

# MATH H3617: Mathematics 3

Module Title:			Mathematics 3			
Language of Instruction:		n:	English			
Credits:		5				
		<u> </u>				
NFQ Level: 7						
Module Deliv	vered In		No Programmes			
Teaching & Learning Strategies:			1. A series of lectures will be delivered using whiteboard and data projector. 2. The Institute Managed Learning Environment will be used to interactively communicate with students e.g. on-line tests, discussion forums, reference information 3. Mathematical software (e.g. MATLAB) may be used by students to reinforce the mathematical principles and practices			
Module Aim:			To familiarise the student with the mathematical concepts and techniques that s/he will encounter in the other modules of the programme.			
Learning Ou	itcomes					
On successfu	ul completio	n of tl	his module the learner should be able to:			
LO1	Solve systems of linear equations using various matrix methods and calculate the eigenvalues and eigenvectors of a matrix.					
LO2	Solve first order separable and first order linear differential equations and apply them to simple problems in mechanics and electrical circuits.					
LO3	Solve second order linear differential equations with constant coefficients and apply them to the analysis of spring-mass systems.					
LO4	Apply Laplace transforms to the solutions of first and second order initial value problems					
Pre-requisite	e learning					
Module Rec This is prior l	ommendati earning (or	<b>ions</b> a prac	ctical skill) that is recommended before enrolment in this module.			
No recomme	ndations list	ted				
<i>Incompatible Modules</i> 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						
<b>Requirements</b> 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

#### Matrices

Solution of simultaneous equations by matrix methods The rank of a matrix. Eigenvectors & eigenvalues of a matrix.

#### Ordinary Differential Equations

First order ordinary differential equations. Applications of first order ODEs in mechanics. Second order linear ODEs with constant coefficients. Free and forced oscillations. Spring-mass systems.

• Laplace Transforms o The Laplace transform and its inverse. First shift theorem. Laplace transforms of derivatives. Solution of first order initial value problems. Solution of second order initial value problems.

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 program for which 30% will be awarded. This will consist of class tests and other assigned tasks, which will assess the achievement of all learning outcomes.	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	A final written examination, for which 70% will be awarded, will assess the extent to which the student has achieved all the module learning outcomes.	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		
Independent Learning Time	Every Week	4.00		
	Total Hours	7.00		