

<b>Module Title:</b>	Design Studio 4 (Product Design)
<b>Language of Instruction:</b>	English
<b>Credits:</b>	30
<b>NFQ Level:</b>	8
<b>Module Delivered In</b>	<a href="#">1 programme(s)</a>
<b>Teaching &amp; Learning Strategies:</b>	The learner is immersed in a range of 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, • Industry/partner collaboration, • Seminars, • E-Learning, • Presentation, • Workshop, • Facilitated peer-to-peer critique/review, • Self-directed independent learning,
<b>Module Aim:</b>	The aim of this module is to guide learners through the full design process from problem identification to final design development on a self-identified project. The module uses studio-based learning to enable the learner to synthesise both design research and process with co-requisite modular knowledge, skills and competencies and to address and resolve Honours Degree level research questions. It aims to assist the learner in establishing a design methodology appropriate to their selected project type and category. It will assist the learner to identify the core project from a human needs perspective and facilitate design and innovation through to the final solution. It will encourage the learner to develop their applied design skills in research, conceptualisation, creativity, innovation, detailing & specification, communication and DFMA. It will encourage the learner to identify and define the scope of the project to be undertaken. It will, where possible, assist the learner to consider a project offering opportunities to engage with small to medium-sized enterprises in the region. The aim of the module is to support the learner to research, define, evaluate and synthesise complex contextual, technical and cultural values to encourage creative thinking and a personal aesthetic response to human-centred and market-appropriate design outcomes.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	To exercise judgement in complex planning and management of research criteria and methodology relevant to product design
LO2	To demonstrate independent learning and motivation needed to complete an effective research phase of a design project
LO3	To demonstrate the ability to analyse, interpret and synthesise ethically gathered research and apply the conclusion into a design solution
LO4	To develop an academic research poster and disseminate new knowledge
LO5	Creatively explore possible directions leading to a valid concept response to an established design brief and present appropriate 2D and 3D media, of a professional standard, to illustrate concept proposals
LO6	Apply formal selection methodologies in the analysis of concept design proposals in order to making decisions and justify them
LO7	Evolve and defend an appropriate aesthetic for a specific product type
LO8	Produce a professionally ready design solution that combines aesthetic qualities, detailing, functionality through an empathic human-centred approach

Pre-requisite learning		
<b>Module Recommendations</b> <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>		
No recommendations listed		
<b>Incompatible Modules</b> <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>		
No incompatible modules listed		
<b>Co-requisite Modules</b>		
9174	PROJ	Project Management
9409	DEVL	Enterprise Development
9511	RECH	User Behaviour Research
9667	DSGN H4422	Branding and Exhibition
<b>Requirements</b> <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>		
No requirements listed		



