STUDENT AND ACADEMIC SERVICES

UWE Bristol | University of the West of England

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	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 for Civil and Environmental Engineering 2019-20		
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 achieve the following learning outcomes:

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

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
		3
	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	

Part 5: Contributes Towards
This module contributes towards the following programmes of study: Building Services Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Civil Engineering [Jan][FT][Northshore][4yrs] MEng 2018-19 Civil and Environmental Engineering [Sep][SW][Frenchay][4yrs] BEng (Hons) 2018-19 Civil and Environmental Engineering [Sep][FT][Frenchay][4yrs] MEng 2018-19 Civil and Environmental Engineering [Sep][SW][Frenchay][5yrs] MEng 2018-19 Civil and Environmental Engineering [Sep][FT][Frenchay][3yrs] BEng (Hons) 2018-19 Building Services Engineering {Apprenticeship} [Sep][PT][Frenchay][5yrs] BEng (Hons) 2018-19 Building Services Engineering {Top-Up} [Sep][PT][SHAPE][1.5yrs] BEng (Hons) 2018-19 Building Services Engineering {Top-Up} [Sep][FT][SHAPE][1yr] BEng (Hons) 2018-19