



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Dynamics		
Module Code	UFMFL8-15-2	Level	Level 5
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	Engineering Mathematics 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Educational Aims:</b> An understanding of dynamic behaviour is an essential key element in the makeup of a good Engineer. This module seeks to instil a confident understanding of the discipline to build upon the basics introduced in level one.</p> <p><b>Outline Syllabus:</b> Revision basic dynamics, rigid body motion, vector methods, single dof free vibration</p> <p>Vibration – undamped single d.o.f. forced vibration</p> <p>Damping and its effect in 1 d.o.f. systems</p> <p>Forced oscillation</p> <p>Introduction to 2 d.o.f. systems</p> <p>Principles of vibration measurement</p> <p>1-d wave equation</p>

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<p>Mechanisms (open and closed) – four bar linkage</p> <p>Vector analysis of mechanisms for position, velocity and acceleration</p> <p>Crank-slider mechanisms</p> <p><b>Teaching and Learning Methods:</b> Contact time: 36 hours</p> <p>Assimilation and skill development: 65 hours</p> <p>Coursework preparation: 17 hours</p> <p>Exam preparation: 32 hours</p> <p>Total study time: 150 hours</p> <p>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.</p> <p>Lab sessions (small groups) will provide a design opportunity to link the abstract theoretical concepts and techniques to real engineering tasks.</p> <p>Scheduled learning includes lectures, tutorials and laboratory classes.</p> <p>Independent learning includes hours engaged with essential reading, assignment preparation and completion etc. These sessions constitute an average time per level as indicated in the table above.</p>
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Part 3: Assessment			
<p>Component A: Assessed via end of semester Exam (75%), which is a summative assessment. Formative assessments (not contributing to module mark) is provided via support in tutorial/lab sessions. End of semester exam is two hours.</p> <p>Component B: Assignment based on laboratory work and design exercise (25%). Formative assessments (not contributing to module mark) is provided via support in tutorial sessions.</p>			
First Sit Components	Final Assessment	Element weighting	Description
Practical Skills Assessment - Component B		25 %	Assessment of practical work
Examination - Component A	✓	75 %	End of semester exam (2 hours)
Resit Components	Final Assessment	Element weighting	Description
Practical Skills Assessment - Component B		25 %	assessment of simulated practical work
Examination - Component A	✓	75 %	Exam (2 hours)

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<b>Part 4: Teaching and Learning Methods</b>																	
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th style="text-align: left;"><b>Module Learning Outcomes</b></th> <th style="text-align: left;"><b>Reference</b></th> </tr> </thead> <tbody> <tr> <td>Understand the principles and methods used in the study and analysis of dynamic behaviour, mechanical vibrations and mechanisms.</td> <td>MO1</td> </tr> <tr> <td>Demonstrate an understanding and knowledge of the key mathematical principles needed to properly analyse dynamic vibrations and systems.</td> <td>MO2</td> </tr> <tr> <td>Identify and describe the performance of dynamic systems using analytical methods and modelling tools.</td> <td>MO3</td> </tr> <tr> <td>Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of laboratory based problems.</td> <td>MO4</td> </tr> <tr> <td>Show cognitive skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis.</td> <td>MO5</td> </tr> <tr> <td>Demonstrate skills in problem formulation and decision making, interpreting experimental results.</td> <td>MO6</td> </tr> </tbody> </table>	<b>Module Learning Outcomes</b>	<b>Reference</b>	Understand the principles and methods used in the study and analysis of dynamic behaviour, mechanical vibrations and mechanisms.	MO1	Demonstrate an understanding and knowledge of the key mathematical principles needed to properly analyse dynamic vibrations and systems.	MO2	Identify and describe the performance of dynamic systems using analytical methods and modelling tools.	MO3	Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of laboratory based problems.	MO4	Show cognitive skills with respect to modelling and simplifying real problems, and applying mathematical methods of analysis.	MO5	Demonstrate skills in problem formulation and decision making, interpreting experimental results.	MO6		
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Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/ufmf18-15-2.html">https://uwe.rl.talis.com/modules/ufmf18-15-2.html</a></p>																

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### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Mechanical Engineering (Mechatronics) {Top-Up} [Sep][FT][AustonSingapore][1yr] BEng (Hons) 2019-20  
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} [Feb][FT][AustonSingapore][1yr] BEng (Hons) 2019-20  
Mechanical Engineering (Mechatronics) {Top-Up} [May][FT][AustonSingapore][1yr] BEng (Hons) 2019-20  
Mechanical Engineering (Mechatronics) {Top-Up} [Sep][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20  
Mechanical Engineering (Mechatronics) {Top-Up} [Feb][FT][AustonSriLanka][1yr] BEng (Hons) 2019-20  
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Mechanical Engineering (Mechatronics) {Top-Up} [May][PT][AustonSriLanka][2yrs] BEng (Hons) 2019-20  
Mechanical Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19  
Mechanical Engineering (Nuclear) - Not Running BEng (Hons) 2017-18  
Mechanical Engineering [Sep][FT][BTC][2yrs] FdSc 2018-19  
Mechanical Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19  
Mechanical Engineering [Sep][FT][Frenchay][3yrs] BEng 2018-19  
Mechanical Engineering [Sep][SW][Frenchay][4yrs] BEng 2018-19