

## Liverpool John Moores University

Title: Applied Maths: The Essentials  
Status: Definitive  
Code: **4172CSD** (125584)  
Version Start Date: 01-08-2021

Owning School/Faculty: Computer Science and Mathematics  
Teaching School/Faculty: Computer Science and Mathematics

Team	Leader
Maggi Toft	Y

**Academic Level:** FHEQ4      **Credit Value:** 20      **Total Delivered Hours:** 46  
**Total Learning Hours:** 200      **Private Study:** 154

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	22
Workshop	22

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS2	Final examination	50	2
Test	AS1	On-line weekly tests	50	

### Aims

*In a modern world, many of the underlying technological principles are hidden from the end user but as creative designers, we need a good level of understanding of technology to create that smart environment. The application of mathematical principles is so very often at the heart of good design. Applied Maths provides those essential tools necessary for successful creations.*

## 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 Represent functions in a graphical form.
- 4 Apply geometrical principles to engineering and technology applications.
- 5 Apply the principles of probability and statistics to computational applications.

## Learning Outcomes of Assessments

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

Final examination	1	2	3	4	5
On-line weekly tests	1	2	3	4	5

## 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*

*Probability:*

- *Discrete and continuous random variables*
- *Probability distributions*
- *Sums and functions of random variables*
- *The law of large numbers*
- *The central limit theorem*

*Statistics:*

- *Sample mean and variance*
- *Estimating distributions*
- *Correlation*
- *Regression*
- *Hypothesis testing*

**Learning Activities**

Lectures, Workshops, Guided Private Study

**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.