

## 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:	Coursework	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:
<b>A</b>	A
<b>B</b>	B
<b>C</b>	C
<b>D</b>	D
<b>E</b>	E
<b>F</b>	F
<b>NS</b>	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