MATH H1623: Mathematics 1

Module Title:	Mathematics 1
Language of Instruction:	English

Credits:	10

NFQ Level:	6

Module Delivered In	No Programmes

Teaching & Learning Strategies:	(a) This module will be delivered using a mixture of lectures and tutorials. (b) The Institute Managed Learning Environment will be used to interactively communicate with students e.g. on-line tests, discussion forums, reference information

Module Aim:	To give the students the knowledge, competencies and skills necessary to support the mathematical procedures encountered in the other modules of this programme.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Manipulate algebraic expressions and to solve algebraic equations
LO2	Draw graphs of algebraic and trigonometric functions and to use graphs to solve equations
LO3	Solve triangles, use identities and sketch periodic functions
LO4	Differentiate various functions and apply differentiation to solve engineering problems
LO5	Perform basic operations with complex numbers and to convert complex numbers to different forms

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
No requirements listed

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Module Content & Assessment

Indicative Content
Basic Algebra o Rules of precedence and use of calculator o Rules of indices o Conversion of units and use of prefixes o Manipulation of fractions and algebraic expressions o Factorisation of algebraic expressions o Solution of simple, simultaneous and quadratic equations o Transposition of formulae o Laws of logarithms o Solution of log and exponential equations o Partial Fractions o Permutations and combinations
Graphs o Linear and quadratic graphs. o Log and exponential graphs. o Determination of laws using linear graphs o Engineering applications
Trigonometry o Angles: degree and radian measure. Trigonometric ratios Inverse trigonometric functions o Solution of triangles. o Compound angle formulae and sums and products of sines and cosines. o Application of trigonometric identities in electrical principles and communications o Graphs of sinusoidal functions o Properties of sinusoidal functions: amplitude, period, frequency, phase angle Addition of sinusoids o Application of sinusoids in electrical/electronic principles and mechanics
Complex numbers o Representation of complex numbers in Cartesian and polar forms o Conversion from one form to the other. Phasors o Manipulation of complex numbers in Cartesian and polar forms o De Moivre's Theorem o Powers and roots of complex numbers.
Differential Calculus o Evaluation of simple limits o Differentiation of simple polynomial functions from first principles. o Differentiation, by rule, of algebraic, trigonometric, exponential and logarithmic functions Chain, product and quotient rules. o Slopes of curves, rates of change and maximum/minimum values of a function

Assessment Breakdown	%
Continuous Assessment	30.00%
End of Module Formal Examination	70.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Other	Each student will be obliged to complete a continuous assessment programme for which 30% will be awarded. This will involve class tests and other assigned tasks.	1,2,3,4,5	30.00	n/a

No Project

No Practical

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	Each student will sit a formal written examination at the end of the module for which 70% will be awarded.	1,2,3,4,5	70.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	Every Week	3.00
Tutorial	Every Week	1.00
Independent Learning	Every Week	3.00
	Total Hours	7.00