



## Part 2: Educational Aims of the Programme

This programme will produce graduates with a wide range of expertise relevant to industry in general and also include skills related to mechanical design, operations, electronics and manufacturing.

### The two possible routes are entry

- as a fall back degree for all BEng programmes and
- direct entry at level 3.

**FALL BACK PROGRAMME:** This part of the programme is designed for students who are unable to complete their original accredited programme of study, due to failure in one or more core modules. It is intended to provide a flexible opportunity for students to continue to study to degree level in their broad discipline area.

**DIRECT ENTRY TOP-UP DEGREE PROGRAMME:** In this part of the programme students enter UWE at level 3 with a HND, Foundation degree or equivalent in a relevant Engineering discipline to study either a 'Manufacturing' or 'Electronic' route to BSc (Hons) Engineering. The aims are that graduates shall be able to:

1. Apply established and novel concepts to the solution of engineering problems.
2. Model engineering systems so as to be able to specify and assess the technical design;
3. Understand the manufacturing, financial and marketing implications of design proposals;
4. Identify the links between design, manufacturing and production management
5. Operate effectively either as individuals or as members of a multi-disciplinary team;
6. Communicate effectively both orally and in written form;
7. Make considered judgments and decisions on complex engineering issues in which not all facts and consequences are accurately known;

The following general aims apply:

- To equip students with a range of skills and knowledge that will enable them to embark on graduate careers or further study in higher education.
- To foster in students the interest and ability to become independent lifelong learners, able to reflect critically both on their practice and that of others.

## Programme requirements for the purposes of the Higher Education Achievement Record (HEAR)

The programme seeks to provide a foundation for lifelong learning with a strong emphasis on the development of appropriate knowledge, skills and professional values essential to an engineer from any branch of industry. It aims to develop technically competent, broad based individuals who think and communicate effectively and who have the basis for conducting inquiry, carrying out problem solving and undertaking critical analysis in a constantly changing industrial context. Consequently, many of the modules are project based; group or individual. The programme will produce graduates with a wide range of expertise relevant to industry in general and depending on the route also include skills related to mechanical design, operations, electronics and manufacturing.

### Part 3: Learning Outcomes of the Programme

The award route provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas:

<b>Learning Outcomes:</b>	UFMFHG-15-0	UFMFAG-30-0	UFMFEG-30-0	UFMFBG-30-0	UFMFCG-15-0	UFMFX8-30-3	UFMFWF-15-3	UFMFD7-15-3	UFMFE9-30-3	UFMFM7-15-3
<b>A) Knowledge and understanding of:</b>										
1 The principles governing the behaviour of engineering components and systems.	y	y	y		y	y	y	y	y	y
2 Mathematical methods appropriate to Engineering.	y	y	y	y		y	y			
3 The properties, characteristics and selection of materials used in engineering components and systems.		y	y		y	y	y	y	y	y
4 A sound understanding of core engineering science and technologies with greater depth in some areas.	y	y	y		y	y	y	y	y	y
5 The principles of information technology and data communications from a user's perspective.	y		y		y	y	y	y	y	y
6 Social, environmental, ethical, economic and commercial factors.	y		y		y	y	y	y	y	y
7 The complexity of large-scale engineering systems and projects, with particular emphasis upon mechanical systems	y		y		y	y	y	y	y	y
<b>(B) Intellectual Skills</b>										
1 The ability to produce solutions to problems through the application of engineering knowledge and understanding..	y	y	y		y	y	y	y	y	y
2 The ability to use scientific principles in the modelling and analysis of engineering systems, processes and products. The ability to select and apply appropriate mathematical methods for modelling and analysing relevant problems.		y		y		y	y	y	y	y
3 The ability to use a broad spectrum of technologies/techniques to solve complex engineering problems.	y		y		y	y	y	y	y	y
4 The ability to select and apply appropriate computer based methods for modelling and analysing problems in fields relating to the						y	y	y	y	y

