



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Product Design Engineering		
Module Code	UBLLXR-15-2	Level	Level 5
For implementation from	2019-20		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Architecture and the Built Environment
Department	FET Dept of Architecture & Built Environ		
Module type:	Standard		
Pre-requisites	Product Design Studio 1 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Educational Aims:</b> See Learning Outcomes</p> <p><b>Outline Syllabus:</b> This module is the second module in the PDT spine that progressively builds upon the first year module Mechanisms and Structures. Applied mathematics and mechanical engineering principles are introduced through project-based learning.</p> <p>Topics covered include:</p> <p>Fundamental principles of Design Engineering:            The application of physical principals to product design.            Analysis of failure modes with a view to extending product lifespan.</p> <p>The design and development and testing of product structures and mechanisms:            The practical application of the engineering theory covered in the first year Structures and Mechanisms module.</p> <p>Integrating analytical methods into a design engineering process and appropriate use of the correct method or technique for the task:            Use of 2D techniques, hand calculations, computational analysis, including FEA, and digital</p>

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prototyping methods including CAD.

Depending on the nature of the projects and case studies, the syllabus may also introduce related product engineering topics to support the specific project.

**Teaching and Learning Methods:** Contact: 36 hours

Preparation for lectures: 12 hours

Assimilation: 30 hours

Project: 60 hours

Examination preparation: 12 hours

Total: 150 hours

The Teaching and Learning Strategy for this module is applied exercise and project based learning in which a topic lecture will introduce the students to the assigned or upcoming contextual information which supports and frames their acquisition of topic specific knowledge, skills and supports their project work in other modules, principally Product Design Technology Design Studio 2.

The exercises and project are designed to facilitate competency acquisition through applied and indirect learning, building knowledge through the introduction of new subject matter and reinvestment of gained knowledge and skills. The tutorial portion of the studio time is designed for the learner to have access to tutorial support, work in the close proximity of classmates and to self-assess his/her progress through the exercises and/or projects.

Exercise and Project work outside of scheduled hours is an essential component to the successful completion of the assigned work with an average time investment of 9 or more hours per week over the semester. Students will be expected to come prepared for the module sessions with in-process or completed work and supplies.

Course work is assessed through digital submission via Blackboard where possible but may also be via in class submission when large working models form part of that project submission.

Feedback will be in the form of verbal and/or written. Marking criteria and assessment format will be clearly indicated on the Project Brief made accessible to the students at the beginning of each project.

Knowledge and Skills reinvestment from parallel running modules are formative and essential for progression through the curriculum.

Additional tutorial support is offered through individual appointments with the module tutors.

### Part 3: Assessment

The assessment strategy for the module mimics professional practice and is evaluated through a design project that will need to be valuated through a group and an individual presentation.

Summative Assessment:

75% of the module mark (Component B) is awarded through a group presentation where the team needs to demonstrate how the working model shows the technical design functions of the proposed product. This group presentation is supported by a group written report (equivalent to 2,500 words) from which technical details and the design process can be assessed. Throughout the project formative reviews and assessment occurs at given points during the year in order to help the development of the product. A differential marking scheme is also applied to ensure fairness of marking where the contribution of different members of the group is not equal.

25% (Component A) is given to an individual viva where each group member will articulate the depth of understanding and contribution towards the development of the final project.

The re-sit project will have a simplified scope and deliverables compared to the group project to ensure it is achievable for the individual while still allowing the student to demonstrate the required skills and understanding.

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The project and the individual's understanding will be assessed through a short presentation supported by a written report (equivalent to 1,000 words) from which technical details and the design process can be assessed.

### Formative Assessment:

Regular "work-in-process" critiques and one-to-one tutoring is given throughout the development process of the projects.

### Feedback:

Verbal peer and tutor feedback is provided during the development process of the projects, during the project critiques. Written feedback will be provided at the end of the project. Students are also expected to undertake reflective practice and provide written feedback on their own projects.

First Sit Components	Final Assessment	Element weighting	Description
Project - Component B		75 %	Group project
Presentation - Component A	✓	25 %	Individual presentation
Resit Components	Final Assessment	Element weighting	Description
Project - Component B		75 %	Individual project report
Presentation - Component A	✓	25 %	Individual project presentation

### Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will achieve the following learning outcomes:	
	<b>Module Learning Outcomes</b>	<b>Reference</b>
	Evaluate technical risks and address risk in design methodology	MO1
	Consider and apply the appropriate mathematical and engineering principles to a particular design problem	MO2
	Apply analytical skills in relation to designed objects including the ability to undertake visual analysis and to analyse designed objects in relation to their context (G07)	MO3
	Apply a systematic approach to problem solving using appropriate design tools and visual/physical techniques (G08)	MO4
	Constructively work in Teams or Groups (P01)	MO5
Contact Hours	<b>Independent Study Hours:</b>	
	Independent study/self-guided study	114
	<b>Total Independent Study Hours:</b>	114
	<b>Scheduled Learning and Teaching Hours:</b>	

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	Face-to-face learning	36
	<b>Total Scheduled Learning and Teaching Hours:</b>	36
	<b>Hours to be allocated</b>	150
	<b>Allocated Hours</b>	150
Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/ubllxr-15-2.html">https://uwe.rl.talis.com/modules/ubllxr-15-2.html</a></p>	

### Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Product Design Technology [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19

Product Design Technology [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19