

Liverpool John Moores University

Title: ENGINEERING PRINCIPLES
Status: Definitive
Code: **4017ENG** (105250)
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering
Teaching School/Faculty: Maritime and Mechanical Engineering

Team	Leader
Russell English	Y

Academic Level: FHEQ4 **Credit Value:** 12 **Total Delivered Hours:** 48
Total Learning Hours: 120 **Private Study:** 72

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	24
Tutorial	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	MapleTA assessment	50	
Essay	AS2	In class end test	50	

Aims

To introduce the essential principles of engineering science

Learning Outcomes

After completing the module the student should be able to:

- 1 apply the principles of kinematics to problems of motion
- 2 apply Newton's laws of motion to the solution of problems in dynamics
- 3 apply the principles of work, energy and power to the solution of engineering problems
- 4 apply the principles of impulse and momentum to the solution of engineering problems
- 5 apply principles of steady state DC circuit analysis to resistive circuits
- 6 use complex notation in analysis of simple inductive and capacitive circuits

Learning Outcomes of Assessments

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

CW	1	2	3	4	5	6
CW	1	2	3	4	5	6

Outline Syllabus

Kinematics of solid bodies. Linear and angular motion with uniform acceleration. Graphical representation of data.

Dynamics of solid bodies. Newton's laws of motion. Application to linear and angular motion and connected systems.

Work, power and energy. Conservation of energy. Application to relevant problems.

Impulse and momentum. Conservation of momentum. Application to relevant problems.

Fundamental notations and relations. Ohms Law, measurement of voltage, current and resistance.

Kirchhoff's laws, series and parallel circuit equivalences.

Semiconductors, intrinsic, P and N types, simple diode action.

Capacitance, Inductance, initial and steady state. Transformer action. Self inductance.

Alternating current fundamentals, period, frequency and angular frequency. Peak, rms and instantaneous values. Complex representation of sinusoidal quantities. Phasors. Series and Parallel AC circuits, RL, RC and RLC circuits.

Learning Activities

A series of lectures supported by tutorials

Notes

This module covers the essential elements of engineering science required by engineers in both electrical and mechanical engineering disciplines