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MODULE DESCRIPTOR

Module Title

Mathematics 1A

Reference	EN1911	Version	3
Created	July 2017	SCQF Level	SCQF 7
Approved	June 2002	SCQF Points	15
Amended	September 2017	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	Solve trigonometric equations by manipulation and use of formulae.
2	Apply vectors to problems in engineering mathematics.
3	Carry out basic operations on complex numbers and calculate their powers and roots.
4	Use standard techniques of differentiation and integration and apply them to problems in engineering.
5	Use computational packages in support of the other Learning Outcomes.

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. The use of a computer mathematics package for solving problems in engineering mathematics.

Module Delivery

The module is delivered using a series of lectures with associated tutorials and computer laboratories where techniques can be applied.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	60	N/A
Non-Contact Hours	90	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

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

Component 1

Type:	Practical Exam	Weighting:	30%	Outcomes Assessed:	5
Description:	Computer based laboratory test.				

Component 2

Type:	Examination	Weighting:	70%	Outcomes Assessed:	1, 2, 3, 4
Description:	Closed book examination.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

To pass the module, you must achieve a 40% weighted average mark from the examination and practical examination. In addition, you need to achieve at least 35% in both the examination and the practical examination Components.

Module Grade	Minimum Requirements to achieve Module Grade:
A	70-100%
B	60-69%
C	50-59%
D	40-49%
E	35-39%
F	0-34%
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	Entry requirements normally include a pass in SQA Higher Grade Mathematics.
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