



## SECTION 1: KEY PROGRAMME DETAILS

This section provides students with key details about their programme.

PROGRAMME INFORMATION	
<b>Final Award Title</b>	BEng (Hons) Electronic Engineering
<b>Default Award Title (Exit Award)</b>	N/A
<b>Interim Award Titles (Exit Awards)</b>	BEng Electronic Engineering DIPHE Electronic Engineering CERTHE Electronic Engineering
<b>Awarding Institution</b>	UWE Bristol
<b>Teaching Institutions</b>	None
<b>Partner Institutions</b>	None
<b>Delivery Locations</b>	Frenchay Campus
<b>Study Abroad / Exchange / Credit Recognition</b>	N/A
<b>Faculty Responsible For Programme</b>	Environment and Technology
<b>Department Responsible For Programme</b>	Engineering and Design
<b>Professional Statutory or Regulatory Body (PSRB) Links</b>	Institution of Engineering and Technology (IET)
<b>Apprenticeship</b>	N/A
<b>Mode of Delivery</b>	FT, SW, with foundation year
<b>Entry Requirements</b>	The University's Standard Entry Requirements  Tariff points as appropriate for the year of entry - up to date requirements are available through the <a href="#">courses database</a> .
<b>For Implementation From</b>	Implementation from September 2020 <i>Include teaching out plan</i>
<b>Programme Codes</b>	FOR QUALITY ENHANCEMENT TEAM TO COMPLETE ISIS: H61E <i>QET to add ISIS, UCAS, JACS/HECOS, SLC codes</i>

<b>PART B: FOR STUDENT AND ACADEMIC SERVICES COMPLETION ONLY</b>	
<b>First UVP Approval Date</b>	<b>Date of first UVP approval</b>
<b>Date of Last Revalidation (through Programme Enhancement Review)</b>	<b>Dates of subsequent PERs and revalidations</b>
<b>Next Programme Enhancement Review Date</b>	<b>Academic year in which next Programme Enhancement Review due (6 years from initial approval or last PER)</b>

## SECTION 2: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES

This section provides students with an overview of the programme, its aims and its learning outcomes. It sets out what prospective and registered students can expect to know, understand and be able to do on successful completion of the programme.

Please write this section in the first person, addressing your prospective students.

### **PART A: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES**

#### **1. (Programme) Overview (c. 400 words)**

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.

The programme is designed to provide the balance of theoretical and practical understanding needed to meet the demands of the electronic engineering industry for engineering practitioners, and in particular to meet the requirements for professional accreditation in partial fulfilment of CEng. Furthermore, it caters for students with both industrial and/or academic backgrounds, to develop problem solving skills and be able to demonstrate leadership in a number of engineering settings.

The Electronic Engineering programme produces graduates with a wide range of expertise relevant to the electronics industry. Electronic engineers are employed throughout the engineering sector in the creation, maintenance and improvement of engineering operations. Consequently, Electronic 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. The programme covers a broad range of disciplines such as digital and analogue circuit design, power electronics, control, signal processing and project management. A number of optional modules provide a deeper level of learning into more advanced and state of the art technologies. As we move closer to a more digitally connected network of systems and devices, this programme allows students to develop expertise particularly in system design, microprocessor hardware/software design and simulation and modeling techniques.

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 in a range of engineering fields.

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

The Foundation Year entry route provides the opportunity for students to enter the programme from an academic background that is different to that normally required for the study of engineering undergraduate programmes.

**PART A: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES****2. Educational Aims (c. 4-6 aims)**

On successful completion of this programme students will

1. be able to work as a graduate electronics engineer across the engineering sector as an effective member of a multidisciplinary team.
2. have acquired the knowledge and understanding of scientific principles and methods necessary to underpin an education in engineering.
3. be able to apply their engineering knowledge to develop and maintain complex engineering products and explore the environmental impact of engineering.
4. have demonstrated an ability to integrate knowledge and understanding of core subject material in order to solve a substantial range of engineering problems, including ones of a complex nature.
5. understand the competencies and social responsibilities of a professional engineer and be able to critically appraise the value and effectiveness of future engineering innovations in the field.
6. have the requisite academic knowledge, skills and preparation to study for higher degrees in appropriate engineering disciplines.

