Liverpool John Moores University

Title: MECHANICAL PRINCIPLES
Status: Definitive
Code: **4004ENGFRI**   (117017)
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:**	10	**Total Delivered Hours:**	26
Total Learning Hours:	100	**Private Study:**	74		

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	14
Practical	4
Tutorial	6

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam		50	2
Test	Test		20	
Report	Rpt		30	

Aims

To provide an introduction to the mechanical behaviour of solid bodies under the influence of applied forces

Learning Outcomes

After completing the module the student should be able to:

1   Employ the concepts of equilibrium to the solution of problems in statics
2   Determine the shear force and bending moment distributions in flexurally loaded beams
3   Employ the concepts of stress and strain to the solution of engineering problems
4   Recall the load-deformation relationships for different materials
5   Calculate the stresses in flexurally loaded beams
6   Calculate the stresses in torsionally loaded circular members

Learning Outcomes of Assessments

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

Exam	1	2	3	4	5	6

Computer Based Test	1	3

Lab report	5	6

Outline Syllabus

Equilibrium of force systems, free body diagrams.
Concept of shearing forces and bending moments in flexurally loaded beams.
Concept of stress and strain: direct, shear, thermal. Application to components / structures subject to axial, shear and thermal loads.
Load-deformation relationships for different materials
Concept of stress and strain : Application to flexurally loaded beams and torsionally loaded circular sections.

Learning Activities

A series of lectures supported by tutorials and practical laboratory work

Notes

To provide an introduction to the mechanical behaviour of solid bodies under the influence of applied forces.