Module Proforma

Approved, 2022.03

Summary Information

Module Code	3103FNDET
Formal Module Title	Foundation Mathematics for Engineering and Technology 2
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 3
Grading Schema	40

Module Contacts

Module Leader

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

Module Team Member

Contact Name	Applies to all offerings	Offerings
Ian Jarman	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Workshop	22

Module Offering(s)

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

Aims and Outcomes

Aims	This module aims to build upon the material covered in Mathematics 1 by exploring more advanced topics in Mathematics. This includes an introduction to elementary techniques in Calculus. After completing this module, students should be prepared with the prerequisite mathematical ability required to embark upon a BEng or BSc degree programme in an engineering or technology subject.

Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Apply basic trigonometric formula to solve problems applicable to engineering and technology
MLO2	Use differentiation to solve problems relevant to engineering and technology
MLO3	Apply techniques of integration in problems relevant to engineering and technology
MLO4	Use techniques of numerical integration in solving problems applicable to engineering and technology.
MLO5	Define and use sequences and series in relation to basic engineering problems

Module Content

Outline Syllabus

The list below provides an indicative list of topics which will be covered in this module: Trigonometry: • Measurement of angles, degrees, radians • Right angle triangles, Pythagoras, sine, cosine, tangent • Non right angled triangles, sine rule, cosine rule • Graphs of trigonometric functions • Inverse trigonometric functions • Simple trigonometric equations • Trigonometric identities • Properties of trigonometric functions, period, frequency, amplitude, phase angle. Differentiation: • Slopes, rates of change. • Differentiation of simple explicit functions: powers, trigonometric functions, exponential functions, logarithmic functions. • Turning points of curves. • Applications of maxima and minima. Integration: • Integration defined as anti-differentiation. Indefinite integrals. • Integration of elementary functions: powers, trigonometric functions, exponential functions, logarithmic functions. • Definite integration and applications e.g. area under a curve. • Numerical integration: Trapezium Rule, Simpson's rule , Number sequences: Arithmetic and geometric progressions, binomial series, Maclaurin's series

Module Overview

This module aims to build upon the material covered in Mathematics 1 by exploring more advanced topics in Mathematics. This includes an introduction to elementary techniques in Calculus.

Additional Information

This module covers the fundamental mathematical skills needed for further study in engineering and technology subjects, and will include extensive practice problem solving, assessed regularly to support a structured approach to learning.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Portfolio	Continual Assessment	30	0	MLO3, MLO1, MLO2, MLO4, MLO5
Centralised Exam	Final Examination	70	2	MLO3, MLO1, MLO2, MLO4, MLO5