

<b>Module Title:</b>	Mathematics 3
<b>Language of Instruction:</b>	English
<b>Credits:</b>	10
<b>NFQ Level:</b>	7
<b>Module Delivered In</b>	No Programmes
<b>Teaching &amp; Learning Strategies:</b>	(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
<b>Module Aim:</b>	To give the students the knowledge, competencies and skills necessary to support the mathematical procedures encountered in the other modules of this course.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Demonstrate a competence in solving First and Second order differential equations.
LO2	Use Fourier series to analyse periodic functions.
LO3	Use Laplace transforms to solve first and second order IVP's.
LO4	Use probability distributions to model uncertainty.
<b>Pre-requisite learning</b>	
<b>Module Recommendations</b>	
<i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
<b>Incompatible Modules</b>	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b>	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
Mathematics 2 or equivalent	

**Module Content & Assessment**
**Indicative Content**
**A.Differential Equations**

Solve variable separable and linear first order differential equations. Solve second order homogeneous and non-homogeneous differential equations.

**B.Fourier Series**

Recognise periodic functions. Even and odd functions. Be able to obtain the Fourier Series of a periodic function. Derive half-range sine and cosine series

**C.Laplace Transforms**

Find the Laplace Transform of standard functions. Find inverse Laplace Transforms. Find the Laplace Transform of derivatives and use Laplace Transforms to solve IVP's.

**D.Probability**

Use probability distributions to calculate probability values.

**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 a maximum of 30% will be awarded.	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**

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

