

MODULE DESCRIPTOR

Module Title

Mathematics 1A

Reference	EN1911	Version	4
Created	March 2023	SCQF Level	SCQF 7
Approved	June 2002	SCQF Points	15
Amended	August 2023	ECTS Points	7.5

Aims of Module

To provide the student with the ability to apply introductory level mathematics to engineering problems.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Carry out manipulation of trigonometric equations by use of formulae.
- 2 Apply vectors to problems in engineering mathematics.
- 3 Carry out basic operations on complex numbers including their powers and roots.
- 4 Employ standard techniques of differentiation and integration.

Indicative Module Content

The syllabus will include: Trigonometry: Trigonometric identities and their application in solving trigonometric equations. The combination of simple waveforms using standard trigonometric formulae. Vectors: Simple vector algebra. The scalar and vector products. Application to engineering problems. Complex numbers: The arithmetic of complex numbers. Rectangular and polar forms. The Argand diagram. De Moivre's theorem and complex roots. Differential Calculus: Differentiation of elementary functions. The rules of differentiation: chain rule, product rule, quotient rule. Application to problems in engineering. Integral Calculus: Integration of elementary functions. Partial fractions. Application to problems in engineering.

Module Delivery

The module is delivered using a series of lectures with associated tutorials.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	40	N/A
Non-Contact Hours	110	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Examination	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	Closed book examination.				

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

Component 1 comprises 100% of the module grade. To pass the module, a grade D is required.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 STROUD, K.A. and BOOTH, D.J., 2020. Engineering Mathematics. 8th ed. Red Globe Press.
- 2 SINGH, K. 2011, Engineering Mathematics Through Applications, 2nd ed., Palgrave
- 3 JAMES, G. and DYKE, P. 2020 Modern Engineering Mathematics, 6th ed., Palgrave