

## Liverpool John Moores University

Title: Engineering Science  
Status: Definitive  
Code: **4004PDE** (120079)  
Version Start Date: 01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering  
Teaching School/Faculty: Electronics and Electrical Engineering

Team	Leader
Clifford Mayhew	Y

**Academic Level:** FHEQ4      **Credit Value:** 20      **Total Delivered Hours:** 72  
**Total Learning Hours:** 200      **Private Study:** 128

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	24
Tutorial	24

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Test	Test 1	In-class science and mathematics test	50	2
Test	Test 2	In-class science and mathematics test	50	2

### Aims

*Provide a foundation in engineering science and mathematics to enable the fundamental analysis of mechanical and electrical engineering systems.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Be able to determine the behavioral characteristics of elements of static engineering systems
- 2 Be able to determine the behavioral characteristics of elements of dynamic engineering systems
- 3 Be able to apply theory to solve electrical and electronic engineering problems

### **Learning Outcomes of Assessments**

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

Inclass Science & Maths Test 1	1	2
Inclass Science & Maths Test 2	2	3

### **Outline Syllabus**

*Module introduction:*

*Module guide; aims; learning outcomes; assessment and marking schemes. Outline syllabus; module timetable and student feedback.*

*Applied mathematics:*

*Engineering units. Algebraic functions. Fundamentals and notation of calculus (Gradient, rate of change, area beneath a function). Plotting and interpreting data in graphical formats. Trigonometry and geometry. Scalars and vectors.*

*Engineering designers, no matter from what background, need to acquire a fundamental appreciation of the mechanical and electrical principles that underpin the design and operation of a large range of products, engineering equipment and systems.*

*This module will develop students' understanding of the key mechanical and electrical concepts that relate to all aspects of engineering design. In particular, students will study elements of engineering statics including the analysis of beams, columns and shafts. They will then be introduced to elements of engineering dynamics, including the behavioral analysis of mechanical systems subject to uniform acceleration, the effects of energy transfer in systems.*

*The electrical system principles begin with an introduction to resistors connected in series/parallel and then developing the use of Ohm's law and Kirchhoff's law to solve problems.*

### **Learning Activities**

This module will be delivered through an integrated series of lectures, tutorials,

practical sessions, and guided design activities. The learning activities are to be student focused and develop the students design knowledge through experiential learning.

## **Notes**

This module is delivered using a variety methods including lectures, seminars, tutorials and practical sessions. The module will be delivered from a engineering and product design perspective.