



SECTION 1: KEY PROGRAMME DETAILS

This section provides students with key details about their programme.

PROGRAMME INFORMATION	
Final Award Title	BEng (Hons) Electronic and Computer Engineering
Default Award Title (Exit Award)	N/A
Interim Award Titles (Exit Awards)	BEng Electronic and Computer Engineering DIPHE Electronic and Computer Engineering CERTHE Electronic and Computer Engineering
Awarding Institution	UWE Bristol
Teaching Institutions	None
Partner Institutions	GlosCol
Delivery Locations	Frenchay Campus, Gloucester College Campus, SHAPE Campus
Study Abroad / Exchange / Credit Recognition	N/A
Faculty Responsible For Programme	Environment and Technology
Department Responsible For Programme	Engineering and Design
Professional Statutory or Regulatory Body (PSRB) Links	Institution of Engineering and Technology (IET)
Apprenticeship	Level 6 DA Standard ST0151
Mode of Delivery	FT, PT
Entry Requirements	The University's Standard Entry Requirements Tariff points as appropriate for the year of entry - up to date requirements are available through the courses database .
For Implementation From	Implementation from September 2020
Programme Codes	FOR QUALITY ENHANCEMENT TEAM TO COMPLETE ISIS: H650

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

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.

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.

The programme is designed to provide the balance of theoretical and practical understanding needed to meet the demands of the electronic and computer 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. This programme conforms to a level 6 Degree Apprenticeship Standard ST0151, developed in conjunction with the Employer Trailblazer Group.

The Electronic and Computer Engineering programme produces graduates with a wide range of expertise relevant to the electronics and computer science industries. Electronic and computer engineers are employed throughout the engineering sector in the creation, maintenance and improvement of engineering operations. Consequently graduates in this field 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, software and programming, power electronics, systems engineering and project management. A number of optional modules provide a deeper level of learning into more advanced and state of the art technologies. As move closer to a more digitally connected network of systems and devices, this programme allows students to develop expertise particularly in embedded systems 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.

PART A: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES

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 and computer 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.

2. Educational Aims (c. 4-6 aims)

This programme aims to:

1. support graduates to develop the necessary skills to be able to work as an effective member of a multidisciplinary team, as a graduate electronic and computer engineer across the engineering sector.
2. support undergraduates in acquiring the knowledge and understanding of scientific principles and methods necessary to underpin an education in engineering.
3. instill the requisite academic knowledge, skills and preparation for progression to study for higher degrees in appropriate engineering disciplines.
4. 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.
5. develop and demonstrate 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.
6. develop and demonstrate an 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.

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

Programme (Learning) Outcomes (POs)

No.	PO Text
PO1	Apply scientific and mathematical principles necessary to underpin electrical and electronic engineering and mathematical methods, computational methods and tools and notation used in the evaluation, integration and analysis of electrical, electronic and computer engineering problems
PO2	Use systems incorporating digital hardware, software, communication, processing algorithms, interfacing circuits and parameter sensing and actuating devices
PO3	Plan, design, model and build electronic and computer engineering systems and be able to specify and assess technical designs
PO4	Apply advanced problem-solving skills and technical knowledge, using a systems approach, to establish rigorous and creative solutions that are fit for purpose for all aspects of the 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

