Liverpool John Moores University

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Title: MATHEMATICS FOR ENGINEERING
Status: Definitive
Code: **4003ENGFRI**   (117014)
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Maritime and Mechanical Engineering

Team	Leader
Ian Jones	Y
Michael Nieves	
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Academic Level:	FHEQ4	**Credit Value:**	10	**Total Delivered Hours:**	24
Total Learning Hours:	100	**Private Study:**	76		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	12
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Technology	Tech		100	

Aims

To provide a foundation in engineering mathematics for its application to the solution of engineering problems

Learning Outcomes

After completing the module the student should be able to:

1   Use and employ vectors to the solution of engineering problems
2   Use and employ matrices to the solution of engineering problems
3   Employ techniques in differentiation to the solution of engineering problems
4   Employ techniques in integration to the solution of engineering problems
5   Use and employ appropriate mathematical software to the solution of engineering mathematics problems

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Technology   1   2   3   4   5

Outline Syllabus

Differential calculus of one variable: Gradient of curve, derivatives of standard functions, linearity, derivatives of composite functions, products and quotients. Applications. Stationary points. Rates of change.

Integral calculus as inverse of differentiation and as a limit of a sum. Standard integrals, linearity. Other methods of integration.

Basic vector algebra including Cartesian components and products. Differentiation of vectors. Applications.

Basic matrix manipulation including the inverse matrix. Solution of systems of linear equations.

Introduction to a computer algebra system eg. DERIVE with application to the solution of engineering problems.

Learning Activities

A combination of lectures and tutorials

Notes

This module provides a foundation in engineering mathematics for level one students in mechanical, electrical and manufacturing programmes.
The online assessment of symbolic answers is at the forefront of computer aided assessment and the flexibility of delivery is particularly suitable for part-time students, for whom this module is intended.