feb][PT][AustonSriLanka][2yrs] BEng (Hons) 2019-20
- Mechanical Engineering (Mechatronics) {Top-Up} [May][PT][AustonSriLanka][2yrs] BEng (Hons) 2019-20

## STUDENT AND ACADEMIC SERVICES

Mechanical Engineering with Manufacturing [Sep][PT][UCW][4yrs] BEng (Hons) 2018-19  
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Mechanical Engineering with Manufacturing {Apprenticeship} [Sep][PT][UCW][4yrs] BEng (Hons) 2018-19  
Mechanical Engineering with Manufacturing {Apprenticeship} [Sep][PT][COBC][4yrs] BEng (Hons) 2018-19  
Mechanical Engineering with Manufacturing {Apprenticeship} [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19  
Mechanical Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19  
Mechanical Engineering [Sep][FT][Frenchay][3yrs] BEng 2018-19