Engineering Mathematics 1a

Module Information

2022.01, Approved

Summary Information

Module Code	4500MDLBHG
Formal Module Title	Engineering Mathematics 1a
Owning School	Engineering
Career	Undergraduate
Credits	10
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Beaconhouse Group

Learning Methods

Learning Method Type	Hours
Online	44

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	September	12 Weeks

Aims and Outcomes

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

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Use basic algebraic manipulations in the solution of engineering problems
MLO2	2	Use basic mathematical functions in the solution of engineering problems
MLO3	3	Use basic trigonometry to describe engineering waves in mechanical and electrical systems
MLO4	4	Use basic complex numbers in the solution of engineering problems
MLO5	5	Use exponentials and logarithms to solve relevant engineering problems.
MLO6	6	Apply complex numbers in the solution of engineering problems.
MLO7	7	Use and apply mathematical software to the solution of engineering mathematics problems

Module Content

Outline Syllabus	Introduction of the use of a computer algebra system. Use of the software applied to the syllabus items belowRevision of basic algebraic techniques: Substitution, simplification, factorisation, indices, evaluation and transposition of formulae, fractions and partial fractions. Linear and quadratic equations, linear simultaneous equationsFunctions: Notation, types of function, composite and inverse, graphs.Trigonometry: Angles and circular measure. Trigonometric ratios for right-angled triangles. Sine and cosine rules. Trigonometric functions and their graphs, simple trigonometric identities and equations. Engineering waves in mechanical and electrical problems.Exponential function: Properties and graph. Natural logarithm as inverse of exponential function, graph and properties. Definitions and calculation of hyperbolic functions including inverse functions.Complex numbers: Complex arithmetic, complex conjugate, Argand diagram. Rectangular, polar forms. Magnitude and phase. Very basic treatment of Euler's formula.
Module Overview	
Additional Information	This module provides a foundation in pre-calculus for level four 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)	Module Learning Outcome Mapping
Test	Online Assessment	100	0	MLO1, MLO2, MLO3, MLO4, MLO5, MLO6, MLO7

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings

Russell English	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings