



Programme Specification

Electro-mechanical Engineering {Apprenticeship-UCW}[UCW]

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Section 1: Key Programme Details

Part A: Programme Information

Programme title: Electro-mechanical Engineering {Apprenticeship-UCW}[UCW]

Highest award: BEng (Hons) Electro-Mechanical Engineering

Interim award: BEng Electro-mechanical Engineering

Interim award: DipHE Electro-mechanical Engineering

Interim award: CertHE Electro-mechanical Engineering

Awarding institution: UWE Bristol

Affiliated institutions: University Centre Weston

Teaching institutions: University Centre Weston, 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: Not applicable

Apprenticeship: ST0025

Mode of delivery: Full-time 4yrs, Full-time 5yrs

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

For implementation from: 01 September 2023

Programme code: H36E00

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.

Electro-mechanical engineers are employed throughout the engineering sector in the creation, maintenance and improvement of engineering operations. Consequently Electro-mechanical 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. Electro-mechanical topics of engineering analysis, design, electrical and electronics, mechanical systems and manufacturing are developed throughout the core and taken to an advanced level. Sufficient electrical and electronic content has been included in the core programme for the study of engineering problems involving electro-mechanical and mechatronic systems.

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, supported by projects 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, encouraging students to engage with the wider role of an engineer 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.

Educational Aims: As a result of successful completion of this programme, a student will:

be able to work as an effective graduate Electro-mechanical engineer across the engineering sector within 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 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 range of engineering problems 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.

Programme Learning Outcomes:

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

Programme Learning Outcomes

- PO1. Research, apply and analyse concepts to solve engineering problems involving design, operations and manufacture that arise across engineering applications including new and emerging technologies.
- PO2. Use systems incorporating digital hardware, software, communication, processing algorithms, interfacing circuits and parameter sensing and actuating devices to solve engineering problems.
- PO3. Model Electro-mechanical engineering systems and be able to specify and assess technical designs.
- PO4. Understand the financial, environmental and marketing implications of design proposals.
- PO5. Use a systems approach to establish rigorous solutions that are fit for purpose and consider all aspects of a problem including production, operation, maintenance, sustainability and disposal.
- PO6. Communicate and operate effectively, professionally and ethically 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. Apply problem solving techniques and 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**

Students on the four and five year programme must take 120 credits from the modules in Year 1.

Year 1 is delivered at UCW.

Year 1 Compulsory Modules (Four and Five Year Students)

Students on the four and five year programmes must take 120 credits from the modules in Compulsory Modules (Four and Five Year Students).

Module Code	Module Title	Credit
UFME3J-15-1	Fundamentals of Electrical and Electronics Principles 2023-24	15
UFME3L-30-1	Fundamentals of Engineering Mathematics and Modelling 2023-24	30
UFME3K-15-1	Fundamentals of Materials for Manufacturing 2023-24	15
UFME3H-15-1	Fundamentals of Mechanical Principles 2023-24	15
UFME3M-15-1	Principles of Programming for Engineers 2023-24	15
UFME3N-30-1	Professional Practice for Engineers 2023-24	30

Year 2

Four year students must take 90 credits from the modules in Year 2.

Five year students must take 60 credits from the modules in Year 2.

Year 2 is delivered at UCW.

Year 2 Compulsory Modules (Five year students)

Students on the five year programme must take 60 credits from the modules in Compulsory Modules (Five year students).

Module Code	Module Title	Credit
UFME5X-15-2	Engineering Dynamics 2024-25	15
UFME63-30-2	Signal Processing and Control 2024-25	30
UFME7D-15-2	Structural Mechanics and its Applications 2024-25	15

Year 2 Compulsory modules (Four year students)

Students on the four year programme must take 90 credits from the modules in Compulsory modules (Four year students).

Module Code	Module Title	Credit
UFME76-15-2	Electro-mechanical Systems 2024-25	15
UFME5X-15-2	Engineering Dynamics 2024-25	15
UFME63-30-2	Signal Processing and Control 2024-25	30
UFME7D-15-2	Structural Mechanics and its Applications 2024-25	15
UFME79-15-2	Thermodynamics and Fluid Dynamics 2024- 25	15

Year 3

Four year students must take 75 credits from the modules in Year 3. In Year 3 Level 5 modules are delivered at UCW and Level 6 modules are delivered at UWE.

Five year students must take 60 credits from the modules in Year 3. Year 3 is delivered at UCW.

Year 3 Compulsory Modules (Five year students)

Students on the five year programme must take 60 credits from the modules in Compulsory Modules (Five year students).

Module Code	Module Title	Credit
UFME76-15-2	Electro-mechanical Systems 2025-26	15
UFME78-30-2	Engineering Research and Collaborative Project 2025-26	30
UFME79-15-2	Thermodynamics and Fluid Dynamics 2025- 26	15

Year 3 Compulsory Modules (Four year students)

Students on the four year programme must take 75 credits from the modules in Compulsory Modules.

Module Code	Module Title	Credit
UFMFYJ-15-3	Control Engineering 2025-26	15

UFME78-30-2	Engineering Research and Collaborative Project 2025-26	30
UFMFV8-15-3	Group Design and Integration Project 2025-26	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2025-26	15

Year 4

Four year students must take 75 credits from the modules in Year 4.

Five year students must take 60 credits from the modules in Year 4.

Year 4 is delivered at UWE.

Year 4 Compulsory Modules (Five year students)

Students on the Five year programme must take 60 credits from the modules in Compulsory Modules (Five year students).

Module Code	Module Title	Credit
UFMFYS-15-3	Advanced Manufacturing Technology 2026-27	15
UFMFYJ-15-3	Control Engineering 2026-27	15
UFMFV8-15-3	Group Design and Integration Project 2026-27	15
UFMFSL-15-3	Integrated Electro-Mechanical Systems 2026-27	15

Year 4 Compulsory Modules (Four year students)

Students on the Four year programme must take 75 credits from the modules in Compulsory Modules (Four year students).

Module Code	Module Title	Credit
UFMFYS-15-3	Advanced Manufacturing Technology 2026-27	15

UFMFU6-15-3	Composite Engineering 2026-27	15
UFMFD7-15-3	Energy Technologies 2026-27	15
UFMFX8-30-3	Engineering Project 2026-27	30

Year 5

Five year students must take 60 credits from the modules in Year 5.

Year 5 is delivered at UWE.

Year 5 Compulsory Modules (Five year students)

Students on the Five year programme must take 60 credits from the modules in Compulsory Modules (Five year students).

Module Code	Module Title	Credit
UFMFU6-15-3	Composite Engineering 2027-28	15
UFMFD7-15-3	Energy Technologies 2027-28	15
UFMFX8-30-3	Engineering Project 2027-28	30

Part C: Higher Education Achievement Record (HEAR) Synopsis

Graduates of this programme will be equipped with a broad understanding of Electro-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
(October 2019)

Strategy 2030

University policies

Relevant PSRB requirements: AHEP4

Level 6 Degree Apprenticeship standard ST0025 Manufacturing Engineer

Industrial Advisory Board/Industry Programme Development Collaboration

Part E: Regulations

A: Approved to University Academic Regulations and Procedures