Programme Specification

Electrical and Electronic Engineering [Frenchay]

Version: 2026-27, v1.0, Validated

Contents

Section 1: Key Programme Details

Part A: Programme Information

Programme title: Electrical and Electronic Engineering [Frenchay]

Highest award: MSc Electrical and Electronic Engineering

Default award: PGCert Electrical and Electronic Engineering [Frenchay]

Default award: PGDip Electrical and Electronic Engineering [Frenchay]

Awarding institution: UWE Bristol

Teaching institutions: UWE Bristol

Study abroad: No

Year abroad: No

Sandwich year: No

Credit recognition: No

School responsible for the programme: CATE School of Engineering, College of Arts, Technology and Environment

Professional, statutory or regulatory bodies: Not applicable

Modes of delivery: Full-time

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

For implementation from: 01 September 2026

Programme code: H65R12

Section 2: Programme Overview, Aims and Learning Outcomes

Part A: Programme Overview, Aims and Learning Outcomes

Overview: The MSc in Electrical and Electronic Engineering is a forward-thinking postgraduate programme designed for students who already hold an undergraduate degree in engineering and are seeking to advance their technical expertise, engage with emerging technologies, and deepen their professional competence. Whether entering from industry or continuing directly from undergraduate study, students will be equipped to address complex engineering challenges across a range of domains central to modern society.

The curriculum offers a strong balance between advanced theory and hands-on application. Students will engage with contemporary modules such as:

Smart Grids

Mixed-Signal ASIC Design

Internet of Things (IoT) with Applications

Radio Frequency and Microwave Communication Systems

Applications of Artificial Intelligence

Advanced Mechatronics

Enterprise and Innovation

Individual MSc Project Module

These modules reflect the evolving landscape of electrical and electronic engineering and provide depth in areas critical to future digital, sustainable, and intelligent infrastructure. The Project Module enables students to undertake a substantial, independent research or development project, applying advanced methods to real-world problems, often with industry relevance.

The programme supports students in meeting the academic requirements for

professional registration as a Chartered Engineer (CEng), offering partial fulfilment of UK-SPEC competences at Level 7. It supports advanced development in:

Critical thinking and problem-solving

Research methodology and data analysis

Ethical and sustainable engineering practice

Innovation and creativity in systems design

Effective communication for technical and non-technical audiences

Students will be encouraged to approach engineering with a systems perspective and to work effectively in multidisciplinary teams, reflecting real-world engineering practice. Through design-led thinking, practical experimentation, modelling, simulation, and analytical investigation, students will explore how to create engineering solutions that address the needs of society and industry.

The programme places particular emphasis on developing engineering habits of mind, such as:
Problem-finding, problem-solving, systems thinking, visualising, adapting, and improving. These are cultivated through project-based learning, peer collaboration, and engagement with academic and industry experts.

By the end of the programme, graduates will be equipped with the advanced knowledge and practical skills required to take on technical leadership roles across a wide range of sectors. These may include energy systems, microelectronics, telecommunications, embedded systems, smart infrastructure, and emerging areas where AI and connectivity are transforming engineering practice.

This MSc is a modern, globally relevant qualification that reflects the digital, connected, and sustainable future of engineering. It is designed to attract a diverse

cohort of students who are committed to pushing the boundaries of technology and contributing to a more innovative, efficient, and equitable engineering profession.

Features of the programme: Integrated Learning Framework and use of problem-based learning with deep technical understanding.

Industry-informed curriculum that provides depth and breadth across.

Structured development of advanced technical and professional competencies to support the progression from graduate engineer to expert practitioner or technical leader.

Professional and personal development is embedded throughout all levels of the programme.

Interdisciplinary projects.

Real engineering problems in core curriculum where students can explore industrial, environmental and societal impact of discipline.

Educational Aims: To be able to operate as an advanced electrical and electronic engineering professional across diverse sectors, contributing effectively to multidisciplinary teams and leading technical initiatives.

To have deepened their understanding of advanced scientific and engineering principles, methods, and technologies that underpin modern electrical and electronic systems.

