Liverpool John Moores University

Title:	APPLIED MATHEMATICS 2
Status:	Definitive
Code:	**6115EDSTUD** (117577)
Version Start Date:	01-08-2018

Owning School/Faculty: Education
Teaching School/Faculty: Education

Team	Leader
Amir Asghari	Y

Academic Level:	FHEQ6	**Credit Value:**	24	**Total Delivered Hours:**	50
Total Learning Hours:	240	**Private Study:**	190		

Delivery Options
Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	28
Workshop	20

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	Problems	Collection of problems solved using ICT where appropriate	50	
Exam	Exam	Terminal exam	50	2

Aims

To further deepen students understanding of the three principal branches of applied mathematics. To deepen and extend students' knowledge of statistical processes, mechanical modeling and concepts in decision mathematics and of the connections between these and other areas of pure and applied mathematics.

Learning Outcomes

After completing the module the student should be able to:

1.   Select and use sophisticated and appropriate mathematical techniques to the solution of applied problems in unseen contexts
2.   Understand and apply a wider range of modeling techniques, with appreciation of the limitations of the model and the need to validate and revise models and an understanding of the link between the applications and areas of pure mathematics
3.   Employ appropriate technological tools to find exact or approximate solutions to a variety of real life problems.

Learning Outcomes of Assessments

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

Selection of problems   2   3

Terminal assessment   1

Outline Syllabus

Recall definitions of probability function, density function, cumulative distribution function and moment generating function, and their inter-relationships and the calculus techniques used to work with them.

Find distributions of functions of random variables, including distributions of maximum and minimum observations

Derive chi-square, t and F distributions from normal distribution

Constructing z, chi-square, t and F tests and the corresponding confidence intervals from sample means and sample variances

Rigid body dynamics

Variable mass problems

Introduction to non-linear dynamics

Algorithms for a range of problems including sorting, shortest path, network flow, matchings, highest common factors (Euclidean algorithm), and apply these algorithms to given instances;

Designing algorithms for certain types of problems from all areas of Mathematics

Learning Activities

Mathematical concepts will be explored in of interactive lectures and workshops backed up by tasks for independent learning. These will use a mix of media e.g. web-based materials including video tutorials and on-line practice exercises, practical activities using ICT as well as more traditional text-book approaches

Notes

Optional module for Mathematics and Education Studies