

Module Title:	Detailing & Specification		
Language of Instruction:	English		
Credits:	10		
NFQ Level:	8		
Module Delivered In	No Programmes		
Teaching & Learning Strategies:	The learner is immersed in a range of collaborative, problem-solving activities, to investigate and evaluate where design can propose solutions for commercial and social benefit. The holistic, student-centred, studio-based approach, facilitated by faculty, is intended to negotiate, facilitate and guide learner engagement and scaffold a deep-learning using the following strategies: Lectures, Studio-based learning, Presentation, Workshop and Self-directed independent learning.		
Module Aim:	The aims of the Case Bridging Study element of this module are: to investigate the theory of form and the visual perception of products; to promote an understanding of the principles and context of form in product design; and to provide a practical and ordered approach to form generation. The learner will investigate the functional and physical requirements of component parts and product architecture requirements to assist in the design of more appropriate and progressive and engaging products. The aim of the Design Specification element of this module is to facilitate the learner with integration and implementation aspects of the component sourcing and design for manufacture and assembly elements of the Honours Degree Project.		
Learning Outcomes			
On successful completion of this module the learner should be able to:			
LO1	Recall and demonstrate implementation of the key principles of form generation through a practical and ordered approach to concept design and design development work.		
LO2	Demonstrate a clear understanding of the functional and physical requirements of individual component parts and product architecture in product design work.		
LO3	Demonstrate an ability to control form and to prepare and present designs for appropriate, progressive and engaging products.		
LO4	Recall principle modelling concepts necessary for successful three dimensional solid modelling.		
LO5	Demonstrate a high level of proficiency in computer-aided solid-modelling and surface-modelling when designing individual parts and assemblies.		
LO6	Prepare fully-defined and dimensioned solid-modelling files for export to conversion software. Create roughing and finishing raster-based tool paths from solid-modelling files for export to postprocessor equipment for machining.		
LO7	Incorporate outputs from CNC postprocessor equipment to assist in the preparation of scale models and appearance models.		
LO8	Present, on suitable storage media, a comprehensive suite of part and assembly files showing fully dimensioned and annotated 3D models that comply with the latest BSI and ISO standards of technical product specifications and documentation.		
LO9	To review personal application & deliverables over the year and deliver a development plan		
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			
6868	DSGN H4424	Human Centred Design & Interaction	
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

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, Surface Modelling, Design Intent.

CBS - Project Framing

Learners will explore form to convey meaning through: shape, scale, texture, colour, material selection and manufacturing processes. Successful form generation is always directed towards opportunities and held within constraints. Learners will be encouraged to explore contextual form factors through a series of form generation boards covering product predecessors, competing products, corporate personality/identity and form benchmarking. Learners will also explore intrinsic form factors and how these elements impact on product symbolism and semantics. Learners will be required to prepare these boards, together with a form generation statement to outline the intended direction for establishing the physical appearance principles and parameters for directing form generation during the project. Through defining and describing these opportunities and constraints the learners will be better equipped to direct the form generation process.

CBS - Concept Design

The Case Bridging Study is designed to encourage learners to communicate their form generation efficiently through sketching and sketch models.

CBS - Design Detailing

Learners will also source components and fittings and be expected to consider product architecture requirements including the functional aspects, such as the individual operations and transformations that contribute to the overall performance of a product, and the physical elements, such as the parts, components and sub-assemblies that implement the product's function, to prepare product architecture proposals that are both considered and appropriate. Elements of the Ergonomic Study and Form Iteration Modelling stages in the Human Centered Design module will be applied to the design detailing stage. Learners will be encouraged to demonstrate that product architecture proposals have considered ergonomic requirements, possible future changes to the product, opportunities for product variety, component standardisation, product performance, design for manufacture and assembly and issues regarding the management of future product development. In turn, elements of the Design Detailing stage will inform the Model Planning stage of the Human Centered Design module.

