Liverpool John Moores University

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Title:	APPLIED MECHANICS
Status:	Definitive
Code:	**5067ENG** (115887)
Version Start Date:	01-08-2018
Owning School/Faculty:	Electronics and Electrical Engineering
Teaching School/Faculty:	Engineering

Team	Leader
Michael Nieves	Y

Academic Level:	FHEQ5	**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	42
Practical	6
Tutorial	21

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	60	3
Portfolio	AS2	Coursework - Laboratory Portfolio	20	
Portfolio	AS3	Coursework - Tutorial Portfolio	20	

Aims

To provide the means for solving many basic engineering problems by learning the principles of mechanics for rigid and deformable solid bodies.

Learning Outcomes

After completing the module the student should be able to:

1	Apply stress/strain transformation in two dimensions to practical engineering problems.
2	Determine stress distribution in material elements under static loading, bending and torsion and predict failure of materials and structures under load.
3	Solve problems involving mechanical vibrations and damping.
4	Solve problems of non-linear motion involving mechanisms
5	Apply the principles of balancing to rotating machine elements

Learning Outcomes of Assessments

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

EXAM	1	2	3	4	5
Laboratory Portfolio	1	4	5		
Tutorial Portfolio	1	2	3	4	5

Outline Syllabus

Elasticity of a continuum - practical uses of 2D stress and strain transformations.
Beam deflection and twist in torsion elements.
Modes of failure - application of yield criteria to elements under combined loading.
Elastic instability, practical examples.
Shear in beams and torsionally loaded thin sections.
Stresses in thin and thick wall cylinders.
Mechanical vibrations. Free and forced vibrations. Effect of damping. Force transmissibility and vibration isolation. Suspension systems.
Nonlinear motion transmission. Instant centres. Velocity and acceleration diagrams for planar linkages.
Balancing of rotating machine elements.

Learning Activities

Lectures, private study, tutorials and laboratory experiments.

Notes

The module extends previous studies in mechanics by examining more applied problems, which relate to real mechanical systems. It helps to strengthen the student's knowledge for successful mechanical design.