



## **Module Specification**

### **Mechanisms and Structures**

Version: 2025-26, v1.0, Approved

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## Part 1: Information

**Module title:** Mechanisms and Structures

**Module code:** UADBBC-30-1

**Level:** Level 4

**For implementation from:** 2025-26

**UWE credit rating:** 30

**ECTS credit rating:** 15

**College:** College of Arts, Technology and Environment

**School:** CATE School of Arts

**Partner institutions:** None

**Field:** Design

**Module type:** Module

**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 is a programme specific module for Product Design Technology BSc (Hons).

This module introduces the technical and theoretical understanding around mechanics and physics within the design process for product design technology.

**Features:** Not applicable

**Educational aims:** This module is an introduction to mechanical engineering principles through applied mathematics, analytical reasoning, observation & physical prototyping.

Students will develop an understanding of engineering practices that will support their working design practices.

Workshop skills and 3D digital modelling and analysis techniques are developed alongside knowledge of engineering science during the module.

Students will learn to identify technical risks and begin to learn how to mitigate the impacts of these risks.

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

Introduction to engineering

Design engineering product case studies

Core maths skills

Force, moment and equilibrium

Mechanisms, machines, work, energy and power, springs and pressure

Direct stress and strain, shear stress and torsion, cantilevers and beams, truss frames.

The syllabus may also include some of the following topics:

Friction, electricity, ergonomics, graphical methods, centre of gravity and balance, buckling.

### Part 3: Teaching and learning methods

**Teaching and learning methods:** The teaching and learning strategy for this module is studio/workshop project-based learning in which a topic demonstration 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 learning, building knowledge through the introduction of new subject matter and reinvestment of gained knowledge and skills. The studio/workshop 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.

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

The module is typically delivered via projects, seminars, group critiques, workshops, individual tutorials and independent study.

Teaching sessions in the module are aimed at building students' skills, knowledge and understanding of the different approaches to Product Design Technology principles.

Emphasis will be placed on establishing a meaningful relationship between conceptual and practical activities. Analytical, evaluative and planning skills will be supported through seminars/tutorials/individual critiques, in order to encourage students to adopt an ongoing engagement with ideas/processes/methods of production beyond the familiar. Critical engagement and reflection on ideas/practices examined within the module will be documented and presented for assessment in the supporting and development work.

Scheduled learning includes lectures, seminars, tutorials, project supervision, demonstration, workshops; fieldwork; external visits; supervised time in studio/workshop.

Students are required to develop a body of work representing their acquired design skills throughout this module and these will form a core part of the learning, teaching and assessment process. Students' portfolios can be hand and / or digital in format and should contain a range of content that includes but is not limited to; physical model making, 2D and 3D drawing, CAD and digital modelling in response to pre-defined project briefs.

The development of critical, analytical and evaluative skills is supported and encouraged through (for instance) the use of inclusive resources, discussion in group critiques and activities, and through individual tutorials. Students are encouraged and supported in the development of their visual, verbal and written communication skills through all aspects of the teaching and learning process and will have access to a range of Study Skills support available centrally.

Independent study/self-guided study includes hours engaged with creative, academic and technical development, visual and textual research, workshop activity and any learning via the VLE outside of taught sessions.

The reading and resource list for this module will be accessible via a live link on the VLE and will also be available via the module handbook and Tallis Library systems.

The reading and resource list is inclusive and accessible and has been designed to amplify a diverse range of critical and creative voices, ensuring representation across multiple perspectives and disciplines.

It is designed inspire curiosity and to support a broad range of Learners through the inclusion of source material across diverse formats, media and platforms; ensuring accessibility for all learning styles and needs.

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

**MO1** Employ effective research methods to explore and gather information related to specific areas of study.

**MO2** Evaluate information from various sources, identifying key ideas, and understanding different perspectives.

**MO3** Understanding the appropriate mathematical and engineering principles to a particular design problem.

**MO4** Recognising technical risks and ascertain possible risk mitigation methodology.

**Hours to be allocated:** 300

**Contact hours:**

Independent study/self-guided study = 228 hours

Face-to-face learning = 72 hours

**Reading list:** The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link

<https://rl.talis.com/3/uwe/lists/ED11F4FD-A658-941E-2A84-98340690F723.html?lang=en-GB&login=1>

## **Part 4: Assessment**

**Assessment strategy:** The assessment strategy of the programme that this module contributes to reflects the School of Art's philosophy which considers assessment to be an active part of the learning process; and is regarded as a tool for learning.

This module takes a programmatic approach to assessment. Summative assessment is via portfolio submission which includes a collection of related work developed over a period of time which may include aspects of drawing, writing and research, and a strong practical element.

This would include:

Project logs

Digital modelling

Reflective consideration of mathematical and engineering principles

Other product engineering principle methodologies.

Process documentation

Research and development work

Presentation of project work.

The portfolio assessment in this module is inclusive and is designed to foster and demonstrate the value of a process-centric approach to learning. The module will include a (regularly reviewed) combination of diverse formats and / or modes of Assessment (including physical / digital) and has been designed to offer students of all learning styles the maximum opportunity to demonstrate the skills, knowledge and experiences that they have gained throughout the module.

Within the submission students are expected to present evidence of work which demonstrates engagement with the minimum number of contact hours for the module, as well as the minimum number of independent study hours. The portfolio work will evidence personal developmental activities and assessment is designed to reduce issues of plagiarism.

Students will receive regular feedback formatively via midpoint group presentations as well as during group tutorials. This provides students with timely and detailed understanding of their progress and provides clear feed-forward guidance regarding future development. The formative feedback and summative assessment processes of this module are embedded into studio pedagogy and as such establish an authentic, inclusive approach to assessment that builds students' confidence as they progress.

Self and peer evaluation constitute an important part of formative feedback in this module and are embedded to facilitate the progression towards autonomous learning.

At Level 4 assessment is via pass/fail grading. This assessment structure is designed to enable students to achieve and evidence the learning outcomes of the module. Students receive personalised feedback against the module learning

outcomes. The module is assessed holistically.

Summative assessment feedback provides students with detailed understanding of their progress and achievement of the LO's and provides clear feed-forward guidance regarding future development. As part of the summative assessment process students are supported in developing individual 'Action Plans' based on their assessment feedback.

Students who do not pass at the first sit will be given a re-sit opportunity. The re-sit assessment requirements will be the same as the first sit.

**Assessment tasks:****Portfolio (First Sit)**

Description: Portfolio of Final Body of Work and supporting materials.

Weighting: 0 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

**Portfolio (Resit)**

Description: Portfolio of Final Body of Work and supporting materials.

Weighting: 0 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

**Part 5: Contributes towards**

This module contributes towards the following programmes of study:

Product Design Technology [Bower] BSc (Hons) 2025-26