



Programme Specification

Mechanical Engineering {Apprenticeship-GlosColl} {Top-Up} [Frenchay]

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Section 1: Key Programme Details

Part A: Programme Information

Programme title: Mechanical Engineering {Apprenticeship-GlosColl} {Top-Up}
[Frenchay]

Highest award: BEng (Hons) Mechanical Engineering

Interim award: BEng 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: ST0027

Mode of delivery: Full-time

Entry requirements: The University's Standard Entry Requirements

For implementation from: 01 September 2020

Programme code: H30T43

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

The student must take 75 credits from the modules in Year 1.

Year 1 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 2023-24	15

Year 1 Optional Modules

Student must choose 60 credits, including 15 credits in Group A, and maximum of 45 credits from Group B, C, D and/or E.

Year 1 Optional Modules Group A

The student must take 15 credits from the modules in Group A.

Module Code	Module Title	Credit
UFMF89-15-3	Industrial Placement 2023-24	15
UFMFNQ-15-3	Professionalism for Engineers 2023-24	15

Year 1 Optional Modules Group B

The student must take between 0 and 15 credits from the modules in Group B.

Module Code	Module Title	Credit
UFMFU6-15-3	Composite Engineering 2023-24	15
UFMF7K-15-3	Materials and Structures for Special Applications 2023-24	15

Year 1 Optional Modules Group C

The student must take between 0 and 15 credits from the modules in Group C.

Module Code	Module Title	Credit
UFMF7T-15-3	Advanced Heat Transfer 2023-24	15
UFMFTA-15-3	Thermofluid Systems 2023-24	15

Year 1 Optional Modules Group D

The student must take between 0 and 15 credits from the modules in Group D.

Module Code	Module Title	Credit
UFMFYS-15-3	Advanced Manufacturing Technology 2023-24	15
UFMFP9-15-3	Mechanics of Materials 2023-24	15

Year 1 Optional Modules Group E

The student must take between 0 and 15 credits from the modules in Group E.

Module Code	Module Title	Credit
UFMFWS-15-3	Emerging Automotive Technology 1 2023-24	15

Year 2

The student must take 45 credits from the modules in Year 2.

Year 2 Compulsory Modules

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

Module Code	Module Title	Credit
UFMFX8-30-3	Engineering Project 2024-25	30

Year 2 Optional Modules

Student must choose a maximum of 15 credits from Group F or G.

Year 2 Optional Modules Group F

The student must take between 0 and 15 credits from the modules in Group F.

Module Code	Module Title	Credit
UFMFVS-15-3	Vehicle Dynamics 2024-25	15
UFMFJ-15-3	Vibrational Dynamics 2024-25	15

Year 2 Optional Modules Group G

The student must take between 0 and 15 credits from the modules in Group G.

Module Code	Module Title	Credit
UFMFYJ-15-3	Control Engineering 2024-25	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2024-25	15

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

From September 2020 intake onwards to comply with conditions set out by Engineering Council UK we will only be able to condone a maximum of 30 credits.