CBS - DFMA Through SolidWorks

Design for Manufacture and Assembly is the combination of design for ease of manufacture of component parts and the design of the product for easy of assembly and, sometimes, disassembly too. Learners will be encouraged to simplify the product structure, to reduce manufacturing and assembly costs, and to quantify improvements in overall performance. Work undertaken during the design detailing and design for manufacture and assembly elements of this module will feed directly into the Concept Realisation element of the Human Centered Design module.

CBS - Final Presentation

PowerPoint presentation reviewing all elements of the Case Bridging Study from initial project framing through to final presentation renderings and model,

Design Specification

Most of this part of the module is allocated for learners to practice and prepare for computer aided modelling and design specification for Honours Degree Project submissions. Learners will prepare a suite of files to include a solid-model base-part file and tool path files necessary to machine (subtractive manufacture/modelling) or to 3D print (additive manufacture/modelling) appearance evaluation models in appropriate modelling material. Learners will be constantly challenged during self-directed projects and this module requires learners to employ creative thinking and demonstrate problem solving abilities for transforming design sketches and sketch models into computer generated solid-modelling. Should learners encounter problems with individual project work then instructions or modelling procedures, salient to their specific needs, will be demonstrated either directly within the learner's solid-modelling file or as a live working example to the entire class. Additional modelling skills will be demonstrated using interactive exercises, examples and also as individual learners encounter problems with project work.

Design Specification - Component Sourcing

Sourcing of proprietary component parts, examination of materials, manufacturing processes, detailing and finishes.

Design Specification - Design for Manufacture and Assembly

During this module learners will develop and demonstrate their design proposals paying particular attention to detailing, wall thicknesses, draft angles, ribs, bosses and internal detailing and tolerances.

Design Specification - Bill of Materials

Learners will compose a Bill of Materials (BOM) listing of raw materials, parts, sub-assemblies and the quantities of each needed to manufacture the end product.

Design Specifications - Technical Drawings

Learners must prepare and submit, on a memory stick or other storage media, a suite of part and assembly files showing a fully dimensioned and annotated 3D models that comply with the latest BSI and ISO standards of technical product specifications and documentation. A full set of printed technical drawings (GA and two, or more, interconnecting parts files) also form part of this module's submission requirements.

Design Studio (Resource)

A dedicated space designed to allow for studio-based learning. This space is specific to a particular learning group. While used to deliver studio-based education the space is available to accommodate learners outside scheduled/timetabled hours. It provides a safe learner-driven, peer-reviewed environment, supported on a one-to-one basis. It supports the synthesis of parallel concurrent modular knowledge, skills and competency with prior learning & personal aesthetic judgement, to resolve specific design research question/s.

Computers/Plotters/Printers (Resource)

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 for the Honours Degree Project.

Assessment Breakdown

	%
Continuous Assessment	100.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	PowerPoint presentation of Case Bridging Study project to include project outline and brief, contextual boards, form generation statement to include product symbolism and semantics, concept sketching and selection, evidence of sketch modelling. Final presentation images showing product architecture/component layout, exploded views, surfaces and finishes.	1,2,3,4,5,6,7,8	35.00	Week 13
Project	Suite of Solid Modelling Files (Part and Assembly files) showing fully dimensioned and annotated 3D models that comply with the latest BSI and ISO standards of technical product specifications and documentation. A full set of printed technical drawings (GA and two, or more, interconnecting parts files) also form part of this module's submission requirements.	1,2,3,4,5,6,7,8	35.00	Week 29
Reflective Journal	Reflective Practice: reviewing approach, engagement, performance, with aligned modular elements and identification of future developmental need/s in design practice.	1,2,3,4,5,6,7,8,9	20.00	Week 30
Oral Examination/Interview	P16: Honours Degree Project Defence & Synthesis. Learners will present for interview, submit and defend Honours Degree Project	1,2,3,4,5,6,7,8,9	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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Studio Based Learning	Every Week	4.00
Independent Learning Time	Every Week	2.00
Total Hours		6.00

