Liverpool John Moores University

Title:	Engineering Science 2
Status:	Definitive
Code:	**4504ENGICA** (119093)
Version Start Date:	01-08-2018

Owning School/Faculty:	Engineering
Teaching School/Faculty:	HICOM University College Sdn,Bhd

Team	Leader
Russell English	

Academic Level:	FHEQ4	**Credit Value:**	20	**Total Delivered Hours:**	76
Total Learning Hours:	200	**Private Study:**	124		

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	44
Practical	8
Tutorial	22

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Practice	AS1	Laboratory and Tutorial workbook, MapleTa	50	
Exam	AS2	Examination	50	2

Aims

To introduce the essential further principles of engineering science

Learning Outcomes

After completing the module the student should be able to:

1	Analyse thermodynamic processes involving vapours in closed and open systems
2	Evaluate the properties of mixtures of gases
3	Solve problems in ideal steady fluid flows.
4	Apply the principles of work, energy, power, impulse and momentum to the solution of engineering problems
5	Determine the shear force and bending moment distribution in flexural loaded beams.
6	Determine bending and torsional stresses for beams and shafts under load

Learning Outcomes of Assessments

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

Maple TA	1	2	3	4	5	6
Examination	1	2	3	4	5	6

Outline Syllabus

Properties of vapours, use of tabulated data, charts etc.
Properties of mixtures, Gibbs-Dalton laws etc.
Applications of conservation of energy, conservation of mass.
Conservation of momentum, momentum equation for 1D and 2D fluid flow.
Bernouli's equation and the conservation of energy in the flow through a stream tube.
Applications of continuity, momentum and energy Equations.
Concepts of work, energy and power. Conservation of energy.
Impulse and Momentum with application to collisions and impacts. Interpretation of experimental results both numerical and graphical.
Concept of shearing forces and bending moments in transversely loaded beams.
Determination of bending and torsional stresses in beams and shafts.

Learning Activities

A combination of Laboratories, Tutorials and Lectures.

Course Material	Book
Author	Hannah and Hillier
Publishing Year	1998
Title	Applied Mechanics
Subtitle	
Edition	2nd
Publisher	Longman
ISBN	9780582256323

Course Material	Book

Author	Popov EA
Publishing Year	1998
Title	Engineering Mechanics of Solids
Subtitle	
Edition	2nd
Publisher	Prentice Hall
ISBN	9780137261598

Course Material	Book
Author	Douglas, JF; Gasiorek, JM; Swaffield, JA; Jack LA
Publishing Year	2005
Title	Fluid Mechanics
Subtitle	
Edition	5th
Publisher	Prentice-Hall
ISBN	9780131292932

Course Material	Book
Author	Eastop, TD; McConkey, A
Publishing Year	1993
Title	Applied Thermodynamics for Engineering Technologists
Subtitle	
Edition	5th
Publisher	Longman
ISBN	9780470219829

Notes

This module is designed to provide an introduction to Engineering science which incorporates the subjects of Mechanics, Materials, Thermodynamics and Fluid Mechanics.