STUDENT AND ACADEMIC SERVICES

UWE Bristol | University of the West of England

MODULE SPECIFICATION

Part 1: Information			
Module Title	Advanced Structural Modelling		
Module Code	UBGMM3-15-3	Level	Level 6
For implementation from	2018-19		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Geography and Environmental Management
Department	FET Dept of Geography & Envrnmental Mgmt		
Contributes towards			
Module type:	Standard		
Pre-requisites	Applications of Mathematics in Civil and Environmental Engineering 2018-19		
Excluded Combinations	None		
Co- requisites	Structural Analysis and Geotechnics (cee) 2018-19		
Module Entry requirements	None		

Part 2: Description
Overview: Pre-requisites: 60 credits at Level 2 To include: UFMFF7-15-2 Applications of Mathematics for Civil and Environmental Engineering   **Educational Aims:** In this module students will develop the necessary knowledge, understanding and skills to analyse and solve problems relating to multi-variable structural systems of both statically determinate and indeterminate structure types, including plates. In addition the educational experience may explore, develop, and practise but not formally discretely assess the following: Appreciation of the importance of validation and verification in interpretation of computer output. Appreciation of the uncertainties inherent in selection of material properties, loadings and boundary conditions. **Outline Syllabus:** The syllabus includes:

Matrix methods in structural analysis: matrix algebra, matrix displacement method.
Stiffness method of structural analysis of pin-jointed structures and frames: nodes, elements, stiffness matrix, loads and restraints.
Introduction to finite elements analysis: nodes, elements, meshes, stiffness matrix, boundary conditions and loads.
Practical finite elements techniques: element types, mesh generation, pre-processing, post-processing.
Modelling dynamic systems: single degree of freedom systems, multi degree of freedom systems, interpreting dynamic response.

Teaching and Learning Methods: This module will be delivered through lecture sessions aimed at establishing the discipline context, key definitions/concepts, and also at establishing a framework for learning. The lectures will be supported by e-learning using computer-based learning exercises. Through these mechanisms learners will also build upon the fundamental concepts covered in the lectures and start applying new understanding through the tasks and activities provided. Regular formative feedback is built into the weekly contact sessions.

Contact Hours:

On average students will receive 4.5 hours of contact time per week. This will be in a range of formats, including lectures, laboratory practicals, field work, tutorial or computer-based sessions, formative feedback sessions and support via e-mail.

The amount of time spent on activities in this module is:

Activity:
Contact time (lectures/feedback/practical sessions): 36 hours
Assimilation and development of knowledge: 84 hours
Coursework preparation: 30 hours
Total study time: 150 hours

Part 3: Assessment			
Component A - Examination: Exam (2 hours). Component B - Report: Portfolio (1000 words).			
First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		50 %	Portfolio (equivalent to 1000 words)
Examination - Component A	✓	50 %	Exam 2 hours
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B		50 %	Portfolio (equivalent to 1000 words)
Examination - Component A	✓	50 %	Exam 2 hours

Part 4: Teaching and Learning Methods

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Learning Outcomes	On successful completion of this module students will be able to:

	Module Learning Outcomes
MO1	Use matrix methods to carry out elastic structural analysis
MO2	Use the stiffness method to carry out elastic structural analysis of trusses and frames
MO3	Use the finite element method to model frames and plates to investigate their response to different load conditions
MO4	Use of single and multi-degree of freedom models to assess the dynamic response of structures

Contact Hours	**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/ubgmm3-15-3.html	