

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	
<i>On successful completion of this module the learner should be able to:</i>	
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 <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

Module Content & Assessment

Indicative Content

Differentiation

Review of basic rules of differentiation. Partial differentiation, rates of changes and small changes of multi 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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Every Week	3.00
Estimated Learner Hours	Every Week	4.00
Total Hours		7.00

