



<b>Title:</b>	CAD with Design <b>APPROVED</b>
<b>Long Title:</b>	CAD with Design
<b>Module Code:</b>	MECH6003
<b>Duration:</b>	1 Semester
<b>Credits:</b>	5
<b>NFQ Level:</b>	Fundamental
<b>Field of Study:</b>	Mechanical Engineering
<b>Valid From:</b>	Semester 1 - 2016/17 ( September 2016 )
<b>Module Delivered in</b>	<a href="#">4 programme(s)</a>
<b>Module Coordinator:</b>	GER KELLY
<b>Module Author:</b>	LORRAINE HOWARD
<b>Module Description:</b>	This module aims to give the student a comprehensive introduction to the industry standards used in Engineering Drawing. The student will be expected to produce a portfolio of orthographic working drawings. The student will also be introduced to the selection of components for mechanical systems.
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Use industry specific CAD software and international drawing standards.
LO2	Produce a portfolio of engineering drawings.
LO3	Manage your portfolio within the institute's file management system.
LO4	Develop 3D parametric models and produce 2D engineering drawings from these models.
LO5	Disassemble, assemble, and design a mechanical system.
<b>Pre-requisite learning</b>	
<b>Incompatible Modules</b>	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>	
No incompatible modules listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Requirements</b>	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>	
No requirements listed	
<b>Co-requisites</b>	
No Co Requisites listed	

**Module Content & Assessment**

**Indicative Content**

**International Drawing Standards**

Identify international drawing standards, to include ISO Standards, BS8888:2013, drawing conventions, line types, line weights.

**File Management**

Utilise the institutes's file management system to manage portfolios and generate sub-folders. Naming convention for files. Retrieval of backup drawings.

**Introductory 2-D Drawings**

Generate 2D drawings using draw, modify, format, zoom, layer control, help, etc.

**Templates and Plotting**

Generate and utilise drawing templates for A2, A3, and A4 sized sheets. Use of paper space and plotting to scale.

**Orthographic Projection**

Drawing in first and third angle projections. Sectional views. Dimensioning.

**3D parametric modelling**

Drawing of basic solid models involving Sketching a Profile, setting Dimensions & Constraints and Basic Features (e.g.: Extrude, Revolve, Holes, Chamfer, Round; duplicating Features;Reorder Features)and working drawing creation.

**Machine Component Design**

Selection and use of rolling bearings, belt drives,keys and keyways. Assembly, disassembly and running of maintenance test rigs.

**Design Project**

Research and select suitable mechanical components to complete the design of a mechanical system.

Assessment Breakdown	%
Course Work	100.00%

Course Work				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Generate a 2D working drawing	1,3	10.0	Week 8
Practical/Skills Evaluation	Produce 3D parametric model and 2D engineering drawing	1,3,4	10.0	Week 11
Practical/Skills Evaluation	Portfolio of CAD models created throughout semester	1,2,3,4	45.0	Sem End
Written Report	Mechanical Design Project report	1,4,5	35.0	Sem End

No End of Module Formal Examination

**Reassessment Requirement**

**Repeat the module**

*The assessment of this module is inextricably linked to the delivery. The student must reattend the module in its entirety in order to be reassessed.*

**The institute reserves the right to alter the nature and timings of assessment**

**Module Workload**

<b>Workload: Full Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab	CAD Lab	4.0	Every Week	4.00
Lecture	Component Design theory	1.0	Every Week	1.00
Independent & Directed Learning (Non-contact)	No Description	2.0	Every Week	2.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				5.00

<b>Workload: Part Time</b>				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab	CAD Lab	4.0	Every Week	4.00
Lecturer-Supervised Learning (Contact)	Component Design theory	1.0	Every Week	1.00
Independent & Directed Learning (Non-contact)	No Description	2.0	Every Week	2.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				5.00

## Module Resources

### *Recommended Book Resources*

- Eanna O Broin 1991, *Technical draughtsmanship*, 2nd Ed. Ed., Gill and Macmillan Dublin [ISBN: 0717116522]
- Robert L. Mott 2013, *Machine Elements in Mechanical Design*, (5th Edition) Ed., Prentice Hall [ISBN: 0135077931]

### *Supplementary Book Resources*

- Alf Yarwood 2012, *Introduction to AutoCAD 2013: 2D and 3D Design*, 1 edition Ed., Routledge [ISBN: 978-0415537629]
- Colin H. Simmons, Neil Phelps, the late Dennis E. Maguire. 2012, *Manual of engineering drawing*, 4 Ed., Butterworth-Heinemann [ISBN: 0080966527]

*This module does not have any article/paper resources*

*This module does not have any other resources*

**Module Delivered in**

<b>Programme Code</b>	<b>Programme</b>	<b>Semester</b>	<b>Delivery</b>
CR_EBIOM_8	<a href="#"><u>Bachelor of Engineering (Honours) in Biomedical Engineering</u></a>	1	Mandatory
CR_EMECH_8	<a href="#"><u>Bachelor of Engineering (Honours) in Mechanical Engineering</u></a>	1	Mandatory
CR_ESENT_8	<a href="#"><u>Bachelor of Engineering (Honours) in Sustainable Energy Engineering</u></a>	1	Mandatory
CR_EOMNI_8	<a href="#"><u>Engineering Common Entry (Level 8)</u></a>	1	Mandatory