

Liverpool John Moores University

Title: ENGINEERING SCIENCE
Status: Definitive
Code: **4502NCCG** (129385)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Nelson Campus

Team	Leader
Christian Matthews	Y

Academic Level: FHEQ4
Credit Value: 20
Total Delivered Hours: 60
Total Learning Hours: 200
Private Study: 140

Delivery Options

Course typically offered: S1, S2, Sum, NS2 (S2 for Jan)

Component	Contact Hours
Lecture	60

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Assignment	Written Assignment	50	
Test	Test	Multiple-choice online test	50	1.5

Aims

This module introduces students to the fundamental laws and applications of the physical sciences within engineering and how to apply this knowledge to find solutions to a variety of engineering problems. Among the topics included in this module are: international system of modules, interpreting data, static and dynamic forces, fluid mechanics and thermodynamics, material properties and failure, and A.C./D.C. circuit theories.

Learning Outcomes

After completing the module the student should be able to:

- 1 Examine scientific data using both quantitative and qualitative methods.
- 2 Determine parameters within mechanical engineering systems
- 3 Explore the characteristics and properties of engineering materials.
- 4 Analyse applications of A.C./D.C. circuit theorems, electromagnetic principles and properties.

Learning Outcomes of Assessments

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

Written Assignment	1	2	3
Multiple-choice online test	4		

Outline Syllabus

Dimensions and SI units

Static and dynamic forces: calculation of reaction forces and accelerations.

Newton's laws of motion: conservation of linear and angular momentum, conservation of energy

Fluid mechanics: hydrostatics, incompressible flow

Thermodynamics: laws, heat transfer, sensible and latent heat

Materials: Simplified atomic structure of metals, simple polymers, etc., properties of materials, materials testing

Electricity: d.c. circuit theory, circuit theorems and their applications, single phase steady state sinusoidal a.c. passive circuits

Magnetism: magnetic fields and fluxes, induction

Learning Activities

Lectures

These will not normally be traditional didactic lectures in which the student plays little active part, but will be delivered in small groups of up to 20 students in which their interaction with their tutor is a key ingredient of their learning experience.

Students will receive approximately 30 hours of taught material, supported by in-class exercises and discussions designed to help student assimilate learning and to provide early informal feedback on their progress.

Seminars (inc workshops)

Student will have the opportunity to test theoretical learning through practical work.

Independent Study

Students are expected to undertake personal reading and research into topic areas that have been stimulated from the lectures and seminars. This reading will enhance their academic work and enable valid contribution to lectures and seminars.

VLE support

This will provide links to academic web-sites and on-line journals, facilitate group discussion outside of the classroom, access to outline lecture notes, and provide students with assessment details.

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Notes

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