Liverpool John Moores University

Title:	FEA METHODS FOR DESIGN
Status:	Definitive
Code:	**7033ENG** (105400)
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:	FHEQ7	**Credit Value:**	10	**Total Delivered Hours:**	36
Total Learning Hours:	100	**Private Study:**	64		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	12
Tutorial	24

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Coursework : Portfolio of FEA tutorial solutions	50	
Essay	AS2	Coursework : Finite element project	50	

Aims

To provide the student with a fundamental understanding of important techniques in finite element analysis as applied to engineering design. To extend their experience and skill in engineering analysis with the aid of applications related software.

Learning Outcomes

After completing the module the student should be able to:

1 Appreciate the basic theory underpinning commercial FE codes
2 Use a typical finite element package for structural analysis
3 Set up and validate an efficient and accurate FE model of an engineering component or structure
4 Appreciate the limitations and use of FEA as part of the design process
5 Evaluate the output from FE analyses

Learning Outcomes of Assessments

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

CW	1	2	3	4	5
CW	2	3	4	5	

Outline Syllabus

Introduction to the finite element method as applied to solid structures and continuums. General theory of the FE method for stress and vibration analysis. Optimum finite element modelling of real structures / continuums. Element selection. Application of boundary conditions and applied loading. Use of finite element software packages to solve engineering problems. Analysis of output from finite element packages.

Learning Activities

Lectures and guided computer workshops

Notes

This module is intended to provide the student with all the necessary skills to undertake a FE analysis using a commercial FEA package. It provides the student with knowledge of the basic theory underpinning FE commercial codes.