

## Liverpool John Moores University

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Title: Foundation Mathematics for Engineering and Technology 1  
Status: Definitive  
Code: **3502USST** (126425)  
Version Start Date: 01-08-2021  
Owning School/Faculty: Engineering  
Teaching School/Faculty: University of Shanghai For Science and Technology

Team	Leader
Ian Jarman	Y

**Academic Level:** FHEQ3      **Credit Value:** 20      **Total Delivered Hours:** 46  
**Total Learning Hours:** 200      **Private Study:** 154

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Tutorial	22
Workshop	22

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS2	Final examination	70	2
Test	AS1	Continual assessment	30	

### Aims

*This module aims to provide students with the mathematical knowledge, understanding and skills which are required to use mathematics as an analytical tool in engineering and technology subjects.*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Apply arithmetic operations to manipulate numbers and calculate values.
- 2 Manipulate and solve a range of equations algebraically and numerically.
- 3 Illustrate mathematical functions in a graphical form.
- 4 Apply geometrical principles to engineering and technology applications.

## Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Final examination	1	2	3	4
Continual assesement	1	2	3	4

## Outline Syllabus

*The list below provides an indicative list of topics which may be covered in this module:*

### *Arithmetic:*

- *Factors, multiples. Concepts of highest common factor and lowest common multiple.*
- *Fractions, addition, multiplication, division, simplification.*
- *Decimal fractions, decimal places, significant figures, scientific notation, rounding off.*
- *Error, percentage, modulus, sigma notation.*

### *Algebra:*

- *Fractions; addition, multiplications, division, simplification.*
- *Algebraic formulae, equations, transposition, simplification, factorization.*
- *Powers, product, quotient, power of a power, roots, negative indices.*
- *Proportionality, direct proportionality, inverse proportionality.*
- *Linear equations, solution, graphs.*
- *Simultaneous linear equations, analytical and graphical solution.*
- *Quadratic equations, solution using formula, graphs.*
- *Exponential functions, introduction.*
- *Logarithms, logs to base 10, natural logs, products, quotients, powers.*
- *Inequalities, intervals.*

### *Geometry:*

- *Perimeters, areas, volumes, typical applications.*
- *Cartesian coordinates, straight line - gradient intercept form*

## **Learning Activities**

Learning is primarily via a Computer Aided Learning package, supported by tutorials and workshops.

## **Notes**

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.