

## Liverpool John Moores University

Title: ADVANCED CALCULUS  
Status: Definitive  
Code: **6112MATHS** (128818)  
Version Start Date: 01-08-2021

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

Team	Leader
Elon Correa	Y
Robert Wilkinson	

**Academic Level:** FHEQ6      **Credit Value:** 10      **Total Delivered Hours:** 30  
**Total Learning Hours:** 100      **Private Study:** 70

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	28

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	100	2

### Aims

*Extend students' mastery of calculus in application areas such as vectors and complex variables.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Use complex analysis to solve problems in calculus.
- 2 Determine the gradient, divergence and curl of scalar and vector quantities as appropriate.
- 3 State the theorems of Gauss, Green and Stokes and apply them in a selection of case studies from physics and engineering.

### **Learning Outcomes of Assessments**

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

Examination	1	2	3
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### **Outline Syllabus**

*Complex analysis, continuity, analytic functions, integration, Cauchy's Theorem. Vector calculus, grad, div and curl, integration, and the theorems of Green, Stokes and Gauss.*

### **Learning Activities**

Lectures and tutorials, solving problems in vector and complex calculus.

### **Notes**

This module gives students the opportunity to apply mathematics to scientific problems.