Module Details	
Module Title	Foundation Mathematics 1
Module Code	ENM3001-B
Academic Year	2023/4
Credits	20
School	Engineering and Informatics (Faculty-wide)
FHEQ Level	RQF Level 3

Contact Hours	
Type	Hours
Lectures	24
Tutorials	48
Directed Study	128

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims
1. Engineers are required to solve problems that affect all aspects of life, and to do this effectively a strong and fundamental knowledge of Mathematics is vital. This module provides students with an understanding of the techniques and ideas of the key contributing academic disciplines of engineering study in mathematics. 2. Facilitate students to become independent learners with the problem-solving and critical thinking skills needed for resolving integrated and multidimensional engineering problems.

Outline Syllabus
* Basic algebra: rules of indices and logarithms, manipulation of formulas, factorisation, completing the square, linear and quadratic equations and associated inequalities. * Plane co-ordinate geometry: distance, lines, circles. * Functions: notation, polynomial, reciprocal, trigonometric, exponential and logarithmic functions with properties and graphs. * Series: arithmetic, and geometric series. * Limit definition and graphical representation. * Derivatives and integrals of algebraic functions. Use of GeoGebra and Mathway to solve many engineering problems.

Learning Outcomes	
Outcome Number	Description
LO1	Apply standard algebraic techniques, geometry and trigonometry when solving problems; describe the capabilities and limitations of computer systems and know how to use these systems when solving problems.
LO2	Apply different mathematical techniques to solve problems in engineering contexts; describe the capabilities and limitations of these techniques when solving engineering problems.
LO3	Apply the skills and knowledge learnt to systematic problem solving; use these skills for data management, data presentation and other IT processes.

Learning, Teaching and Assessment Strategy

? Concepts, principles and practical calculations are developed and practised in mixed lecture/tutorial classes and are consolidated in tutorial group sessions.

? The lectures are supported by tutorial sessions, in advance of a tutorial students will be tasked to complete exercises and examples, and the solutions are then discussed during the tutorials. This allows students to progress at an individual pace relevant to their own understanding, while also ensuring that each topic is covered in a timely manner to help comprehension of lecture content. Tutors have opportunities to repeat explanations and/or increase the challenge depending upon individual student needs.

? Students have differing maths abilities, therefore, a diagnostic test (that does not contribute to the total mark) exists at the beginning of the semester to provide a profile of the mathematical strengths and weaknesses of the students. Then the students are offered to attend University maths workshops and support classes. This helps to strengthen the weaknesses and bring all students to the same level.

? Written classroom test will assess the development of the application of practical skills to the knowledge base of the strand, and the formal examinations will assess the wider learning outcomes expressed in the descriptor.

? The classroom test is designed to gradually build and test the students' skills and knowledge before the final exam. The classroom test will help the students to prepare for the formal examination as it will cover part of the topics delivered in this module, while the formal examination will cover all the topics.

? The main formulas and equations that might be used to solve the classroom test and examination will be provided to the students, as the assessment will be on the application of these skills and formulas rather than memorising them. This will also support the development of the exam?s skills and confidence of the students. In all cases feedback is provided.

? The students? attendance is monitored (electronically by attendance monitor readers) and reported on weekly basis to the module leader and personal academic tutors. If the student?s attendance is not satisfactory, he/she will be contacted to clarify the reason and get the required support if needed.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Classroom test	Closed book examination	15%
Summative	Classroom test	Closed book examination	15%
Summative	Examination - Closed Book	Closed book examination	70%
Referral	Examination - Closed Book	Closed book examination	100%
Formative		Method - Short classroom based self-assessment worked examples Description - Students will be able to work through examples in class and to self-assess their performance as the answer is revealed to all students by the lecturer Length & Duration - As needed by the lecture	N/A

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html