



Programme Specification

Mechanical Engineering [Sep][PT][Frenchay][6yrs]

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Contents

Programme Specification	1
Section 1: Key Programme Details	2
Part A: Programme Information	2
Section 2: Programme Overview, Aims and Learning Outcomes	3
Part A: Programme Overview, Aims and Learning Outcomes	3
Part B: Programme Structure.....	6
Part C: Higher Education Achievement Record (HEAR) Synopsis	9
Part D: External Reference Points and Benchmarks	10
Part E: Regulations	10

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Mechanical Engineering [Sep][PT][Frenchay][6yrs]

Highest award: BEng (Hons) Mechanical Engineering

Interim award: BEng Mechanical Engineering

Interim award: DipHE Mechanical Engineering

Interim award: CertHE Mechanical Engineering

Awarding institution: UWE Bristol

Affiliated institutions: Not applicable

Teaching institutions: UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: No

Credit recognition: No

Department responsible for the programme: FET Dept of Engineering Design & Mathematics, Faculty of Environment & Technology

Contributing departments: Not applicable

Professional, statutory or regulatory bodies:

Institution of Mechanical Engineers (IMechE)

Apprenticeship: Not applicable

Mode of delivery: Part-time

Entry requirements: For the current entry requirements see the UWE public website

For implementation from: 01 September 2020

Programme code: H30U13-SEP-PT-FR-H301

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The curriculum is designed for students seeking an engineering education closely aligned to engineering practice. Technical knowledge, engineering practice, business awareness and sustainability are integrated through projects and revisited to produce confident graduates able to apply their skills to novel situations and create engineering solutions that benefit society.

Professional development is placed at the heart of the curriculum. From day one, students are taken on a journey from student engineer to graduate engineer, preparing them for life as an engineering professional. Students will identify, develop and demonstrate competencies expected of a professional engineer in the workplace. Projects and activities, embedded throughout the curriculum, are designed to develop the engineering habits of mind such as: Problem-finding, Problem-solving, Visualising, Systems Thinking, Improving, and Adapting. Foundation principles of engineering science, skills and practice are integrated throughout all years of study.

Mechanical engineers are employed throughout the engineering sector in the creation, maintenance and improvement of engineering operations. Consequently mechanical engineering graduates need to be able to integrate engineering knowledge skills from across engineering and be able to be an effective member of a multidisciplinary team. Mechanical engineering topics of engineering analysis, design, structures, stress analysis, dynamics, materials, thermofluids, systems and manufacturing are developed throughout the core and taken to an advanced level in the optional modules. Sufficient electrical and electronic content has been included in the core programme for the study of engineering problems involving electromechanical and mechatronic systems with the option of further studying advanced artefacts.

The ability to work in multidisciplinary teams on projects that require a broader view of the role of engineering in industry and society is developed through the core programme using project weeks to bring students together in problem finding and solution spaces where students are able to interact with each other, academics and external practitioners.

The integration of knowledge, skills and practice allows the tackling of real engineering challenges and encourage students to engage with the wider role that mechanical engineers and specifically engineering habits of mind can play in tackling global challenges. This is an accessible and modern engineering curriculum designed to attract students from diverse backgrounds able to see the future role of engineering in industry and society.

The design of the programme, and in particular the focus on the development of engineering habits and behaviours required by engineering organisations of graduate engineers is intended to ensure that the Educational Aims and Learning Outcomes are relevant to full-time learners with limited or no prior experience of the engineering profession and to those learners who are based in industry either as degree apprentices or as experienced engineers working towards higher academic and professional qualifications.

Educational Aims: Be able to work as a graduate mechanical engineer across the engineering sector able to work as an effective member of a multidisciplinary team.

Have acquired the knowledge and understanding of scientific principles and methods necessary to underpin an education in engineering. The programme will provide insight into, and practical skills in, the creation and maintenance of complex engineering products and will explore the environmental impact of engineering.

