

Module Title:	3D Modelling	
Language of Instruction:	English	
Credits:	5	
NFQ Level:	6	
Module Delivered In	2 programme(s)	
Teaching & Learning Strategies:	A combination of lectures, practical instruction, studio-based learning and problem-based learning activities support the materials appreciation element of this module. Delivery of the CAD element, in a designated computer lab, explores more advanced parametric solid-modelling features to support learner engagement in studio-based modules and is designed around process or task-based training with particular emphasis on the process and procedures necessary to complete a distinct solid modelling task. Solid modelling skills are introduced by a series of interactive demonstrations and work examples. These work examples are followed by pedagogical-sequenced exercises designed to allow learners to practice the various skills that have been discussed and used in the work examples. Course-defined projects, such as the Re-Design Project, Group Project and Conceptual Project within Design Studio 2, are set submission requirements for this module. Students will prepare a suite of files to include one or more of the following elements: Solid Model Assembly (parts and assembly files), a General Assembly drawing with Bill of Materials, and detailed parts drawings, fully-dimensioned and annotated as required for fabrication and assembly.	
Module Aim:	The aim of this module is to further develop materials appreciation, 3D parametric modelling skills and 2D technical drafting skills to facilitate and support Design Studio (Design for Industry) work. The materials appreciation aspect of the module takes a closer look at material properties, specialist materials and processes. Material appreciation element also considers material performance and testing, contact mechanics, section analysis and finite element analysis. Learners will be introduced to technical drawing standard (BS PP8888) to direct 3D modelling and 2D drafting outputs. This module is closely aligned with course work undertaken during the Re-Design Project in Design Studio 2 (Design for Industry) module and the Working Prototypes module.	
Learning Outcomes		
On successful completion of this module the learner should be able to:		
LO1	Recall principle modelling concepts necessary for successful 3D parametric solid modelling to complement studio-based course work.	
LO2	Interpret and implement key elements of technical drawing standard BS PP 8888 to prepare a suite of technical drawings, using traditional 2D technical drafting methods or 2D orthographic drawings generated in a 3D modelling environment.	
LO3	Demonstrate an understanding of material properties and apply appropriate material selection, testing, analysis and DFM strategies in product design proposals.	
LO4	Demonstrate an understanding of key engineering principles such as material failure theory, contact mechanics, friction and section analysis.	
Pre-requisite learning		
Module Recommendations		
This is prior learning (or a practical skill) that is recommended before enrolment in this module.		
No recommendations 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		
9540	SKLS	Design Studio 2 (Design for Industry)
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

Technical Drawing Standards

Introduction to, and interpreting of, Technical Drawing Standards PP 8888 to ensure that learner outputs, such as traditional 2D technical drafting or 2D orthographic drawings directly from files generated in a 3D modelling environment, conform to the nominated technical drawing standards.

3D Modelling

Learners will be expected to recall the 3D modelling concepts learned in Year1 of the programme and encouraged to develop their 3D modelling capabilities by adding more advanced modelling features to their repertoire. Learners will use 3D modelling skills as a support tool for exploring space envelopes and space management during the Repositioning Project within the Design Studio 2 module.

Material Properties

Learners will develop their knowledge, understanding of key engineering principals and properties. Deformation and failure, finite element analysis and material properties such as electrical, thermal and magnetic properties will be covered. Learners will also be introduced to specialist materials and applications.

Electrical Circuit Theory

In conjunction with the Working Prototypes module, learners will learn about basic circuit theory and build simple electrical circuits and learn about physical computing for prototyping using Arduino C, Arduino Python and Raspberry Pi.

Assessment Breakdown	%
Continuous Assessment	100.00%

Continuous Assessment

<i>Assessment Type</i>	<i>Assessment Description</i>	<i>Outcome addressed</i>	<i>% of total</i>	<i>Assessment Date</i>
Project	Suite of hand-drawn 2D orthographic drawing conforming to BS PP8888	2	50.00	Week 4
Other	Material specification and solid modelling element of a studio-based project.	1,2,3,4	50.00	Sem 1 End

No Project

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	4.00
Total Hours		4.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_DHPDI_B	Bachelor of Arts (Honours) in Product Design Innovation	3	Mandatory
CW_DHIDE_D	Bachelor of Arts in Design	3	Mandatory