Module Title:	Prototyping & Surfaces
Language of Instruction:	English

Credits:	10

NFQ Level:	7

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, • Peer-to-peer group/team learning, • Seminars, • E-Learning, • Presentation, • Workshop, • Facilitated peer-to-peer critique/review, • Self-directed independent learning,

Module Aim:	The aim of the module is to immerse the learner in key areas of a design project to develop their understanding of what design workshop brings to the design process. Design modelling offers opportunity for research, specification, exploration of existing products & trends. Disassembly of products allows for examination of componentry, manufacturing techniques and assembly. This approach develops a learner's knowledge of the design of the product from the inside out. These internal constraints will be married to ergonomic external constraints and the development of block modelling to capture these criteria. Learners will engage with 3D printing as a mechanism for producing detailed models and be able to produce a prototype of a working model. Through the development of these skills an enhanced approach to representational modelling will be developed. This will focus on detail specifications of finishes, textures & aesthetics.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	To engage in product disassembly and capturing of details to aid the design process
LO2	To employ model making skills in investigation of existing products and reverse engineer
LO3	To produce a bill of materials & component specification
LO4	To assess surface finishing & combinations of and choose an appropriate finish specification and produce a representational model to a professional standard
LO5	To develop a 3D printed working prototype
LO6	To assess new technologies in material, production and technology for opportunities in design
LO7	To demonstrate the ability to develop block models defined by internal & external constraints
LO8	To review skills and deliverables over the module in context with the six key learning streams

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		
6858	INTL H3424	Industrial Design
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

Product Disassembly (Project 12)
Learners engage in a Product disassembly project which coincides with the industrial design module. Through this process there will be a cataloging of components/parts. These will be categorised and grouped for assessment of manufacturing details and materials. Internal components will be recorded before disassembly and stored for reassembly in the prototype. Learners will learn how to record and compile a bill of materials including specification sheets. Based on the information learned through disassembly learners will be expected to generate an array of foam model iterations to explore the form opportunities. Learners will develop the skill of specifying finishes (visual & tactile) through the creation of swatches indicating combinations of colours and textures. A minimum of two swatch variations will be explored to allow for an informed decision of final specification. Prototype – Learner will engage with the MCOR 3D paper printed prototype in alignment with the advanced computer modelling module. Prototypes will be printed and used for the alignment of original product components. The assembly of this prototype will be assessed to identify potential clashes and rectify them.

Industrial Design (Project 14)
Learners through the workshop module will engage in a research phase to identify opportunity with new technology to develop a range of projects. In unison with the industrial design module learners will engage in a block modelling exercise to determine the internal and external factors which define the form of the product being designed. Through a combination of traditional model making and sketching space envelops can be explored. The learner will develop a final representational model showing attention to detail, finish specification, components and be completed to a professional level

Workshop/Materials (Resource)
This is a dedicated space to allow learners to test, evaluate and represent the application of their research through 3D physical workshop made models. Resourcing of a workshop space include machinery, tools and materials. Materials such as modelling foam, MDF, Jelutong, Cardboard, foam board are all essential to investigate and develop a design solution.

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.

Technician (Resource)
A dedicated design technician to support, demonstrate and maintain equipment while auditing and stocking of materials for the design workshop and studio practice

Prototyping Equipment (Resource)
There are a number of prototyping machines used including Laser cutter, 3D powder printer, 3D Paper printer

Assessment Breakdown	%
Continuous Assessment	100.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Product Disassembly – Product disassembly and categorisation of components, assessment of manufacturing details and materials. Delivery of a bill of materials including specification sheets	1,2,3,4	5.00	Week 5
Project	Iterations – development of 5-10 iterative foam models defined by Bill of Materials and components	2	5.00	Week 7
Presentation	Swatches- Creation of a set of swatch opportunities to inform the material and finish specification of final design	4	5.00	Week 9
Project	Prototype - 3D paper prototype working model. Alignment of original product components encased in prototype for product testing.	1,2,3,4,5	20.00	Week 15
Presentation	Research Phase – Investigation of new technologies, new materials or new processes and identification of opportunity for product development	6	10.00	Week 19
Project	Block Modelling - Development of Block modelling to define and understand the internal & external factors defining the form of the product	6,7	5.00	Week 23
Project	Representational Model – professional level final model defined by block model including detailing and component application	2,4	20.00	Week 30
Reflective Journal	Planning & Management Reflective Practice: reviewing approach, engagement, performance, collaborative style, synthesis with aligned modular elements and identification of future developmental need/s.	1,2,3,4,5,6,7,8	20.00	Week 30
Oral Examination/Interview	Showcase Defence	8	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		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Studio Based Learning	Every Week	4.00
Independent Learning Time	Every Week	2.00
	Total Hours	6.00