PART A: PROGRAMME OVERVIEW, AIMS and LEARNING OUTCOMES

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

Programme Outcomes: Level 4 and 5 modules	Module No: UFMFXT-15-1 (core)	Module No: UFMFFT-15-1 (core)	Module No: UFMFGT-15-1 (core)	Module No: UFMFJT-30-1 (core)	Module No: UMFJSJ-15-1 (core)	Module No: UFMFHT-30-1 (core)	Module No: UFMFQS-15-2 (core)	Module No: UFMFRS-15-2 (core)	Module No: UFMFMT-30-2 (core)	Module No: UFMFXE-30-2 (op)	Module No: UFMFQT-15-2 (core)	Module No: UFMF9W-15-2 Systems Engineering (core)
PO1:	x	x	x	x	x	x			x	x	x	
PO2:				x		x			x	x	x	
PO3:	x			x		x			x	x	x	x
PO4:	x						x		x			x
PO5:	x		x		x		x					x
PO6:	x	x		x			x	x		x	x	x
PO7:	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;">Programme Outcomes: Level 6</p> <p>Option numbering indicates mutually exclusive options</p>	Module No: UFMFX8-30-3 (core)	Module No: UFMFV8-15-3 (core)	Module No: UFMFDE-15-3 (core)	Module No: UFMFPQ-15-3 (core)	Module No: UFMFW7-15-3 (cpre)	Module No: UFMFNQ-15-3 (op 1)	Module No: UFMF89-15-3 (op 1)	Module No: UFMFH8-15-3 (op 2.1)	Module No: UFMF57-15-3 (op 2.2)	Module No: UFMFVT-15-3 (op 2.3)	Module No: UFCFJ4-15-3 (op 2.4)		
	PO1:	x		x		x			x	x	x		
	PO2:	x	x		x	x			x	x	x	x	
	PO3:	x		x	x	x			x	x	x	x	
	PO4:		x	x		x	x		x	x	x	x	
	PO5:	x						x					
	PO6:	x	x	x	x	x	x	x	x	x	x	x	
	PO7:	x	x	x	x	x	x	x	x	x	x	x	
	PO8:	x	x	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: 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
UFMFXT-15-1	Engineering Practice 1b	4	15
UFMFSJ-15-1	Computing Practice	4	15
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
UFMFXE-30-2	Embedded Systems Design	5	30
UFMFMT-30-2	Signals and Systems	5	30
UFMF9W-15-2	Systems Engineering	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
UFMFDE-15-3	Power Electronics	6	15
UFMFW7-15-3	Control Systems Design	6	15
UFMFPQ-15-3	Embedded Systems Development 1	6	15

Optional modules Set 1: Select 15 credits from

Module Code	Module title	Level	Credit
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
UFCEJ4-15-3	Building and Porting Operating Systems	6	15

2. Structure (Part-time)

This structure diagram demonstrates the student journey from entry at Level 6 through to Graduation for a typical **part-time student** including:

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

Year: 1**Compulsory modules**

Module Code	Module Title	Level	Credit
UFMFXT-15-1	Engineering Practice 1b	4	15
UFMFFT-15-1	Mathematical Modelling for Electronics and Robotics	4	15
UFMFJT-30-1	Principles of Electrical Engineering	4	30
UFMFGT-15-1	Programming for Engineers	4	15
UFMFSJ-15-1	Computing Practice	4	15

Year: 2

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

Compulsory modules			
Module Code	Module Title	Level	Credit
UFMFEXE-30-2	Embedded Systems Design	5	30
UFMFHT-30-1	Applied Electronics	4	30
UFMFQT-15-2	Digital System Design	5	15
UFMFQS-15-2	Engineering Practice 2	5	15
Year: 3			
Interim award: CertHE Electronic and Computer Engineering requires 120 credits at the appropriate level. Please refer to UWE Academic Regulations for details.			
Compulsory modules			
Module Code	Module title	Level	Credit
UFMFMT-30-2	Signals and Systems	5	30
UFMF9W-15-2	Systems Engineering	5	15
UFMFRS-15-2	Engineering Research	5	15
Year: 4			
Interim award: DipHE Electronic and Computer Engineering requires 240 credits at the appropriate level. Please refer to UWE Academic Regulations for details.			
Compulsory modules			
Module Code	Module title	Level	Credit
UFMFV8-15-3	Group Design and Integration Project	6	15
UFMFNQ-15-3	Professionalism for Engineers	6	15
UFMFDE-15-3	Power Electronics	6	15
UFMFPQ-15-3	Embedded Systems Development 1	6	15
Year: 5			
Interim award: BEng Electronic and Computer 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
UFMFW7-15-3	Control Systems Design	6	15
Optional modules set 4: 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
UF CFJ4-15-3	Building and Porting Operating Systems	6	15

PART C: HIGHER EDUCATION ACHIEVEMENT RECORD (HEAR) SYNOPSIS

Designed in conjunction with key national and multi-national employers, the Electronic and Computer Engineering programme provides graduates with the mix of skills and capabilities required by UK business for the specification, design and delivery of electronic, computing 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
- Level 6 Degree Apprenticeship standard ST0151

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 and computer engineering described in the 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 the 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.

PART D: EXTERNAL REFERENCE POINTS AND BENCHMARKS

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 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) Electronic 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.