Module Specification

Module Summary Information

1	**Module Title**	Computer Aided Engineering
2	**Module Credits**	20
3	**Module Level**	6
4	**Module Code**	ENG6075

5	**Module Overview**

In the development cycle of new and existing components, processes and systems the use of computer analysis has a strong role to play. Reduced lead times can mean faster arrival at the market than competitors and therefore gaining an advantage. Engineers are at the centre of the development process and therefore require a good understanding of the key aspects of computer aided engineering (CAE).

This module will expose you to key aspects of computer aided engineering with regards to the fundamental principles behind the screen, the selection of appropriate boundary conditions and methods for a solution, as well as raising awareness of the limitations of CAE.

The focus will be on combining theoretical concepts and user experience design with practical “hands-on” approaches widely used within the engineering industry and considering specific cases to build a bridge between theory and practise.

6	**Indicative Content**

Introduction to multi-body dynamic system simulation
Analysis of single degree of freedom system, analytical verification of results,

Introduction to Finite Element Analysis
Theoretical background, elements types and limitations, application of boundary conditions, selection of stress and strain components, model convergence

Validation of results
Benchmark of tests, correlation between results between analytical, practical and numerical methods, assessment of quality of results

7	Module Learning Outcomes On successful completion of the module, students will be able to:	
	1	Apply the principles of computational technology to practical engineering problems.
	2	Evaluate and employ an appropriate approach for the modelling of a given engineering problem.
	3	Determine and analyse the loads, deformations and stresses in engineering components and systems using industry-standard software.
	4	Analyse and evaluate results obtained from computational simulations and cross-reference with learned knowledge from other modules.

8	Module Assessment			
Learning Outcome				
	Coursework	**Exam**	**In-Person**
1-4		**100%**	

9	Breakdown Learning and Teaching Activities	
Learning Activities		**Hours**
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable		48
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE		0
Private Study (PS) includes preparation for exams		152
Total Study Hours:		200