

Module Title:	Manufacturing and CAD
Language of Instruction:	English
Credits:	10
NFQ Level:	6
Module Delivered In	4 programme(s)
Teaching & Learning Strategies:	Lectures, laboratories, demonstrations, research, project work and some study will be used to ensure the student has a wide range of experiences.
Module Aim:	The aim of this module is to provide students with an in depth understanding of manufacturing, the design process and computer aided methods.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Demonstrate an understanding of the manufacture of components and assemblies in a workshop environment, selecting appropriate fabrication techniques to ensure safe manner of operation.
LO2	Demonstrate an understanding of the procedure for conducting a risk assessment, implementing control measures and resulting risk reduction.
LO3	Demonstrate an understanding of measurement and inspection procedures.
LO4	Develop 3D models and assemblies, and the generation of 2D drawings of these components using CAD systems.
LO5	Describe and implement various computer aided methods.
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
DSGN H1001 Computer Aided Drafting or equivalent	

Module Content & Assessment

Indicative Content

CAD Modelling & Design

Part/Assembly design using industry standard parametric modelers, Design for manufacture principals Parametric equations, part configurations, design tables, excel based design tables Features, Weldments, Surfaces, Sheet metal, Intro to tolerancing, introduction to assembly design, introduction to working drawings, templates, Plant layout design.

Manufacturing methods

Advanced turning and milling (machining to a tolerance, how to set up for multiple operations, datums, tool setting and selection, sequence of operations, Component indexing using the dividing head for Gear and Spline Cutting) Surface grinding. Rapid Prototyping - 3D Printing Advanced Welding techniques

Workshop safety and risk assessment.

Understand the procedures for conducting a risk assessment of a workplace, Understand the procedures for conducting a risk assessment of a new piece or modified piece of machinery, Machinery Directive and International Standards of machine design

Introduction to Measurement and Inspection

Understand the operation of mechanical, optical, pneumatic, electrical and electronic comparators. Understand and carry out the measurement of screw thread and gear teeth. Surface texture in terms of BS 1134 and BS 2634

Assessment Breakdown	%
Continuous Assessment	20.00%
Project	35.00%
Practical	45.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Written Report	Risk Assessment	1,2	10.00	Week 5
Examination	Class Test	1,3	10.00	Week 12

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	3D Design of a mechanical system - Stage 1 (Parts)	4,5	15.00	Week 8
Project	3D Design of a mechanical system - Stage 2 (Assembly, analysis & drawings)	4,5	20.00	End-of-Semester

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Mechanical workshop fabrication projects:	1,2,3	45.00	Every Week

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	12 Weeks per Stage	2.00
Laboratory	12 Weeks per Stage	3.00
Lab/Lecture	12 Weeks per Stage	2.00
Independent Learning	15 Weeks per Stage	11.07
Total Hours		250.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EFARG_B	Bachelor of Engineering (Honours) in Agricultural Systems Engineering	3	Mandatory
CW_EMMEC_B	Bachelor of Engineering (Honours) in Mechanical Engineering	3	Mandatory
CW_EFARG_D	Bachelor of Engineering in Agricultural Systems Engineering	3	Mandatory
CW_EEMEC_D	Bachelor of Engineering in Mechanical Engineering	3	Mandatory