<b>Part 3: Learning Outcomes of the Programme</b>										
design, manufacture and control of engineering components and systems.										
5 Adoption of a creative and innovative approach to solving problems and design.	y					y	y	y	y	y
6 Comprehension of the broad picture and demonstration of a professional attitude to the responsibilities of engineering practitioners.						y	y	y	y	y
<b>(C) Subject/Professional/Practical Skills</b>										
1 Appropriate skills including safe working in experimental work in laboratories and workshops.	y		y		y	y	y			y
2 Demonstrate practical testing of engineering ideas through laboratory work or simulation with supporting technical analysis and critical evaluation of results.	y		y			y				
3 Understanding and execution of the design process.			y			y				
4 Use of a range of computer software for design, analysis and control.	y		y			y				y
5 Execution and management of multi-disciplinary projects, both individually and as a member of a group.	y		y			y	y			
<b>(D) Transferable skills and other attributes</b>										
1. Communication skills: to communicate orally or in writing, including, for instance, the results of technical investigations, to peers and/or to "problem owners".	y		y			y	y	y	y	y
2. Self-management skills: to plan and manage time, to meet deadlines and to work with others.	y		y			y	y	y	y	y
3. IT Skills in Context (to use software in the context of problem-solving investigations, and to interpret findings)	y		y			y	y	y	y	y
4. Problem formulation and solution. Progression to independent learning: To gain experience of and to develop skills independently of structured class work.	y	y	y	y	y	y	y	y	y	y
5. Comprehension of professional literature: to read and to use literature sources appropriate to the discipline to support learning activities.	y		y			y	y	y	y	y

<b>Part 4: Student Learning and Student Support</b>
<p><b>Teaching and learning strategies to enable learning outcomes to be achieved and demonstrated</b></p> <p>At UWE, Bristol there is a policy for a minimum average requirement of 12 hours/week contact time over the course of the full undergraduate programme. This contact time encompasses a range of face: face activities as described below. In addition, a range of other learning activities will be embedded within the programme which, together with the contact time, will enable learning outcomes to be achieved and demonstrated.</p> <p>On the BSc (Hons) Engineering programme teaching is a mix of scheduled, independent and placement learning. For the programme a wide range of teaching and learning strategies are utilised and are dependent on the modules choices.</p> <p><b>Scheduled learning</b> includes lectures, tutorials, project supervision, demonstration, practical classes and workshops; external visits; work based learning; supervised time in the workshop. Scheduled sessions may vary slightly depending on the module choices made.</p>

#### **Part 4: Student Learning and Student Support**

**Independent learning** includes hours engaged with essential reading, case study preparation, assignment preparation and completion etc. Scheduled sessions may vary slightly depending on the module choices made.

#### **Description of any Distinctive Features**

Due to the flexible nature of the programme students may choose any module from any of the BEng programmes provided they hold the necessary prerequisites, the module is running in the year they wish to take it and it can be timetabled without the need for extra classes to be scheduled. Students will choose their own modules by reading the module specifications on the UWE website, consulting with module leaders and the support of student advisors and/or the programme leader. Note: Where students have chosen a specific route through the programme they will have a specific diet of modules. These choices include Direct entry level 3, manufacturing or electronic route and Foundation Engineering.

#### **Part 5: Assessment**

Approved to [University Regulations and Procedures](#)

#### **Assessment Strategy**

Assessment strategy to enable the learning outcomes to be achieved and demonstrated:

Learning outcomes are achieved and demonstrated in a variety of contexts including: examination; poster presentation; individual and group projects; practical assignments; portfolio of exercises and on-line tests. Summative and formative assessment may be given by peers, academic staff and on occasion professional industrial practitioners.

## Part 6: Programme Structure

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 requirements, module diet, including compulsory and optional modules

ENTRY <sup>(1)</sup>		Compulsory Modules <sup>(2)</sup>	Optional Modules	Interim Awards
	Year 0 (Foundation, if required)	UFMFAG-30-0 Foundation Mechanics  UFMFBG-30-0 Foundation Mathematics: Algebra & Calculus  UFMFCG-15-0 Introduction to Mechatronics  UFMFEG-30-0 Engineering Experimentation  UFMFHG-15-0 Foundation Group Project	None	None
	Year 1	Compulsory Modules <sup>(3)</sup> UFMFJ9-30-1 Engineering Mathematics	Optional Modules <sup>(3)</sup> Any module on any BEng Programme.	Interim Awards  Cert HE Engineering  Credit requirements 120 credits. 100 credits at level 1 or above.  Note that students satisfy the level 1 credit requirements by virtue of having already completed these credits on an EDM BEng programme
	Year 2	Compulsory Modules No compulsory modules for the fall back programme.	Optional Modules Any module on any BEng Programme, provided the prerequisites have been met and the module is running and can be timetabled in the chosen year of study	Interim Awards  Dip HE Engineering  Credit requirements 240 credits are required with at least 100 credits at level 2.
Year Out: Placement students all take Module: UFMF89-15-3 Industrial Placement				

<sup>(1)</sup> There is no direct entry to level 0, level 1 or level 2 of this award

