



MODULE SPECIFICATION

Part 1: Information			
Module Title	Mathematical Sciences Case Studies		
Module Code	UFMFMH-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	Mathematics, Statistics and Operational Research Project A 2019-20, Mathematics, Statistics and Operational Research Project B 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Educational Aims: See Learning Outcomes.</p> <p>Outline Syllabus: In this module students will become familiar with methods and techniques to solve problems in applied mathematics through three separate case studies. In the first case study students will be introduced to a specific problem, and will be guided through: (i) the modelling process and mathematical formulation of the problem, (ii) simplifying and solving the resulting mathematical model and (iii) interpreting and communicating the results. In the second and third case studies students will be able to choose problems arising from a broad range of applications that cover topics in mathematics/statistics/probability.</p> <p>Teaching and Learning Methods: During case study one there will whole group lectures, used to deliver material on the specified topic. For case studies two and three students are required to choose problems from an extensive list that covers a range of topics in applied mathematics/probability/and statistics from a broad spectrum of applied problems, such as environmental, health, social. In the second case study students will be given guided reading, where as in the third case study they will need to research independently appropriate techniques for modelling and solving their chosen problem. For case studies two and three students will be allocated an advisor, the role of the advisor is provide guidance and monitor progress through regular meetings. Alongside this there will also be some scheduled whole group workshops.</p>

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Part 3: Assessment			
<p>The assessment will involve the completion of two components. The first three learning outcomes will be assessed in component A and all five, in particular the fifth one, will be assessed component B.</p> <p>Component A, which is based on the second case study, is assessed by a presentation in which students need to communicate effectively their chosen problem, describe the mathematical model, their results, conclusions and critical evaluation.</p> <p>Component B, which is based on the third case study, is assessed by an individual written report, in which students present their model, results and critical evaluation.</p>			
First Sit Components	Final Assessment	Element weighting	Description
Report - Component B	✓	75 %	Individual report (2500 words)
Presentation - Component A		25 %	Presentation (30 mins)
Resit Components	Final Assessment	Element weighting	Description
Report - Component B	✓	75 %	Individual report (2500 words)
Presentation - Component A		25 %	Presentation (30 minutes)

Part 4: Teaching and Learning Methods													
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Solve and analyse applied problems that arise in a broad range of unfamiliar contexts, derive suitable mathematical models, select appropriate mathematical techniques, and critically evaluate their effectiveness</td> <td>MO1</td> </tr> <tr> <td>Demonstrate research skills and the ability to read critically a range of source material that covers advanced topics in mathematics/statistics/probability</td> <td>MO2</td> </tr> <tr> <td>Communicate their results effectively in a variety of forms</td> <td>MO3</td> </tr> <tr> <td>Demonstrate awareness of the impact of the subject on society</td> <td>MO4</td> </tr> <tr> <td>Show evidence of independent learning</td> <td>MO5</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Solve and analyse applied problems that arise in a broad range of unfamiliar contexts, derive suitable mathematical models, select appropriate mathematical techniques, and critically evaluate their effectiveness	MO1	Demonstrate research skills and the ability to read critically a range of source material that covers advanced topics in mathematics/statistics/probability	MO2	Communicate their results effectively in a variety of forms	MO3	Demonstrate awareness of the impact of the subject on society	MO4	Show evidence of independent learning	MO5
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Contact Hours	<table border="1"> <thead> <tr> <th colspan="2">Independent Study Hours:</th> </tr> </thead> <tbody> <tr> <td>Independent study/self-guided study</td> <td>114</td> </tr> <tr> <td>Total Independent Study Hours:</td> <td>114</td> </tr> <tr> <th colspan="2">Scheduled Learning and Teaching Hours:</th> </tr> </tbody> </table>	Independent Study Hours:		Independent study/self-guided study	114	Total Independent Study Hours:	114	Scheduled Learning and Teaching Hours:					
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	Face-to-face learning	36
	Total Scheduled Learning and Teaching Hours:	36
	Hours to be allocated	150
	Allocated Hours	150
Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p>https://uwe.rl.talis.com/index.html</p>	

Part 5: Contributes Towards

This module contributes towards the following programmes of study: