Liverpool John Moores University

Title:	COMPUTER AIDED ENGINEERING ANALYSIS
Status:	Definitive
Code:	**6069ENG** (106355)
Version Start Date:	01-08-2016
Owning School/Faculty:	Maritime and Mechanical Engineering
Teaching School/Faculty:	Maritime and Mechanical Engineering

Team	Leader
Glynn Rothwell	Y

Academic Level:	FHEQ6	**Credit Value:**	24	**Total Delivered Hours:**	76
Total Learning Hours:	240	**Private Study:**	164		

Delivery Options
Course typically offered: Summer

Component	Contact Hours
Lecture	24
Practical	40
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Portfolio of FE exercises	15	
Portfolio	AS2	Portfolio of CFD exercises	15	
Portfolio	AS3	Analysis project	35	
Portfolio	AS4	Analysis report	35	

Aims

The module aims to provide the student with a fundamental understanding of important techniques in computational analysis and 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 Use a typical finite element package.
2 Set up and validate an efficient and accurate FE model of an engineering component or structure
3 Use a commercial CFD package to solve a real fluid flow problem
4 Appreciate the limitations and use of FEA or CFD as part of the design process.
5 Evaluate the output from FE and CFD analyses
6 Understand the basic theory underpinning commercial CFD and FE codes.

Learning Outcomes of Assessments

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

Portfolio of FE exercises	1	2	4	5	6
Portfolio of CFD exercises	3	4	5	6	
Major CFD project	3	4	5		
Major FEA project	1	2	4	5	

Outline Syllabus

Introduction to the finite element method as applied to solid structures and continuums.
General theory of the FE method.
Optimum finite element modeling of real structures/continuums.
Element selection.
Application of boundary conditions and applied loading.
Introduction to the use of finite element software packages.
Analysis of output from finite element packages.
Introduction to non-linear FE analysis.
Introduction to CFD with industrial examples of usage.
Use of commercial CFD code to solve engineering problems.

Learning Activities

Lectures, tutorials and guided computer workshops.

Notes

The module extends the students' knowledge of modern FEA/CFD analysis

techniques. The emphasis is on applications and problem solving