

Summary Information

Module Code	4328BEUG
Formal Module Title	Engineering Mathematics
Owning School	Civil Engineering and Built Environment
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 4
Grading Schema	40

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Badr Abdullah	Yes	N/A

Module Team Member

Contact Name	Applies to all offerings	Offerings
Muhammad Ahmad	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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Teaching Responsibility

LJMU Schools involved in Delivery
Civil Engineering and Built Environment

Learning Methods

Learning Method Type	Hours
Lecture	33
Tutorial	10
Workshop	10

Module Offering(s)

Offering Code	Location	Start Month	Duration
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To develop knowledge and understanding of the mathematics underpinning engineering, and to apply these techniques within an engineering context.
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Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Use basic algebraic manipulations, matrices and mathematical functions proficiently in the analysis and solution of engineering problems
MLO2	Use and apply mathematical software to the solution of engineering mathematics problems
MLO3	Apply differential and integral calculus proficiently in the analysis and solution of engineering problems
MLO4	Communicate effectively through the clear presentation of mathematical equations and formulae.

Module Content

Outline Syllabus
<p>Revision of basic algebraic techniques: substitution, simplification, factorisation, indices, evaluation and transposition of formulae, fractions and partial fractions. Linear and quadratic equations, linear simultaneous equations. Trigonometry: Angular measurement (radians and degrees, minutes and seconds), Sine and cosine rules. Trigonometric identities and equations. Applications: Surveying; Forces Revision of 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. Revision of integral calculus as inverse of differentiation. Standard integrals, linearity, integration of composite functions. Numerical integration. Applications: Centroids Complex numbers: Complex arithmetic, complex conjugate, Argand diagram. Rectangular, polar forms. Magnitude and phase. Basic use of Euler's formula. Basic matrix manipulation including the inverse matrix. Applications: Solution of systems of linear equations. 1st order differential equations</p>

Module Overview

This module develops knowledge and understanding of the mathematics underpinning engineering, and how you would apply these techniques within an engineering context.

Additional Information

This module provides a foundation in engineering mathematics for use in the analysis and solution of engineering problems.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Centralised Exam	In-class test	30	0	MLO2, MLO3, MLO1, MLO4
Centralised Exam	Examination	70	2	MLO3, MLO1, MLO4