



MODULE SPECIFICATION

Part 1: Information			
Module Title	Foundation Mathematics: Algebra and Calculus		
Module Code	UFMFBG-30-0	Level	Level 3
For implementation from	2020-21		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Educational Aims: See Learning Outcomes</p> <p>Outline Syllabus: Numbers and Calculations</p> <p>Indices, Standard Form, Percentages, Logarithms. Compound Interest and Continuous compounding.</p> <p>Algebra</p> <p>Basic Algebra. Factorisation. Algebraic Fractions, Linear Equations. Rearranging Formulae. Simultaneous Linear Equations. Linear Equations and Graphs. Quadratic Equations. Solving Quadratics by completing the square. Graphs of Quadratic Functions. Simultaneous Solution of Quadratic and Linear Equations. Introduction to Partial Fractions. Arithmetic and Geometric Series.</p> <p>Functions</p> <p>Functions and inverses. Function of a Function. Properties of standard functions used in engineering: polynomial, rational, trigonometric, exponential and logarithmic functions.</p>

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Calculus

Differential Calculus. The Derivates of other Functions. Maxima and Minima. The Chain Rule (or Composite Rule). The Product Rule and Quotient Rule. The Second Derivative. Integration. The Definite Integral. Introduction to Integration by Parts and Integration by Substitution.

Teaching and Learning Methods: By classroom teaching and directed reading:

Students will be provided with essential course reading material in the form of a comprehensive module handbook containing lecture notes. There is support material in the form of downloadable video and audio files.

The learning strategy is to guide students through highly structured workbooks that encourage active learning. The video and audio files allow students to consolidate their understanding. The aim is to ensure that foundation level students have mastery and fluency of concepts, methods and communication of this material which underpins much of the analytical work they would encounter at level 1.

Students will be guided to extra resources on the web where necessary and they may consult the indicative reading list below to assist understanding.

Scheduled learning includes lectures with tutorial sessions.

Independent learning includes hours engaged in solving worksheet problems and preparation for assessments.

Part 3: Assessment

The assessment strategy uses component B to provide formative feedback to students so that they can assess their progress throughout the year and an end of module examination to assess whether students have reached an appropriate standard in mathematics to progress to single honours programmes in Engineering and Mathematics.

Component A: consists of an end of module online examination to assess elements covered in both semesters.

Component B: consists of a series of e-assessments that provide instant feedback and a mid-sessional online examination that will provide feedback on written work.

First Sit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A		13 %	Online Mid-sessional test (January)
Examination (Online) - Component A	✓	75 %	Online Examination
Online Assignment - Component B		12 %	e -Assessments
Resit Components	Final Assessment	Element weighting	Description
Examination (Online) - Component A	✓	75 %	Online Examination
Online Assignment - Component B		25 %	e -Assessment

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Part 4: Teaching and Learning Methods															
Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:														
	<table border="1"> <thead> <tr> <th>Module Learning Outcomes</th> <th>Reference</th> </tr> </thead> <tbody> <tr> <td>Perform numerical calculations to an appropriate level of accuracy</td> <td>MO1</td> </tr> <tr> <td>Interpret an algebraic expression and select an appropriate method for changing the subject of the expression</td> <td>MO2</td> </tr> <tr> <td>Solve equations that involve standard mathematical functions used in engineering</td> <td>MO3</td> </tr> <tr> <td>Differentiate and integrate standard mathematical functions used in engineering</td> <td>MO4</td> </tr> <tr> <td>Select and apply suitable mathematical techniques to solve extended problems</td> <td>MO5</td> </tr> <tr> <td>Communicate mathematical arguments using clear, appropriate and consistent notation</td> <td>MO6</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Perform numerical calculations to an appropriate level of accuracy	MO1	Interpret an algebraic expression and select an appropriate method for changing the subject of the expression	MO2	Solve equations that involve standard mathematical functions used in engineering	MO3	Differentiate and integrate standard mathematical functions used in engineering	MO4	Select and apply suitable mathematical techniques to solve extended problems	MO5	Communicate mathematical arguments using clear, appropriate and consistent notation	MO6
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Contact Hours	Independent Study Hours:														
	Independent study/self-guided study	228													
	Total Independent Study Hours:	228													
	Scheduled Learning and Teaching Hours:														
	Face-to-face learning	72													
	Total Scheduled Learning and Teaching Hours:	72													
	Hours to be allocated	300													
	Allocated Hours	300													
	Reading List	<i>The reading list for this module can be accessed via the following link:</i>													
		https://uwe.rl.talis.com/modules/ufmfbg-30-0.html													

Part 5: Contributes Towards
<p>This module contributes towards the following programmes of study:</p> <p>Computer Security and Forensics [Feb][FT][GCET][4yrs] BSc (Hons) 2020-21</p> <p>Computer Security and Forensics [Oct][FT][GCET][4yrs] BSc (Hons) 2020-21</p> <p>Mathematics with Qualified Teacher Status (QTS) {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2020-21</p> <p>Aerospace Engineering {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2020-21</p> <p>Aerospace Engineering {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2020-21</p> <p>Aerospace Engineering with Pilot Studies {Foundation} [Sep][FT][Frenchay][4yrs] BEng (Hons) 2020-21</p> <p>Aerospace Engineering with Pilot Studies {Foundation} [Sep][SW][Frenchay][5yrs] BEng (Hons) 2020-21</p>