

## Liverpool John Moores University

Title: PURE MATHEMATICS 3  
Status: Definitive  
Code: **6114EDSTUD** (117576)  
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:** 51  
**Total Learning Hours:** 240  
**Private Study:** 189

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	38
Workshop	10

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Terminal exam	75	3
Portfolio	Proofs	Continuity proofs exercises	25	

### Aims

*To develop knowledge and techniques in multiple integrals, partial differential equations mathematical analysis and series approximations to functions and appreciation of their connections to other areas of pure and applied mathematics*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Be able to formulate, solve and apply problems involving multiple integrals
- 2 Be able to formulate, solve and apply problems involving partial differential equations
- 3 Understand and be able to use in proofs the formal mathematical concepts of the limit of a series and the continuity of a function
- 4 Understand and be able to use in proofs the approximations of functions using power, Taylor and Fourier series

### **Learning Outcomes of Assessments**

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

Terminal assessment	1	2	4
Proofs	3		

### **Outline Syllabus**

*Multiple integrals.*

*Simple partial differential equations and some common examples and applications.*

*Limits of series – epsilon delta definitions and proofs, tests for convergence, de l' Hôpital's Rule.*

*Continuity of functions.*

*Links to the foundations of calculus*

*Power series, radius of convergence.*

*Taylor series.*

*Fourier series.*

### **Learning Activities**

Lectures, workshops and independent learning activities

### **Notes**

Core course for Mathematics and Education Studies