Indicative Content
<p><b>Minor Design Project (MDP)</b></p> <p>The MDP allows the student to run through the design process in a structured project in order to calibrate expectation and application expected for the HDP. At the start of the project learners will be assigned an existing product, a brand and an iconic designer and asked to design a next generation product celebrating the chosen designer and brand. It is designed to encourage learners to communicate their form generation efficiently through sketching and sketch models. The project will use a traditional design methodology where engage on different areas will product a highly developed concept. The key focus of the project is to explore form and convey meaning through: shape, scales &amp; proportion, texture, colour, material selection and manufacturing processes. The stages of the project will include: Form generation communication boards, develop a form generations statement, form generation process &amp; conceptualisation, form exploration through iterative sketch modelling, component and fittings sourcing, product architecture, key interaction touch points, DFMA, design detailing, form and proportion final model and future product development. The timeline will include two design reviews on weeks 5 and 8. Design review 1 will focus of the form development and conceptualisation (sketchbook, communication boards and sketch models). Design review 2 will align with a design freeze to aid in the transition to the digital modelling phase. The final deliverable for the MDP is in week 12. This will involve a verbal presentation, communication boards, suite of digital modelling files, models, sketchbooks and a reflective document on the process and learning.</p>
<p><b>Honours Design Project (HDP) (Phase 1 Project Research)</b></p> <p>Learners will explore self-generated problem proposals and decide on a direction suitable for an honour's degree project. Using a series of design sprints the problem proposals with be identified, explored and defined. The problem area is then scoped to identify potential project directions within the problem areas. Stakeholder maps will be generation and research groups identified. Learners will be expected to record their process, finding and exploration of the project identification phase through the project sketchbook. Learners will then engage in research in order to scope the proposed are expected to engage in the activity proposed and conduct immersive research. Learners will document this research phase and identify innovation opportunities for further research. After extrapolation of research findings learners will deliver five direction showing their ability to organise complex data and identify product opportunity This will be conducted in tandem with the user behavior research module Learners will engage with a secondary research phase providing greater depth to primary research findings. This secondary research will focus on ethics, legislation, and publications in the area. The research is documented in an academic research poster showing the research journey, project context, methodology used primary / secondary research, user description, key conclusions and referencing. Visual communication will be considered as part of the development of data visualisation, process mapping and poster composition. The conclusions will be used to develop a comprehensive design brief as part of the project management module.</p>
<p><b>HDP (Phase 2 Concept Generation)</b></p> <p>Learners will begin to finalise the criteria and constraints of their HDP proposal. Learners will be encouraged to explore design factors through a series of form generation boards covering product predecessors, competing products, mood/style and form benchmarking. Using the design brief (Project Management module), the user requirements (User Behaviour Research module) and the communication boards learner with lock in the guiding criteria for their new product development. Learners are encouraged to investigate multiple options at this stage. Through concept design iteration, the learner is required to demonstrate a synthesis between personal aesthetic within the constraints of the commercial context and be able to rationalise their decision process. Design concept work will show a direct lineage from any research conclusions extrapolated during the research phase of the HDP. The HDP sketchbook will be reviewed at his stage and a decision will be made on a concept to be developed. This review will also give the last opportunity of project deviation and must be agreed during the design review.</p>
<p><b>HDP (Phase 3 Product Architecture &amp; Proof of Concept)</b></p> <p>The development phase will differ from learner to learner depending on the nature of individual research proposals. With the aid of the academic team, learners will meet an agreed number of completion points. At each stage learners are guided through self, peer and academic review to assist in the design development process. In developing the HDP the learner will be required to explore, test, evaluate, communicate and rationalise their decision-making process. Typically, the development phase would be as follows: Phase 1 – Systems Level Design, selection of viable directions, identify and map key values to design brief requirements, placement, connectivity &amp; product service system/s, application of human centred design, Aesthetic, user interface, anthropometrics, ergonomics &amp; interactions, technical and component investigation, production &amp; material investigation and product architecture. The concept is investigated, tested and evaluated in relation to its feasibility as a product concept. As part of the proof of concept delivery learners much deliver a communication board demonstrating synthesis of the design process and a deep understanding of the design proposal. Learner through a verbal presentation will also present supplementary work on the product development phase. These include: sketchbook, selection matrix, iterative sketch models, user testing &amp; product viability, working drawings, digital base part, materials and manufacturing, BOM and enterprise development.</p>
<p><b>HDP (Phase 4 Design Report)</b></p> <p>The learners will compile a Final HDP Project Report detailing the design process, methodology, project management, project context, final design proposal, DFMA, costing. This report will bring together multiple deliverable form across multiple modules.</p>
<p><b>HDP (Phase 5 Final Design)</b></p> <p>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 Detail design &amp; testing, space envelopes &amp; sub systems, developed component specification, product aesthetics, development of iterative models to explore form, exploration of surface finishes/detail &amp; appearance modelling, working drawings, wire frames. refinement and bill of materials, detail design, &amp; aesthetic, General Assembly &amp; parts drawing, assembly specifications, costing and final appearance model. The design workshop is limited to a capacity of 18 under Health and Safety. In the event a class group exceeds 18 the class will be broken into two groups each receiving full allocation of contact hours. Workshop will need to be scheduled for 2 hours per week on the timetable. In conjunction with the Branding &amp; Exhibition module, learners will develop the plans for a final design exhibition of work. The learners will compile all of the work undertaken as part of their design projects and engage in a student/project defense. Key submissions: final communication board, representation model, suite of digital modelling files, sketchbook, design report, enterprise development and all supplementary work undertaken throughout the module. The learner will give a 10-minute presentation on their work followed by an in-depth questions and answers session on the design consideration of their final product.</p>
<p><b>Design Studio (Resource)</b></p> <p>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 &amp; personal aesthetic judgement, to resolve specific design research question/s.</p>
<p><b>Workshop/Materials (Resource)</b></p> <p>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 investigation of developing a design solution.</p>
<p><b>Computers/Plotters/Printing (Resource)</b></p> <p>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 Honours Degree Project.</p>
<p><b>Prototyping (Resource)</b></p> <p>There are a number of prototyping machines - Laser cutter, 3D powder printer, 3D Paper printer</p>
<p><b>Tecnician (Resource)</b></p> <p>A dedicated design technician to support, demonstrate and maintain equipment while auditing and stocking of materials for the design workshop and studio practice</p>

Assessment Breakdown	%
Continuous Assessment	100.00%

Continuous Assessment				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Presentation	Minor Design Project (MDP) Verbal presentation, communication boards, suite of digital modelling files, models, sketchbooks and a reflective document on the process and learning.	1,2,3,5,6,7	25.00	Week 12
Presentation	Honours Degree Project (HDP) Research Poster Academic research poster showing the research journey, project context, methodology used primary / secondary research, user description, key conclusions and referencing	1,2,3,4	15.00	Week 11
Presentation	(HDP) Proof of Concept learners must deliver a communication board demonstrating synthesis of the design process and a deep understanding of the design proposal. Learner through a verbal presentation will also present supplementary work on the product development phase. These include: sketchbook, concept generation, concept development, selection matrix, iterative sketch models, user testing & product viability, working drawings, digital base part, materials and manufacturing, BOM and enterprise development.	2,3,5,6,7	20.00	Week 23
Written Report	(HDP) Design Report Final HDP Project Report detailing the design process, methodology, project management, project context, final design proposal, DFMA, costing. This report will bring together multiple deliverable form across multiple modules.	1,3,6,7,8	10.00	Week 29
Presentation	(HDP) Final Design The learners will compile all of the work undertaken as part of their design projects and engage in a student/project defense. Key submissions: final communication board, representation model, suite of digital modelling files, sketchbook, design report, enterprise development and all supplementary work undertaken throughout the module. The learner will give a 10-minute presentation on their work followed by an in-depth questions and answers session on the design consideration of their final product.	3,4,5,6,7,8	30.00	Week 30

No Project
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No Practical
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No End of Module Formal Examination
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SETU Carlow Campus reserves the right to alter the nature and timings of assessment

**Module Workload**

<b>Workload: Full Time</b>		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Studio Based Learning	Every Week	15.00
Independent Learning	Every Week	13.00
Total Hours		28.00

**Module Delivered In**

Programme Code	Programme	Semester	Delivery
CW_DHPDI_B	<a href="#">Bachelor of Arts (Honours) in Product Design Innovation</a>	8	Mandatory