To be able to apply specialised knowledge and systems thinking to the design, development, and optimisation of complex engineering solutions, while critically evaluating their environmental, ethical, and societal impacts.

To have demonstrated the ability to integrate and apply advanced concepts across a broad range of subject areas in order to solve technically complex and novel

engineering challenges.

To possess a critical understanding of the professional competencies, ethical considerations, and global responsibilities of a Chartered Engineer, including the ability to assess the future impact and value of emerging technologies in the field.

To have acquired the academic foundation and research capability required to pursue further study or doctoral-level research in specialised areas of electrical and electronic engineering.

Programme Learning Outcomes:

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

Programme Learning Outcomes

PO1. Apply advanced mathematics, scientific methods, and electrical and electronic engineering principles to solve complex problems, using up-to-date knowledge and awareness of emerging developments.

PO2. Formulate and analyse complex electrical and electronic engineering problems using first-principles reasoning and engineering judgement, evaluating available data and recognising the limitations of analytical methods

PO3. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed.

PO4. Select and critically evaluate technical literature and other sources of information to solve complex problems.

PO5. Design original solutions to complex problems that address societal, user, environmental and commercial needs while complying with relevant standards and professional responsibilities

PO6. Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life-cycle of a product or process) and minimise adverse impacts.

PO7. Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance.

PO8. Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used.

Assessment strategy: The assessment strategy for the MSc Electrical and Electronic Engineering has been designed to reflect the expectations of postgraduate-level learning, as well as the professional competencies required by the Institution of Engineering and Technology (IET) and UK-SPEC (AHEP4) standards. At this level, assessment is not only a measure of subject mastery, but also a tool for encouraging deeper learning, critical thinking, and independent scholarly development.

The programme incorporates a diverse range of assessment methods to ensure that students can demonstrate their advanced knowledge, professional competencies, and technical capabilities. Assessments are aligned with learning outcomes in a way that ensures authenticity, academic rigour, and relevance to modern engineering practice.

Authentic and Applied Assessment
While traditional written examinations continue to play a role in validating individual learning, the MSc programme places increased emphasis on assessment modes that reflect real-world engineering tasks. These include:

Open-book and scenario-based exams, encouraging application of theoretical knowledge to complex, multi-faceted problems;

Design reports and feasibility studies, linked to laboratory or simulation-based tasks;

Computer-based assessments, particularly in modules involving modelling, simulation, signal processing or control systems;

Research-led technical reports, where students synthesise academic and industrial literature to inform engineering decision-making;

Individual and group project presentations, assessing communication, teamwork, and problem-solving;

Portfolio-based assessments and reflective writing.

These modes allow students to demonstrate their ability to integrate knowledge across modules, justify technical choices, and evaluate the societal and environmental impact of engineering solutions.

Progressive and Scaffolded Learning

As postgraduate learners often come with varied academic and professional backgrounds, the assessment strategy is designed to be both inclusive and developmental. Assessments are scaffolded to support students in adapting to UK academic conventions, developing high-level analytical skills, and becoming increasingly independent in their approach to problem-solving and research.

The programme makes use of assessment points based on the new university's programme assessment strategy, where assessment takes a programmatic approach and timely formative feedback is provided. Similarly, the MSc Project provides the opportunity for students to demonstrate the culmination of their learning through a substantial piece of independent, supervised work — often linked to real-world problems, industrial contexts, or research.

Alignment with Professional Standards
The assessment strategy remains closely aligned with the requirements of the IET and Engineering Council. It ensures that:

Students can provide verifiable evidence of individual achievement;

Technical, ethical, and societal dimensions of engineering are appropriately assessed;

Assessment outcomes contribute to graduate preparedness for professional

registration and employment in diverse engineering sectors.

By balancing rigour, authenticity, and inclusivity, the assessment approach supports the development of well-rounded, reflective, and highly capable engineering professionals.

Student support: Espresso Engineering and Espresso Maths drop-in support stations.

