

Summary Information

Module Code	4302MECH
Formal Module Title	Engineering Mathematics 1b
Owning School	Engineering
Career	Undergraduate
Credits	10
Academic level	FHEQ Level 4
Grading Schema	40

Module Contacts**Module Leader**

Contact Name	Applies to all offerings	Offerings
Amir Asghari	Yes	N/A

Module Team Member

Contact Name	Applies to all offerings	Offerings
Margaret Toft	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	11
Tutorial	11

Module Offering(s)

Offering Code	Location	Start Month	Duration
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	To provide a foundation in engineering mathematics for its application to the solution of engineering problems. This module is a continuation from 4301MECH - Engineering Mathematics 1a.
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Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Use vectors and matrices in the solution of engineering problems.
MLO2	Apply techniques of integration or differentiation in the solution of engineering problems.
MLO3	Solve first order ordinary differential equations by the method of separation of variables and apply to the modelling of engineering problems.
MLO4	Use and apply mathematical software to the solution of engineering problems.

Module Content

Outline Syllabus
Introduction of the use of a computer algebra system (for example MATLAB or similar). Use of the software applied to the syllabus items below. 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. 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, integration of composite functions, numerical integration. Applications of integration. Ordinary differential equations. First order linear, constant coefficient equations. Separation of variables. Application to modelling.

Module Overview

Additional Information

This module provides a foundation in engineering mathematics for level 4 students in mechanical and electrical engineering to enable them to apply this to the solution of engineering problems.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Test	VLE Based Tests	100	0	MLO3, MLO4, MLO1, MLO2