Have demonstrated an ability to integrate their knowledge and understanding of core subject material in order to solve a substantial range of engineering problems, including ones of a complex nature either individually or as part of a team.

Have developed and demonstrated understanding of the competencies and social responsibilities required by a professional engineer in the workplace and society. Activities to scaffold this development are embedded throughout the core curriculum to develop the engineering habits of mind. As a consequence, students will be able to critically appraise the value and effectiveness of future engineering innovations in the field in terms of business improvement and environmental sustainability.

Have the requisite academic knowledge, skills and preparation for progression to study for higher degrees in appropriate engineering disciplines.

Be equipped to make an early contribution to the success of an engineering organization having demonstrated strategic management and leadership skills within the context of a significant innovative engineering project requiring technical and business expertise.

Programme Learning Outcomes:

On successful completion of this programme graduates will achieve the following learning outcomes.

Programme Learning Outcomes

- PO1. Apply established and novel mechanical analysis concepts to solve engineering problems involving design, operations and manufacture that arise across mechanical engineering applications.
- PO2. Use systems incorporating digital hardware, software, communication, processing algorithms, interfacing circuits and parameter sensing and actuating devices.
- PO3. Model mechanical engineering systems and be able to specify and assess technical designs.
- PO4. Understand the manufacturing, financial and marketing implications of design proposals.
- PO5. Identify the links between design, manufacturing and production management and assess the capabilities of manufacturing systems software used in the design, maintenance and improvement of manufacturing facilities.

- PO6. Communicate and operate effectively either as individuals or as members of a team.
- PO7. Pursue independent study, research and investigations to undertake enquiry into novel and unfamiliar concepts and implement change in an engineering environment.
- PO8. Make considered judgements and decisions on complex engineering issues in which not all facts and consequences are accurately known.

Part B: Programme Structure

Year 1

Year 1 Compulsory Modules

The student must take 30 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMFKS-30-1	Engineering Practice 1 2020-21	30

Year 2

The student must take 75 credits from the modules in Year 2.

Year 2 Compulsory Modules

The student must take 75 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMFPS-15-1	Applied Electrical Technology 2021-22	15
UFMFMS-30-1	Dynamics Modelling and Simulation 2021-22	30
UFMFLS-30-1	Solid Mechanics, Materials and Manufacturing 2021-22	30

Year 3

The student must take 75 credits from the modules in Year 3.

Year 3 Compulsory Modules

The student must take 75 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMFL8-15-2	Dynamics 2022-23	15
UFMFSS-30-2	Structural Mechanics 2022-23	30
UFMFUS-15-2	Systems Design 2022-23	15
UFMFNS-15-1	Thermofluids 2022-23	15

Year 4

The student must take 75 credits from the modules in Year 4.

Year 4 Compulsory Modules

The student must take 60 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMFTS-30-2	Applied Thermofluids 2023-24	30
UFMFQS-15-2	Engineering Practice 2 2023-24	15
UFMFRS-15-2	Engineering Research 2023-24	15

Year 4 Optional Modules

The student must select 15 credits from Optional Modules.

Students may select a maximum of 15 credits from each of the following combinations:

UFMFXJ-15-3 Vibrational Dynamics OR UFMFVS-15-3 Vehicle Dynamics

UFMFSL-15-3 Integrated Electromechanical Systems OR UFMFYJ-15-3 Control Engineering

Module Code	Module Title	Credit
UFMFYJ-15-3	Control Engineering 2023-24	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2023-24	15

UFMFVS-15-3	Vehicle Dynamics 2023-24	15
UFMFJ-15-3	Vibrational Dynamics 2023-24	15

Year 5

The student must take 75 credits from the modules in Year 5.