Personality and professional strengths finding activity at start of programme.

Mathematics diagnostic testing and follow-up interventions.

Development of group work skills and attributes.

Academic mentors to provide continuity of support to SpLD students.

Video capture of course content delivery.

E-assessments for rapid feedback in multiple modules.

Students can explore industrial, environmental and societal impact of discipline.

Mathematics skills aligned taught in engineering context.

Part B: Programme Structure

Year 1

Full time students must take 180 credits from the modules in Year 1.

Students will be required to complete all compulsory modules in addition to two optional modules, one selected from each semester, thereby achieving a total of 180 credits.

Year 1 Compulsory Modules (Full Time)
Full time students must take 150 credits from the modules in Year 1

Module Code	Module Title	Credit
UFMEBJ-30-M	Mixed-Signal ASIC Design 2026-27	30
UFMEBK-30-M	Smart Grids 2026-27	30
UFMEBL-30-M	Internet of Things (IoT) with Applications 2026-27	30
UFMEBQ-60-M	Project Module 2026-27	60

Year 1 Optional Modules (Full Time) Group A

Module Code	Module Title	Credit
UFME7F-15-M	Advanced Control and Dynamics 2026-27	15
UFMEBM-15-M	Radio Frequency and Microwave Communication Systems 2026-27	15
USSJM6-15-M	Enterprise and Innovation 2026-27	15

Year 1 Optional Modules (Full Time) Group B

Module Code	Module Title	Credit
UFMEBX-15-M	Applications of Artificial Intelligence 2026-27	15
UFMFTL-15-M	Advanced Mechatronics 2026-27	15

Part C: Higher Education Achievement Record (HEAR) Synopsis

Graduates of this programme will be equipped with a comprehensive understanding of electrical and electronic principles, combined with knowledge of engineering practice, digital systems, and project management.

The programme develops graduates with a broad-based, systems-oriented approach to solving complex engineering challenges. They will be well prepared to work effectively in multidisciplinary teams, capable of critically evaluating existing technologies and methodologies and applying creative, evidence-based solutions to real-world engineering problems.

Part D: External Reference Points and Benchmarks

Description of how the following reference points and benchmarks have been used in the design of the programme:

QAA UK Quality Code for HE (October 2019)

Framework for higher education qualifications (FHEQ)

Subject benchmark statement for Higher Education qualifications in engineering (October 2019)

Strategy 2030

University policies

Staff research projects

IET requirements: AHEP4

Industrial Advisory Board

The learning outcomes required by the Engineering Council UK are mandatory for accredited engineering programmes. The specific outcomes are derived from the requirements for electronic engineering described in the IET Learning Outcomes Handbook for BEng programmes. There are constraints from IET that have been taken into account, for example a suitable amount of an acceptable form of controlled assessment.

The modules have been designed to ensure adequate and appropriate coverage of these outcomes across the levels of study.

SEEC level descriptors have informed the design of the assessment of the learning outcomes.

University strategies and policies:
The curriculum has been carefully designed from the outset to reflect current best practices in engineering education, with a strong emphasis on advanced technical content and increased laboratory engagement. This approach ensures a rich and immersive student experience, aligned to the diverse professional and academic pathways that MSc graduates are likely to pursue.

Employer interaction and feedback: The department works with a number of industrial partners through two consortia and an industrial liaison panel. Feedback from employers during visits to placement students has also has also helped inform this revised programme. This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of individual modules can be found in module specifications, available on the university's website.

Part E: Regulations
Approved to the University Regulations and Procedures.

The PSRB requirements below are permitted within the regulations.

The following requirements apply to awards which have been accredited by a PSRB that comes under the auspices of the Engineering Council UK:
- The permitted maximum compensated credit is 30 credits for a Bachelors or Integrated Masters degree, and a maximum of 20 credits in a Masters degree.
- The awarding of compensated credit may be considered for an overall module

mark in the range of 30% to 39% for Levels 4-6 and 40%-49% for Level 7.

- Major individual and group-based project modules must not be compensated.