

Module Title:	Mathematics 2
Language of Instruction:	English
Credits:	5
NFQ Level:	6
Module Delivered In	1 programme(s)
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 test, discussion forums, reference information (c) Mathematical software (e.g. Matlab) will be used by students to re-enforce the mathematical principles and practices
Module Aim:	To give the students the knowledge, competencies and skills necessary to support the mathematical procedures encountered in the other modules of this course.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Demonstrate a competence in differentiating a variety single variable and multi variable functions.
LO2	Demonstrate a competence in integrating a variety of functions.
LO3	Apply basic operations to matrices and vectors. Use matrix methods to solve simultaneous equations.
LO4	Recognise arithmetic and geometric series and find their sums.
LO5	Apply basic laws of probability. Calculate mean and standard deviation for a simple discrete probability distribution.
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>	
Mathematics 1 st or equivalent	

Module Content & Assessment

Indicative Content
(a) Differentiation Review of basic rules of differentiation. Implicit, parametric and logarithmic differentiation. Partial differentiation, rates of changes and small changes of multi-variable functions.
(b) 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
(c) Matrices Arithmetic operations on matrices. Matrix inverse using cofactors. Simultaneous equations using Matrix inverse and Cramer's Rule.
(d) Vectors Addition and subtraction of vectors in two and three dimensions. Dot and cross product of vectors
(e) Sequences and Series Arithmetic and geometric progressions. Sum of a series
(f) Statistics and Probability Mean, Median, Mode and Standard Deviation of a sample. Laws of probability. Random variables. Introduction to a discrete probability distribution.

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
Essay	Each student will be required to complete a continuous assessment assignment addressing all learning outcomes	1,2,3,4,5	30.00	Ongoing

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.	1,2,3,4,5	70.00	End-of-Semester

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

Module Workload

Workload: Part Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Per Semester	0.96
Independent Learning Time	Per Semester	4.04
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_BSFOP_D	Bachelor of Science in Flight Operations	2	Mandatory