



Module Specification

Engineering for Designers

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Part 1: Information

Module title: Engineering for Designers

Module code: UBLFS8-15-2

Level: Level 5

For implementation from: 2020-21

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Architecture and the Built Environment

Module type: Standard

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module is an introduction to mechanical engineering principles through applied mathematics, analytical reasoning, observation and physical prototyping.

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: 1. Introduction to Engineering:

An introduction to the relevance of engineering to the design process and the student's career.

2. Design Engineering product case studies:

Such as bicycles, mechanical and electromechanical products

3. Core Maths Skills

4. Force, Moment and Equilibrium:

Free body diagrams

5. Mechanisms:

Work, energy and power, Mechanisms Machines, transmissions, Mechanical elements including Springs.

6. Structures:

Direct Stress and Strain, Shear Stress and Torsion, Cantilevers and Beams.

Note: all elements are not weighted equally in study or assessment time.

The syllabus may change slightly from year to year to include all or some of the key subjects listed above in response to the needs of the students and specific project assignments in this and other modules in the programme. It may also include some of the following topics depending on the specific real world examples used to develop understanding of the engineering knowledge: Friction, Electricity, Ergonomics, Graphical methods, Centre of gravity and balance, Buckling. Pressure, Truss Frames.

The structure of this module is to apply the gained skills and knowledge throughout Level 2 in applied contextual themes.

Part 3: Teaching and learning methods

Teaching and learning methods: Teaching and Learning Strategy for this module is 'lectorial' based learning in which a topic lecture will introduce the students to the assigned or coming up exercises and/or project which supports and frames their acquisition of topic specific knowledge and skills.

The exercises and projects are designed to facilitate competency acquisition through the didactic and applied learning, building knowledge through the introduction of new subject matter and reinvestment of gained knowledge and skills. The tutorial portion of the studio 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 of twice the number of tutorial hours invested per week. Students will be expected to come prepared for the module sessions with in-process or completed work and supplies.

At times though the run students will be required to pre-read on topics and selected materials, research and orally present on the topic.

Projects and course work is assessed through viva (oral presentations) "pinup" project demonstrations in front of the students peers and tutors and written project submissions.

Feedback will be in the form of direct 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 assessable criteria and essential for progression through the curriculum.

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

Contact time: 36 hours

Assimilation and Skill Development: 52 hours

Project: 32 hours

Exam preparation: 30 hours

Total: 150 hours

Module Learning outcomes:

MO1 Consideration and apply the appropriate mathematical and engineering principles to a particular design problem.

MO2 Apply a systematic approach to problem solving using appropriate design tools and techniques

MO3 Evaluate technical risks and address risk in design methodology

MO4 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

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/ublfs8-15-2.html) via the following link <https://uwe.rl.talis.com/modules/ublfs8-15-2.html>

Part 4: Assessment

Assessment strategy: The assessment strategy in this standard module is based upon evaluations of the process and the outcomes of the completed project and a written exam.

Summative Assessment: Project evaluated on subject specific criteria clearly stated on each project brief at the outset of each project:

Project evaluated in both peer critiques (controlled condition evaluations) and direct submissions. These presentation critiques are held during term time and during the examination period. Typical presentations are 5 to 15 minutes in duration including the formal presentation and feedback from peers and tutors. [B]

Examination on design and analysis of mechanical structures and mechanisms [2 hours] [A].

An overall mark percentage of professionalism is allotted to assess aspects of participation and engagement [B].

Formative Assessment: Regular “in-process” critiques and one-to-one tutoring is given throughout the development process of the project.

Feedback: Peer and tutor feedback is provided during the development process of the project, during the project critiques.

Assessment components:

Examination (Online) - Component A (First Sit)

Description: Online Exam (24 hour window)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Project - Component B (First Sit)

Description: Individual Project

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Examination (Online) - Component A (Resit)

Description: Online Exam (24 hour window)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested:

Project - Component B (Resit)

Description: Individual Project

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Creative Product Design {Foundation} [Sep][FT][Frenchay][4yrs] BA (Hons) 2018-19

Product Design {Foundation} [Sep][FT][Frenchay][4yrs] BA (Hons) 2018-19

Product Design {Foundation} [Sep][SW][Frenchay][5yrs] BA (Hons) 2018-19

Creative Product Design {Foundation} [Sep][SW][Frenchay][5yrs] - Not Running BA (Hons) 2017-18