



Module Specification

Product Design Engineering

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Part 1: Information

Module title: Product Design Engineering

Module code: UBLLXR-15-2

Level: Level 5

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

College: Faculty of Environment & Technology

School: FET Dept of Architecture & Built Environ

Partner institutions: None

Field: Architecture and the Built Environment

Module type: Module

Pre-requisites: Product Design Studio 1 2023-24

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: 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.

Topics covered include:

Fundamental principles of Design Engineering:

The application of physical principals to product design.

Analysis of failure modes with a view to extending product lifespan.

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.

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 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.

Part 3: Teaching and learning methods

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.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Evaluate technical risks and address risk in design methodology

MO2 Consider and apply the appropriate mathematical and engineering principles to a particular design problem

MO3 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)

MO4 Apply a systematic approach to problem solving using appropriate design tools and visual/physical techniques (G08)

MO5 Constructively work in Teams or Groups (P01)

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ubllxr-15-2.html) via the following link <https://uwe.rl.talis.com/modules/ubllxr-15-2.html>

Part 4: Assessment

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

Summative Assessment:

50% of the module mark (Project is awarded through 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 module 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.

50% (Presentation) 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 an individual viva where each group member will articulate their depth of understanding and contribution towards the development of the final project.

Resit strategy

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. The project and the individual's understanding will be assessed through a short individual presentation supported by a written report (equivalent to 1,000 words) from which technical details and the design process can be assessed. Project Resit also includes an additional short written reflection on the importance of group work and the potential benefits that could have been achieved through better engagement in the group project.

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.

Assessment tasks:

Presentation (First Sit)

Description: Individual presentation

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Project (First Sit)

Description: Group project

Weighting: 50 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Presentation (Resit)

Description: Individual project presentation

Weighting: 50 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Project (Resit)

Description: Individual project report with an additional short written reflection on the importance of group work

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Product Design Technology [Frenchay] BSc (Hons) 2022-23

Product Design Technology {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons)
2021-22

Product Design Technology {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons)
2021-22

