

Liverpool John Moores University

Title: MODELLING 1
Status: Definitive
Code: **4111MATHS** (124190)
Version Start Date: 01-08-2021

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

Team	Leader
Stewart Chidlow	Y

Academic Level: FHEQ4
Credit Value: 20
Total Delivered Hours: 60
Total Learning Hours: 200
Private Study: 140

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	33
Practical	11
Tutorial	16

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Continual assessment with online tests to consolidate previous learning. Questions to develop independent critical thinking	50	
Report	AS2	Coursework to test lecture content delivery	50	

Aims

To introduce the student to fundamentals of algebra and functions which will be built upon in mathematical methods in Semester 2 and complements applications in

modelling 2

Learning Outcomes

After completing the module the student should be able to:

- 1 Understand the basic theory of functions
- 2 Use function notation: recognise standard forms of functions and sketch, plot and interpret their output
- 3 Handle elementary series and series approximations to functions
- 4 Use relevant computer software as appropriate to solve problems and investigate fundamental mathematical concepts
- 5 Perform elementary vector algebra
- 6 Perform calculations in complex arithmetic

Learning Outcomes of Assessments

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

Continual online assessment	1	2	3	5	6
Curve sketching 2000words	4				

Outline Syllabus

Introduction to theory of functions

Functions

- *straight line*
- *quadratics, cubics*
- *Polynomials: finding roots, remainder theorem*
- *Trigonometric functions: sine, cosine, tangent sec, cosec, cot*
- *Inverse trigonometric functions*
- *Exponential, logarithmic*
- *Hyberbolic functions: cosh, sinh*
- *complex numbers*

Binomial expansions

Series: arithmetic, geometric

Vectors

Learning Activities

Lectures, tutorials, laboratory session, directed study

Notes

This is an integrative module to give students proficiency and confidence in the use of fundamental mathematical concepts. The module sets the foundation for relating

defined mathematical concepts to areas of mathematical sciences and has a focus on problem solving.