

## MODL H2404: 3-D Computer Modelling

Module Title:		3-D Computer Modelling				
Language of Instruction:		English				
Credits:	5					
NFQ Level: 6						
Module Delivered In		No Programmes				
Teaching & Learning Strategies:		The learner is immersed in a range of collaborative, problem-solving activities, to investigate and evaluat where design can propose solutions for commercial and social benefit. The holistic, student-centred stud based approach, facilitated by faculty, is intended to negotiate, facilitate and guide learner engagement a scaffold a deep-learning using the following strategies: Lectures, Studio based learning and Self-directed independent learning.				
Module Aim:		The aim of this module is to introduce learners to the concept and principles of computer-aided design using three-dimensional solid modelling and mechanical design software. To introduce learners to the key user interface elements (screen navigation and mouse skills) and the fundamental skills and concepts central to the successful use of the software. To demonstrate when and how to apply the essential programme tools and features necessary to successfully create and build parametric solid models and assemblies. To encourage learners to accumulate a broad range of part modeling techniques and procedures applicable to product design applications. To ensure that learners understand the stages required in the production of detailed engineering drawings that conform to recognised international standards. Solid modelling programmes are generally feature-rich applications and this module is to short to cover every aspect of a solid-modelling package. Therefore, the focus of this module is on demonstrating the fundamental skills and concepts central to the successful use and integration of three-dimensional solid modelling with other course work.				
Learning Ou	itcomes					
On successf	ul completion o	f this module the learner should be able to:				
LO1	Recall princi	le modelling concepts necessary for successful three dimensional parametric solid modelling.				
LO2	Demonstrate good user interface skills through efficient screen navigation of menus, toolbars, etc. and through co-or of various input devices such as keyboard and mouse, pointers, tablets or touch screens.					
LO3	Select the appropriate system-defined plane for the base sketch and recognise when to use planer faces and user-defined planes for boss sketches and base/boss features. Produce fully defines sketches through specification of dimensions a control of geometric relationships. Determine and apply appropriate dimensioning methodologies to convey design interview.					
LO4	Create a range of solids using base and boss features and to understand how parameters of these features can be edited regenerate the model. Demonstrate a good level of proficiency in utilizing sketches and features for building simple solid models of parts such as castings, mouldings and extrusions.					
LO5	Prepare 2D orthographic drawings directly from files generated in a 3D modeling environment. Generate a suite of technical drawings that conform to standard dimensioning practices and that are fully annotated with notes and additional information required for prototyping and/or production.					
LO6	Integrate sol	d-modeling skills and outputs to complement other course work				
LO7	To review sk	lls & deliverables from the module and submit a futue development plan				
Pre-requisite	e learning					
Module Rec This is prior I	ommendation earning (or a p	<b>s</b> ractical skill) that is recommended before enrolment in this module.				
No recomme	ndations listed					
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						
<b>Requirements</b> This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.						
No requirements listed						



### MODL H2404: 3-D Computer Modelling

### **Module Content & Assessment**

#### Indicative Content

#### Terminology

Coursework will cover the basic concepts and terminology used in three-dimensional solid-modelling applications such as: Feature-based Modelling, Parametric Modelling, Solid-modelling, Design Intent, Benefits of Solid-modelling.

#### 2D Profile Sketching

Most three-dimensional solid models begin with a two-dimensional profile sketch and becoming comfortable with using the various sketch tools, sketching techniques and sketch definition is, therefore, very important. e.g. Sketching and Sketch Tools, Construction Planes, Sketch Relations, Dimensioning, Standard Views, Isometric and Perspective, View Rotation and Zoom.

#### **3D Feature-based Modelling**

A typical computer-generated solid model will be a combination of individual solid-modelling features. Coursework will cover the tools and techniques necessary to create three-dimensional base features from two-dimensional profile sketches, for example: Extruded features, Cut - extrusions, Revolved features, Sweeps, Lofted features Coursework will also cover how to utilise and combine a range of applied features to these base features in order to build a more complete solid model, for example: Fillets, Chamfers Shell features Coursework will also cover more advanced feature-based modelling techniques for part models such as: Rib Features, Boss Features, Mirror Features, Countersunk and Counter-bore Hole Features, View Sectioning and Adding Text.

#### Assembly Modelling

Coursework will cover the various stages required in assembly modelling such as: Adding and positioning the first component, Mating components to each other, Exploded Views Assembly Analysis Techniques, such as mass property calculations and dynamic interference detection.

#### **Technical Drawing Files**

Coursework will cover the various stages required in the production of detailed engineering drawings using standard drawing templates conforming to recognised international standards. Opening a drawing file, Standard template selection, custom templates / title blocks. Drawing views: standard, named, section, detail and aligned. Model dimensions, Annotations and Driven Dimensions

#### Resources

Computer Lab – access to a dedicated computer lab with suite of software (SolidWorks, PhotoWorks 360, KeyShot and Adobe Creative Cloud Suite). Lecturer workstation connected to an overhead projector, projection screen and white board.

#### Resources

Computers/Plotters/Printers – in this year each learner requires the use of a personal computer of suitable specification to run software used on the design programme. There should be access to printing and plotting facilities in order to complete final deliverables..

Assessment Breakdown	%	
Continuous Assessment	100.00%	

#### Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date			
Other	Parts and assembly files submitted on suitable storage media for assessment and checking.	1,2,3,4	45.00	Sem 1 End			
Project	Solid modelling element of a Studio based project.	1,2,3,4,5,6	25.00	Sem 1 End			
Portfolio	Submission of a portfolio showing content and development during the year across the six key learning streams.	1,2,3,4,5,6,7	20.00	Week 30			
Oral Examination/Interview	Learners will present for interview and produce a reflective chart reviewing performance across the six key learning streams & future development plan.	1,2,3,4,5,6,7	10.00	Week 30			

No Project

No Practical

No End of Module Formal Examination

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



## MODL H2404: 3-D Computer Modelling

# Module Workload

Workload: Full Time					
Workload Type	Frequency	Average Weekly Learner Workload			
Lecture	Every Week	4.00			
Independent Learning Time	Every Week	2.00			
	Total Hours	6.00			