MATH C3603: Engineering Mathematics 5

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	
On successful completion of this module the learner should be able to:	
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 *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *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
Requirements *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
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

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
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