Year 5 Compulsory Modules

The student must take 15 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMFV8-15-3	Group Design and Integration Project 2024-25	15

Year 5 Core Optional Modules

The student must take 15 credits from Core Optional Modules

Module Code	Module Title	Credit
UFMF89-15-3	Industrial Placement 2024-25	15
UFMFNQ-15-3	Professionalism for Engineers 2024-25	15

Year 5 Optional Modules

The student must take 45 credits from module in Optional Modules.

Students may select a maximum of 15 credits from each of the following combinations:

UFMFU6-15-3 Composite Engineering OR UFMF7K-15-3 Materials and Structures for Special Applications

UFMFP9-15-3 Mechanics of Materials OR UFMFYs-15-3 Advanced Manufacturing Technology

UFMF7T-15-3 Advanced Heat Transfer OR UFMFTA-15-3 Thermofluid Systems

Module Code	Module Title	Credit
UFMF7T-15-3	Advanced Heat Transfer 2024-25	15

UFMFYS-15-3	Advanced Manufacturing Technology 2024-25	15
UFMFU6-15-3	Composite Engineering 2024-25	15
UFMFWS-15-3	Emerging Automotive Technology 1 2024-25	15
UFMFCL-15-3	Engineering and Society 2024-25	15
UFMF7K-15-3	Materials and Structures for Special Applications 2024-25	15
UFMFP9-15-3	Mechanics of Materials 2024-25	15
UFMFTA-15-3	Thermofluid Systems 2024-25	15

Year 6

The student must take 30 credits from the modules in Year 6.

Year 6 Compulsory Modules

The student must take 30 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMFX8-30-3	Engineering Project 2025-26	30

Part C: Higher Education Achievement Record (HEAR) Synopsis

Graduates of this programme will be equipped with a broad understanding of mechanical analysis and design, combined with knowledge of engineering practice, information technology and project management.

The programme produces graduates with a broad-based 'systems' approach to engineering problem solving. Graduates from this programme will be equipped to work in multi-disciplinary teams, able to critically appraise existing ideas and practice and produce creative solutions to engineering problems.

Part D: External Reference Points and Benchmarks

QAA UK Quality Code for HE

Framework for higher education qualifications (FHEQ)

Subject benchmark statement for Higher Education qualifications in engineering (Feb 2015)

Strategy 2030

University policies

Staff research projects

Relevant PSRB requirements: AHEP3

Industrial Advisory Board

Part E: Regulations

B: Approved variant to University Academic Regulations and Procedures

The following variant regulations have been approved by the University Regulations to comply with conditions set out by Engineering Council UK.

The degree classification for the 360 credit honours degree BEng (Hons) Mechanical Engineering (or 480 credit honours degree with an integrated foundation year) is based upon

the best marks for 100 credits at level 6 and the best marks achieved for the next 100 credits at level 5 or above.

Marks achieved for the 100 level 6 credits are weighted three times the value of the marks for the 100 credits at level 5 or above.

The calculation at level 6 must always use the full credit and mark for the level 6 project module UFMFX8-30-3 followed by the best marks associated with the remaining level 6 credits.

Where the credit size of the best marks associated with the remaining level 6 modules would give a credit total greater than 100, only the relevant portion of credit is counted. The unused credit may be counted towards the set of best marks at level

5 or above.

The classification method for direct entrants to the BEng in Mechanical Engineering will include the marks and whole credit for the project.

Condoned Credit

Approved to variant University Academic Regulations and Procedures.

The following variant regulation for condoned credit (E4) applies to students on this award which has been accredited by a PSRB that comes under the auspices of Engineering Council UK.

The variant applied to Level 4 September 2020 intake onwards.

The permitted maximum condoned credit is 30 credits for a Bachelors or Integrated Masters degree and a maximum of 20 credits in a Masters degree.

The awarding of condoned credit may be considered for an overall module mark in the range 30% to 39%.

As a consequence Engineering Council UK regulations about the offer of excused credit for modules critical to the awarding of accreditation, excused credit will not be available on this award.