



MODULE SPECIFICATION

Part 1: Information			
Module Title	Mechanics of Composites		
Module Code	UFMFVL-15-M	Level	Level 7
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	Mechanical Engineering [Sep][FT][Frenchay][1yr] MSc 2018-19 Mechanical Engineering [Sep][PT][Frenchay][2yrs] MSc 2018-19		
Module type:	Standard		
Pre-requisites	Stress Analysis 2018-19		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Educational Aims: See Learning Outcomes</p> <p>Outline Syllabus: Introduction to micro/macro mechanics of composite materials</p> <p>Classical laminate theory</p> <p>Strength of laminates</p> <p>Failure criteria for laminates</p>

STUDENT AND ACADEMIC SERVICES

Stability of composites (buckling)

Environmental effects (temperature and moisture)

Introduction to Finite Element Analysis: overview of FEA applications, nodes, elements, meshes, stiffness matrix, and boundary conditions - loads and restraints.

Practical Composite FE modelling techniques: e.g.: Planning, pre-processing, model solution, post processing, symmetry, convergence tests, boundary conditions, element types/selection, co-ordinate systems, mesh creation.

Teaching and Learning Methods: This module is supported by computer practical sessions. Study time outside of contact hours will be spent on worked exercises and example problems.

Scheduled learning includes lectures, tutorials and computer practical sessions

Independent learning includes hours engaged with essential reading, software, assignment preparation and completion etc. These sessions constitute an average time per level as indicated in the table below.

There are a total of 36 scheduled contact hours for lecturing and tutorials:

Lectures/tutorials: 36 hours
 Self-directed learning : 60 hours
 Coursework: 27 hours
 Exam preparation : 27 hours
 Total hours : 150

Part 3: Assessment

The module is assessed using two components of assessment where both theoretical concepts and practical implementation of finite element methods to engineering structural analysis problems.

A two hour written end of module examination is used to assess concepts in finite element theory and methods under controlled conditions.

The coursework component is designed to assess modelling using software packages, and competence in critically evaluating and analysing results of a computational structural analysis. The output of this coursework will be a report in the style of a 10 page conference paper. A template will be provided to help students structure the report appropriately.

The referred coursework will involve a reworking of the first sit submission taking into account feedback to improve the quality of the work. In the event of any non-submission of coursework a new but equivalent task will be published.

First Sit Components	Final Assessment	Element weighting	Description
Report - Component B		60 %	Individual Report
Examination - Component A	✓	40 %	Exam (2 hours)
Resit Components	Final Assessment	Element weighting	Description
Report - Component B		60 %	Individual report
Examination - Component A	✓	40 %	Exam (2 hours)

Part 4: Teaching and Learning Methods																			
Learning Outcomes	<p>On successful completion of this module students will be able to:</p> <table border="1"> <thead> <tr> <th colspan="2" style="text-align: center;">Module Learning Outcomes</th> </tr> </thead> <tbody> <tr> <td>MO1</td> <td>Design and undertake substantial investigations to address significant areas of theory and practice in structural modelling</td> </tr> <tr> <td>MO2</td> <td>Select appropriate advanced methodological approaches and critically evaluate their effectiveness</td> </tr> <tr> <td>MO3</td> <td>Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems</td> </tr> <tr> <td>MO4</td> <td>Demonstrate and critically evaluate current theoretical and methodological approaches through use of professional literature</td> </tr> <tr> <td>MO5</td> <td>Act with initiative in decision-making within professional or given guidelines</td> </tr> <tr> <td>MO6</td> <td>Communicate effectively using professional engineering terms</td> </tr> </tbody> </table>	Module Learning Outcomes		MO1	Design and undertake substantial investigations to address significant areas of theory and practice in structural modelling	MO2	Select appropriate advanced methodological approaches and critically evaluate their effectiveness	MO3	Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems	MO4	Demonstrate and critically evaluate current theoretical and methodological approaches through use of professional literature	MO5	Act with initiative in decision-making within professional or given guidelines	MO6	Communicate effectively using professional engineering terms				
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Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p>https://uwe.rl.talis.com/modules/ufmfvl-15-m.html</p>																		