**3. Programme Learning Outcomes (c. 6-8 outcomes)****Programme (Learning) Outcomes (POs)**

No.	PO Text
PO1	Apply scientific and analytical methods to solve engineering problems involving design, evaluation and manufacture across electrical and electronic engineering applications.
PO2	Use systems that incorporate digital hardware, algorithms, interfacing circuits and communication, sensing and actuating devices.
PO3	Design, model and build electronic engineering systems and be able to specify and assess technical designs.
PO4	Use a systems approach to establish rigorous solutions that are fit for purpose and consider all aspects of a problem including production, operation, maintenance and disposal.
PO5	Demonstrate a critical awareness of manufacturing, financial and marketing implications of design proposals.
PO6	Pursue independent study, undertake enquiry into novel and unfamiliar concepts and implement change in an engineering environment.
PO7	Communicate and operate effectively, professionally and ethically either as individuals or as members of a team.
PO8	Make considered judgements and decisions on complex engineering issues in which not all facts and consequences are accurately known

#### 4. Programme (Learning) Outcomes (POs) Mapping

<b>Programme Outcomes: Level 3 to 5 modules</b>	Module No: UFMFAG-30-0 (core)	Module No: UFMFBG-30-0 (core)	Module No: UFMFEG-30-0 (core)	Module No: UFMFCG-15-0 (core)	Module No: UFMFHG-15-0 (core)	Module No: UFMFKS-30-1 (core)	Module No: UFMFFT-15-1 (core)	Module No: UFMFGT-15-1 (core)	Module No: UFMFJT-30-1 (core)	Module No: UFMFHT-30-1 (core)	Module No: UFMFQS-15-2 (core)	Module No: UFMFRS-15-2 (core)	Module No: UFMFKA-30-2 (core)	Module No: UFMFMT-30-2 (core)	Module No: UFMFPT-15-2 (core)	Module No: UFMFQT-15-2 (core)
PO1:	x	x	x	x	x	x	x	x	x	x			x	x	x	x
PO2:			x						x	x			x	x	x	x
PO3:					x				x	x			x	x	x	x
PO4:						x					x		x	x	x	
PO5:						x		x			x		x			
PO6:	x	x	x	x	x	x	x		x		x	x	x		x	x
PO7:	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
PO8:						x		x		x	x	x	x		x	

#### 4. Programme (Learning) Outcomes (POs) Mapping

	<p style="text-align: center;"><b>Programme Outcomes: Level 6</b></p> <p style="text-align: center;">Option numbering indicates mutually exclusive options</p>	Module No: UFMFX8-30-3 (core)	Module No: UFMFV8-15-3 (core)	Module No: UFMFNQ-15-3 (op 1)	Module No: UFMF89-15-3 (op 1)	Module No: UFMFST-30-3 (core)	Module No: UFMFW7-15-3 (core)	Module No: UFMFS7-15-3 (op 2)	Module No: UFMFVT-15-3 (op 2)	Module No: UFMFH8-15-3 (op 2)
		PO1:	x					x	x	x
PO2:	x	x				x	x	x	x	x
PO3:	x					x	x	x	x	x
PO4:		x	x	x		x	x	x	x	x
PO5:	x									
PO6:	x	x	x	x		x	x	x	x	x
PO7:	x	x	x	x		x	x	x	x	x
PO8:	x	x				x	x	x	x	x

**PART B: PROGRAMME STRUCTURE****1. Structure (Full-time)**

This structure diagram demonstrates the student journey from entry through to Graduation for a typical **full-time student** including:

- level and credit requirements
- interim award titles
- compulsory and optional modules

**Year: 0** (Foundation Year entry)**Compulsory modules**

Module Code	Module Title	Level	Credit
UFMFAG-30-0	Foundation Mechanics	3	30
UFMFBG-30-0	Foundation Mathematics: Algebra and Calculus	3	30
UFMFEG-30-0	Engineering Experimentation	3	30
UFMFCG-15-0	Introduction to Mechatronics	3	15
UFMFHG-15-0	Foundation Group Project	3	15

**Year: 1**

**Interim award:** CertHE Electronic Engineering requires 120 credits at the appropriate level. Please refer to UWE Academic Regulations for details.

**Compulsory modules**

Module Code	Module Title	Level	Credit
UFMFKS-30-1	Engineering Practice 1	4	30
UFMFHT-30-1	Applied Electronics	4	30
UFMFJT-30-1	Principles of Electrical Engineering	4	30
UFMFFT-15-1	Mathematical Modelling for Electronics and Robotics	4	15
UFMFGT-15-1	Programming for Engineers	4	15

**Year: 2**

**Interim award:** DipHE Electronic Engineering requires 240 credits at the appropriate level. Please refer to UWE Academic Regulations for details.

