

Liverpool John Moores University

Title: MODELLING 2
Status: Definitive
Code: **4113MATHS** (124193)
Version Start Date: 01-08-2021

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

Team	Leader
Ian Malabar	Y

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

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Tutorial	5
Workshop	33

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	
Portfolio	AS2	Sports data presentation and MAPLE TA assessments	50	

Aims

To introduce the student to mathematical modelling and analytical reasoning linked to real-world applications.

To introduce students to algorithms for, and practical applications of linear algebra.

Learning Outcomes

After completing the module the student should be able to:

- 1 Understand the importance of interpreting problems in mathematical form.
- 2 Model sports data using regression methods and present as a group.
- 3 Apply linear algebra techniques and algorithms in real-world problem solving.

Learning Outcomes of Assessments

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

Online tests and questions	1	
Sports data and MAPLE TA	2	3

Outline Syllabus

Mathematical Methods for Modelling.

Review of least squares regression and application to performance data.

Numerical algorithms in linear algebra, e.g. methods for evaluating eigenvalues.

Applications of matrices in statistics.

Other application areas, such as Page Rank algorithm.

Learning Activities

Group work in preparation for assessed presentation.

Lectures and problem solving sessions in MAPLE TA.

Notes

This is an integrative module to give students proficiency and confidence in the use of fundamental mathematical tools.

The first part gives confidence and experience in presenting statistical data.

It then covers the application of matrices, eigenvalues and eigenvectors, not only as important concepts, but also as the kernel for many applications. The module sets the foundation for relating defined mathematical tools to areas of mathematical sciences and therefore has a focus on problem solving using theoretical material covered in more detail in other modules.