

Module Title:	Computer Integrated Engineering 3	
Language of Instruction:	English	
Credits:	10	
NFQ Level:	7	
Module Delivered In	No Programmes	
Teaching & Learning Strategies:	The module will be delivered using lectures and tutorials with a mixture of presentations, example exercises, question and answer sessions, group discussions and online resources. Laboratory classes will be delivered to students working in groups to obtain experimental data with subsequent individual reporting/assessment.	
Module Aim:	The aim of this module is to provide students with an in-depth understanding of manufacturing, the design process and computer integrated engineering. A key element of the module is to develop the student's team working ability. Part of the assessment for this module is a group based project (in groups of four or five) to model and present a significant engineering artifact such as, for example, a complete car or aircraft.	
Learning Outcomes		
On successful completion of this module the learner should be able to:		
LO1	Understand the significance of the engineering design process and the part it plays in the manufacture of products and components;	
LO2	Describe and implement various computer aided methods;	
LO3	Understand the significance of parametric modelling & Finite Element Analysis and the part they play in the design of products and components;	
LO4	To work effectively as part of a team in an engineering project environment.	
Pre-requisite learning		
Module Recommendations		
This is prior learning (or a practical skill) that is recommended before enrolment in this module.		
6419	GRAP H1601	Technical Graphics 1
6426	TECH H2609	Technical Graphics 2
6427	MANU H2602	Design and Manufacture
6433	COMP H3613	Computer Integrated Eng 3
Incompatible Modules		
These are modules which have learning outcomes that are too similar to the learning outcomes of this module.		
No incompatible modules listed		
Co-requisite Modules		
No Co-requisite modules listed		
Requirements		
This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.		
No requirements listed		

Module Content & Assessment

Indicative Content

- **Advanced CAD/CAM Modelling:**
o Advanced assembly design and analysis, o Advanced drafting; o CAM principles and techniques, o Scheme design / Virtual prototyping. o Additive manufacturing processes o Mechanism Design: o Mechanism Design and Dynamics with SolidWorks. o Surfacing o Creating Mechanism Connections o Contextual design
- **Finite Element Analysis**
o General Pre-processing o Modelling Connections o Remote Boundary Conditions and Constraint Equations o Static Structural Analysis o Modal Analysis o Thermal Analysis o Multistep Analysis o Results and Post-Processing
- **Computer integrated engineering**
o Computer aided methods and implementation o Parametric modellers o Implementation of Computer integrated manufacturing
- **Automation and Control Technologies:**
o Material Handling and Identification Technologies o Fundamentals of NC Technology o Computer Numerical Control o Distributed Numerical Control o Applications of NC o NC Part Programming
- **Product Design and CAD/CAM in the Production System:**
o Product Design and CAD o CAD System Hardware o CAM, CAD/CAM, and CIM
- **Process Planning and Concurrent Engineering:**
o Process Planning o Computer-Aided Process Planning o Concurrent Engineering and Design for Manufacturing o Advanced Manufacturing Planning
- **Production Planning and Control Systems:**
o Aggregate Production Planning and the Master Production Schedule o Material Requirements Planning o Capacity Planning o Shop Floor Control o Inventory Control o Extensions of MRP

Assessment Breakdown	%
Continuous Assessment	50.00%
Project	50.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Written, online and Computer applications examinations. Group presentations	1,2,3	50.00	n/a

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Students will be assessed on their ability to work as part of a design team, and present a significant engineering artifact such as, for example, a complete car or aircraft. Students Will be assessed under the following criteria • Use Project planning tools, demonstrate an ability to coordinate the project and function as a design team member. • Demonstrate skills in producing high quality engineering schematics/Drawings of individual components and assemblies • Demonstrate skills in animating moving mechanism components within the chosen model. • Be able to interface 3D CAD skills with other engineering software. • Produce a CAD portfolio containing all material	1,2,3,4	50.00	n/a

No Practical

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Every Week	2.00
Laboratory	Every Week	2.00
Estimated Learner Hours	Every Week	4.00
Total Hours		8.00