**Compulsory modules**

Module Code	Module title	Level	Credit
UFMFQS-15-2	Engineering Practice 2	5	15
UFMFRS-15-2	Engineering Research	5	15
UFMFKA-30-2	Microcontroller Applications Group Lab	5	30
UFMFMT-30-2	Signals and Systems	5	30
UFMFPT-15-2	Analogue Electronic Systems	5	15
UFMFQT-15-2	Digital System Design	5	15

**Year: 2P (Placement Year)**

**Interim award:** DipHE Electronic Engineering requires 240 credits at the appropriate level. Please refer to UWE Academic Regulations for details.

**Optional module**

Module Code	Module title	Level	Credit
UFMF89-15-3	Industrial Placement	6	15

**Year: 3**

**Interim award:** BEng Electronic Engineering requires 300 credits at the appropriate level. Please refer to UWE Academic Regulations for details.

**Compulsory modules**

Module Code	Module title	Level	Credit
UFMFX8-30-3	Engineering Project	6	30
UFMFV8-15-3	Group Design and Integration Project	6	15
UFMFST-30-3	Power Electronics and Energy Systems	6	30
UFMFW7-15-3	Control Systems Design	6	15

**Optional modules Set 1:** Select 15 credits from

UFMFNQ-15-3	Professionalism for Engineers	6	15
UFMF89-15-3	Industrial Placement (must be selected in year 2P)	6	15

**Optional modules Set 2:** Select 15 credits from

Module Code	Module title	Level	Credit
UFMFS7-15-3	Communications	6	15
UFMFVT-15-3	Advanced Analogue Electronics	6	15
UFMFH8-15-3	Digital Signal Processing	6	15

**PART C: HIGHER EDUCATION ACHIEVEMENT RECORD (HEAR) SYNOPSIS**

Designed in conjunction with key national and multi-national employers, the Electronic Engineering programme provides graduates with the mix of skills and capabilities required by UK business for the specification, design and delivery of electronic and embedded systems and solutions, including safety critical systems, as required by the aerospace, transport, medical, military and other industries.

Delivered in a way that develops technically competent individuals who think and communicate effectively and who can conduct inquiry, solve problems, undertake critical analysis and deliver effective electronic and embedded software systems solutions in a constantly changing business context. It provides a solid foundation for lifelong learning, emphasising the development of knowledge, skills and professional values essential to the practice of systems development.



**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: AHEP3
- Industrial Advisory Board
- DA standard ST0151, Embedded Electronic Systems Design and Development Engineer, developed in conjunction with the Employer Trailblazer Group

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, that a minimum of 40% written examinations across the programme is considered an acceptable form of controlled assessment. Whilst this provides a constraint on the style of assessments, it does not inhibit our integrated learning approach.

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:** This programme is a refreshed and updated version of a programme that has run for many years. It has a long tradition of accepting students from diverse backgrounds and a wide range of entry qualifications. It accommodates student entry on a part-time basis at several points within the programme as well as having a tradition of direct entry to year 2 for full-time overseas students. Modules within the programme are also delivered within partner institutions regionally and globally. Foundation degrees and higher apprenticeship schemes have been developed in conjunction with academic and industrial partners as feeders into this programme.

The new curriculum has been designed to take the best practice from the previous structure along with the introduction of the integrated learning framework. This, when combined with the new laboratories, will provide enhanced student experience.

**Employer interaction and feedback:** The Department of Engineering Design & Mathematics works with a number of industrial partners through two consortia and a newly formed industrial liaison panel. Feedback from employers during visits to placement students has also helped inform this revised programme. The programme provides part-time options which ensure an ongoing interaction with regional employers. 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**

A: Approved variant to University Academic Regulations and Procedures

B: The Institution for Engineering and Technology accreditation requirements:

- All level 5 and 6 credits are considered when calculating the Degree classification.

The degree classification for the 360 credit honours degrees BEng (Hons) Electrical and Electronic Engineering, BEng (Hons) Electronic Engineering, BEng (Hons) Robotics and BEng (Hons) Electronics and Computer Engineering (or 480 credit honours degree with an integrated foundation year) is based upon all the marks achieved at level 5 and all the marks achieved at level 6. Marks achieved for level 6 credits are weighted three times the value of the marks for the level 5 credits (Paper AB16/05/07).

**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 across the whole programme.