Institiúid Teicneolaíochta Chorcaí
Cork Institute of Technology

MATH6015: Technological Mathematics 2

Module Details

Short Title:	Technological Mathematics 2 APPROVED
Full Title:	Technological Mathematics 2

Module Code:	MATH6015	**NFQ Level:**	Fundamental	**ECTS Credits:**	5.0

Valid From:	Semester 1 - 2012/13 (September 2012)
Module Coordinator:	AINE NI SHE
Module Author:	VIOLETA MORARI
Description:	This module introduces differential and integral calculus and treats applications pertinent to the student discipline.

Learning Outcomes:

On successful completion of this module the learner will be able to

1. Differentiate a wide variety of functions encountered in engineering problems.
2. Determine the equation of a tangent line, calculate rates of change and solve optimisation problems.
3. Evaluate anti-derivatives and definite integrals using table look-up and the method of substitution.
4. Apply integration to problems relevant to the student discipline.
5. Formulate and solve first-order differential equations.

Pre-requisite learning

Module Recommendations

This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named CIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).

No recommendations listed

Incompatible Modules

These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.

No incompatible modules listed

Requirements

This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.

No requirements listed

Co-requisites

No co-requisites listed listed

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Module Content & Assessment

Indicative Content
• **Differentiation** Introduction to limits. Definition and graphical interpretation of a derivative. Differentiation of common functions using the product, quotient and chain rules. Applications of differentiation. • **Integration** Integration as anti-differentiation. Evauation of standard integrals using table look-up and the method of substitution. Applications of the definite integral. Solutions of first-order differential equations.

Assessment Breakdown	**%**
Course Work	30.0%
End of Semester Formal Examination	70%

	Outcome addressed	*% of total*	*Assessment Date*
Formal End-of-Semester Examination	1,2,3,4,5	70%	Semester End

Coursework Breakdown				
Type	*Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Other	In class assessment	1,2	15.0	Week 5
Other	In class assessment	3,4,5	15.0	Week 10

Reassessment Requirement
Repeat examination *Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.*

The institute reserves the right to alter the nature and timings of assessment

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Module Workload & Resources

Workload	**Full-time**			
Type	*Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	Formal Lecture	3.0	Every Week	3.00
Tutorial	Based on exercise sheets	1.0	Every Week	1.00
Independent & Directed Learning (Non-contact)	Class notes and exercise sheets	3.0	Every Week	3.00
			Total Weekly Learner Workload	7.00
			Total Weekly Contact Hours	4.00

Workload	**Part-time mode**			
Type	*Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	Lectures	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Worksheets with feedback	1.0	Every Week	1.00
Tutorial	Tutorial	1.0	Every Week	1.00
Independent & Directed Learning (Non-contact)	Reading and Skills Practice	4.0	Every Second Week	2.00
Independent & Directed Learning (Non-contact)	Reading and Skills Practice	3.0	Every Second Week	1.50
			Part-Time Total Weekly Learner Workload	7.50
			Part-Time Total Weekly Contact Hours	3.00

Resources

Recommended Book Resources

- **P. Tebbutt 1998, *Basic Mathematics*, John Wiley & Sons [ISBN: 0-471-97284-3]**
- **John Bird 2010, *Basic Engineering Mathematics*, 5th Ed., Newnes [ISBN: 978-1856176972]**

Supplementary Book Resources

- **K.A. Stroud 2007, *Engineering Mathematics*, 6th Ed., Macmillan [ISBN: 978-1403942463]**
- **John Bird 2010, *Engineering Mathematics*, 6th Ed., Newnes [ISBN: 978-0080965628]**
- **Kuldeep Singh 2011, *Engineering Mathematics Through Applications. Kuldeep Singh*, Palgrave Macmillan [ISBN: 978-0230274792]**
- **K.A.Stroud 2009, *Foundation Mathematics*, 1st Ed., Palgrave Macmillan [ISBN: 978-0230579071]**
- **Glyn James... [et al.] 2007, *Modern engineering mathematics*, 4th Ed., Pearson Prentice Hall Harlow [ISBN: 978-0132391443]**

Other Resources

- **Website: *CIT Maths Online***
  http://mathsonline.cit.ie/
- **Website: *Mathcentre***
  http://www.mathcentre.co.uk