MODULE SPECIFICATION

Part 1: Information			
Module Title	Applications of Mathematics in Civil and Environmental Engineering		
Module Code	UFMFF7-15-2	Level	Level 5
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			
Module type:	Standard		
Pre-requisites	Mathematics for Civil and Environmental Engineering 2018-19		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Educational Aims: In this module students will be introduced to advanced mathematical techniques used in the solution of engineering problems. Applications taken from heat flow and structural mechanics will be used to illustrate the techniques.

Outline Syllabus: Mathematical content:

Complex algebra: Basic algebraic operations, complex solutions to quadratic equations.

Linear algebra: Determination of eigenvalues and eigenvectors

Fourier series: Properties of periodic functions, odd and even functions. Computation and convergence of Fourier series.

Differential equations: 2nd order linear constant coefficient differential equations, resonance. 1st and 2nd order partial derivatives. Solution of separable partial differential equations.

The module is delivered by means of lectures and workshops. To prepare for assessment, students will be expected to undertake self-directed learning in addition to the directed learning which supports taught classes.

Teaching and Learning Methods: See Assessment

Part 3: Assessment

The examination is summative and assesses the students understanding of mathematical concepts and techniques, and their ability to apply those techniques to a variety of problems that test understanding of the engineering context. Students will have the opportunity to prepare for applied/modelling type scenarios which will then form the basis of a structured examination question.

The computer based tests provide frequent and instant feedback to students about their progress through the module.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
In-class test - Component B		25 %	Computer based tests
Examination - Component A	✓	75 %	Written exam
Resit Components	**Final Assessment**	**Element weighting**	**Description**
In-class test - Component B		25 %	Computer based tests
Examination - Component A	✓	75 %	Examination (2 hours)

Part 4: Teaching and Learning Methods

Learning Outcomes

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

	Module Learning Outcomes
MO1	Select and apply advanced techniques from engineering mathematics to the solution of a given engineering problem
MO2	State and apply physical laws to the solution of engineering problems
MO3	Interpret a mathematical model in terms of the physical problem being described with reference to the underlying assumptions and limitations of the model
MO4	Communicate mathematical ideas and concepts in written form

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/ufmff7-15-2.html	