

Module Title:	Engineering Mathematics 5
Language of Instruction:	English
Credits:	5
NFQ Level:	7
Module Delivered In	8 programme(s)
Teaching & Learning Strategies:	A series of lectures will be delivered using whiteboard and data projector. The Institute Managed Learning Environment will be used to interactively communicate with students e.g. on-line test, discussion forums, reference information Mathematical software (e.g. Matlab) will be used by students to re-enforce the mathematical principles and practices
Module Aim:	To give the student sufficient mathematical knowledge to support the other modules of the course and provide a solid foundation for further studies
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Solve IVP's (linear differential equations) using Laplace Transforms.
LO2	Model uncertainty using Probability Distributions.
LO3	Use computer applications and programs to model mathematical systems
LO4	Apply differential equations to engineering applications.
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

Laplace Transforms

Introduction to differential equations and their solutions. Use Laplace Transforms to solve first and second order differential equations.

Probability Distributions

Random variables and simple probability distributions Binomial and Poisson probability distributions. Continuous random variables. The Normal distribution.

Numerical Analysis Software

Application of numerical methods through software packages such as Python and/or Matlab

Assessment Breakdown	%
Continuous Assessment	70.00%
Practical	30.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	Each student will be obliged to complete a continuous assessment program	1,2,4	70.00	n/a

No Project

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Series of assessments based on the application of numerical methods through software	3,4	30.00	n/a

No End of Module Formal Examination

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	12 Weeks per Stage	3.00
Lab/Lecture	12 Weeks per Stage	2.00
Independent Learning	15 Weeks per Stage	4.33
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEAER_B	Bachelor of Engineering (Honours) in Aerospace Engineering	5	Mandatory
CW_EFARG_B	Bachelor of Engineering (Honours) in Agricultural Systems Engineering	5	Mandatory
CW_EMMEC_B	Bachelor of Engineering (Honours) in Mechanical Engineering	5	Mandatory
CW_EEROB_B	Bachelor of Engineering (Honours) in Robotics and Automated Systems	5	Mandatory
CW_EFARG_D	Bachelor of Engineering in Agricultural Systems Engineering	5	Mandatory
CW_EEACS_D	Bachelor of Engineering in Aircraft Systems	5	Mandatory
CW_EEMEC_D	Bachelor of Engineering in Mechanical Engineering	5	Mandatory
CW_EEROO_D	Bachelor of Engineering in Robotics and Automated Systems	5	Mandatory