MATH C2607: Engineering Mathematics 3

Module Title:	Engineering Mathematics 3
Language of Instruction:	English

Credits:	5

NFQ Level:	6

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, Python) 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	Differentiate common mathematical functions
LO2	Apply differential calculus to the solution of engineering-type problems
LO3	Find the partial derivatives and total differentials of multivariable functions and use them to calculate small changes
LO4	Solve mathematical problems using computer programmes

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

MATH C2607: Engineering Mathematics 3

Module Content & Assessment

Indicative Content
Differentiation Derivative in terms of the limit of a function Derivatives of common engineering functions and apply rules of differentiation Second order derivatives and application to engineering problems Second derivative test to find maxima, minima and points of inflection and applications in engineering and kinematics
Partial differentiation Find the partial derivatives and total differentials of multivariable functions and use them to calculate small changes
Fourier Series Recognise periodic functions. Fourier Series of a periodic function.
Software Applications Solve engineering problems, plot graphs and perform mathematical computations 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 for which 30% will be awarded.	1,2,3	70.00	n/a

No Project

Practical

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Use of software techniques to solve mathematical problems	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

MATH C2607: Engineering Mathematics 3

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	12 Weeks per Stage	3.00
Practicals	12 Weeks per Stage	2.00
Independent Learning Time	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	3	Mandatory
CW_EFARG_B	Bachelor of Engineering (Honours) in Agricultural Systems Engineering	3	Mandatory
CW_EMMEC_B	Bachelor of Engineering (Honours) in Mechanical Engineering	3	Mandatory
CW_EEROB_B	Bachelor of Engineering (Honours) in Robotics and Automated Systems	3	Mandatory
CW_EFARG_D	Bachelor of Engineering in Agricultural Systems Engineering	3	Mandatory
CW_EEACS_D	Bachelor of Engineering in Aircraft Systems	3	Mandatory
CW_EEMEC_D	Bachelor of Engineering in Mechanical Engineering	3	Mandatory
CW_EEROO_D	Bachelor of Engineering in Robotics and Automated Systems	3	Mandatory