

## Module Information

2022.01, Approved

### Summary Information

Module Code	3503USST
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

### Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

### Partner Teaching Institution

Institution Name
University of Shanghai For Science and Technology

### Learning Methods

Learning Method Type	Hours
Tutorial	22
Workshop	22

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-PAR	PAR	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.
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**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Apply basic trigonometric formula to solve problems applicable to engineering and technology
MLO2	2	Use differentiation to solve problems relevant to engineering and technology
MLO3	3	Apply techniques of integration in problems relevant to engineering and technology
MLO4	4	Use techniques of numerical integration in solving problems applicable to engineering and technology.

## 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
Module Overview	
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)	Module Learning Outcome Mapping
Portfolio	Continual Assessment	30	0	MLO1, MLO2, MLO3, MLO4
Exam	Final Examination	70	2	MLO1, MLO2, MLO3, MLO4

## Module Contacts

### Module Leader

Contact Name	Applies to all offerings	Offerings
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Ian Jarman	Yes	N/A
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**Partner Module Team**

Contact Name	Applies to all offerings	Offerings
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