MATH H2622: Mathematics 2

Module Title:	Mathematics 2
Language of Instruction:	English

Credits:	10

NFQ Level:	6

Module Delivered In	No Programmes

Teaching & Learning Strategies:	(a) A series of lectures will be delivered using whiteboard and data projector. (b) The Institute Managed Learning Environment will be used to interactively communicate with students e.g. on-line tests, discussion forums, reference information (c) Mathematical software (e.g. MATLAB) may be used by students to reinforce the mathematical principles and practices

Module Aim:	To give the students the knowledge, competence 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	Differentiate a wide variety of functions
LO2	Integrate and use integration to solve engineering problems
LO3	Apply vector operations and vector differentiation to simple problems in mechanics and dynamics
LO4	Apply laws of probability and apply probability distributions to engineering type problems.

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
Differentiation Review of basic rules of differentiation. Partial differentiation,rates of changes and small changes of mutli variable functions.
Integration The integral as an anti-derivative. Integration of basic functions by rule. Integration of functions using the special methods of partial fractions, algebraic substitutions and integration by parts. Areas under curves, average and RMS values using the definite integral. Application of integration to areas of engineering
Vectors Perform standard operations on vectors in two-dimensional space and three dimensional space Compute the dot product of vectors, lengths of vectors, and angles between vectors Compute the cross product of vectors and interpret it geometrically. Differentiate vector functions.
Sequences and Series Arithmetic and geometric progressions. Sum of a series
Statistics and Probability Mean, Median, Mode and Standard Deviation of a sample. Laws of probability. Random variables. Using discrete and continuous probability distributions to solve probability question.

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.	1,2,3,4	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	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
Estimated Learner Hours	Every Week	4.00
	Total Hours	7.00