

Summary Information

Module Code	4612BECC
Formal Module Title	Mathematics for Construction
Owning School	Civil Engineering and Built Environment
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Coleg Cambria

Learning Methods

Learning Method Type	Hours
Lecture	27
Tutorial	10
Workshop	19

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	September	28 Weeks

Aims and Outcomes

Aims	This module aims to provide the learner with an understanding of the underpinning mathematical principles, techniques and applications in the construction industry.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Review mathematical techniques in algebra, geometry, trigonometry and calculus relevant to problems within the construction industry.
MLO2	2	Apply mathematical methods to solve geometric and trigonometric problems in construction.
MLO3	3	Apply analytical methods to the examination of structural elements and provide appropriate solutions.
MLO4	4	Illustrate the application of calculus within construction by solving problems using differentiation and integration.

Module Content

Outline Syllabus	-Revision of whole numbers, fractions, indices, powers of 10, BIDMAS, percentages, ratios: - Graphs-Basic trigonometric ratios in right-angled triangles-Pythagoras theorem-Angles including angles in polygons(exterior, interior), in parallel lines-Area and perimeter and volume of basic and composite shapes, with applications in engineering and construction including integration: -Area under a curve/ Volumes of revolution / Numerical methods- trapezoidal rule, mid-ordinate, Simpson's rule -Beams theory: types of beams and supports. Calculations of reaction forces, shear force and bending moment diagrams , slope/deflection of a beam using calculus of various cross-sections of beams-Column theory: Calculation of centroids and moments of inertia using integration for long columns-Differentiation - finding the gradients of functions at different points on curves, by finding derivatives, using standard results- Applications of differentiation: Optimisation in construction, kinematics, structural mechanics, problems of maxima/minima, rates of change
Module Overview	
Additional Information	This module is designed to provide students with a range of mathematical skills and knowledge of the techniques and standard results, used to solve problems in the construction industry. Students will be encouraged to apply appropriate analytical methods in different engineering situations.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Test	Open Book Test	30	2	MLO1
Exam	Open Book Exam	70	2	MLO2, MLO3, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Jeff Cullen	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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