ENGR C1502: Engineering Mathematics I

Module Title:	Engineering Mathematics I
Language of Instruction:	English

Credits:	5

NFQ Level:	6

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Lectures, Tutorials and Private study

Module Aim:	The aim of the module is to further develop students' mathematical skills in calculus and linear algebra and to enable them to apply these skills to engineering applications.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Evaluate the determinants and determine the inverses of 2nd and 3rd order matrices.
LO2	Use the matrix inverse to solve linear systems.
LO3	Apply differential calculus to a variety of engineering applications such as calculation of local maxima and minima etc.
LO4	Apply integral calculus to a variety of engineering applications such as calculation of volumes, summations etc.

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
Matrices & Determinants (25 hours lectures) (a) Evaluation of 2nd & 3rd order determinants (b) Inverse of 2nd & 3rd order matrices (c) Solving linear systems using these theories
Calculus (25 hours lectures) (a) Differentation using the product rule, quotient rule and chain rule. (b) Applications of differentiation to practical engineering problems. (c) Integration of the more common engineering functions using the tables (d) Integration by substitution, parts and partial fractions (e) Basic engineering applications of integration.

Assessment Breakdown	%
Continuous Assessment	40.00%
End of Module Formal Examination	60.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Other	2 x In class exams on topics covered	1,2,3,4	20.00	n/a
Short Answer Questions	Short answer questions of the topics covered to enable students to practice and consolidate their mathematical knowledge.	1,2,3,4	20.00	n/a

No Project

No Practical

End of Module Formal Examination

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	No Description	1,2,3,4	60.00	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
Estimated Learner Hours	Every Week	3.00
	Total Hours	6.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering	2	Mandatory
CW_CMCIV_D	Bachelor of Engineering in Civil Engineering	4	Mandatory