<sup>(2)</sup> Note that students satisfy the level 0 credit requirements by virtue of having already completed these credits on an EDM BEng programme

<sup>(3)</sup> Note that students satisfy the level 1 credit requirements by virtue of having already completed these credits on an EDM BEng programme

Year 3: MANUFACTURING ROUTE (If part time route, year of study shown in brackets)	Compulsory Modules	Optional Modules	Interim Awards
	UFMFX8-30-3 (3.2) Individual Project BEng  UFMFD7-15-3 (3.2) Energy Technologies  UFMFM7-15-3 (3.1) Business Environment  UFMFE9-30-3 (3.1) Structural Design and Inspection  UFMFU7-15-3 (3.1) Computational Methods  UFMFWF-15-3 (3.2) Managing Advanced Manufacturing	In exceptional circumstances a compulsory module may be exchanged for any other BEng module provided:  Prerequisites have been met and the module is running and can be timetabled for the chosen year of study.	n/a
Year 3: ELECTRONIC ROUTE (part time year shown in brackets)	Compulsory Modules	Optional Modules	Interim Awards
	UFMFS7-15-3 (3.1) Communications  UFMFH8-15-3 (3.1) Digital Signal Processing  UFMFW7-15-3 (3.2) Control Systems Design  UFMFV8-15-3 (3.1) Group Design and Integration Project  UFMFE7-15-3 (3.1) Analogue Circuit Design  UFMFX8-30-3 (3.2) Individual Project BEng  UFMFM7-15-3 (3.2) Business Environment	In exceptional circumstances UFMFW7-15-3 Control Systems Design exchanged for:  UFMFC9-15-3 Machine Vision  UFMF99-15-3 Intelligent Adaptive Control	n/a
Year 3: FALL BACK PROGRAMME	Compulsory Modules	Optional Modules	Interim Awards
	No compulsory modules for the fall back programme.	Any module on any BEng Programme, provided the prerequisites have been met and the module is running and can be timetabled in the chosen year of study.	n/a

## GRADUATION

**Part time:** The following structure diagram demonstrates the student journey from Entry through to Graduation for a typical **part time student**. **Part time is only permitted from level 2 only.**

	Year 2	<b>Compulsory Modules</b> No compulsory modules for the fall back programme.	<b>Optional Modules</b> Any module on any BEng Programme, provided the prerequisites have been met and the module is running and can be timetabled in the chosen year of study	<b>Interim Awards</b> <b>Diploma of Higher Education Engineering</b>  Credit requirements 240 credits are required with at least 100 credits at level 2.
Year Out: Placement students all take Module: UFMF89-15-3 Industrial Placement				
	Year 3: MANUFACTURING ROUTE (part time route, year of study shown in brackets)	<b>Compulsory Modules</b> UFMFX8-30-3 (3.2) Individual Project BEng  UFMFD7-15-3 (3.2) Energy Technologies  UFMFM7-15-3 (3.1) Business Environment  UFMFE9-30-3 (3.1) Structural Design and Inspection  UFMFU7-15-3 (3.1) Computational Methods  UFMFWF-15-3 (3.2) Managing Advanced Manufacturing	<b>Optional Modules</b> In exceptional circumstances a compulsory module may be exchanged for any other BEng module provided:  Prerequisites have been met and the module is running and can be timetable for the chosen year of study.	n/a
	Year 3: ELECTRONIC ROUTE (part time year shown in brackets)	<b>Compulsory Modules</b> UFMFS7-15-3 (3.1) Communications UFMFH8-15-3 (3.1) Digital Signal Processing UFMFW7-15-3 (3.2) Control Systems Design UFMFV8-15-3 (3.1) Group Design and Integration Project UFMFE7-15-3 (3.1) Analogue Circuit Design UFMFX8-30-3 (3.2) Individual Project BEng UFMFM7-15-3 (3.2) Business Environment	<b>Optional Modules</b> In exceptional circumstances  UFMFW7-15-3 Control systems Design exchanged for:  UFMFC9-15-3 Machine Vision  UFMF99-15-3 Intelligent Adaptive Control	n/a

	Compulsory Modules	Optional Modules	Interim Awards
Year 3: FALL BACK PROGRAMME	No compulsory modules for the fall back programme.	Any module on any BEng Programme, provided the prerequisites have been met and the module is running and can be timetabled in the chosen year of study.	n/a

### Part 7: Entry Requirements

The University's Standard Entry Requirements apply with the following additions/exceptions\*:

Entrants are required to have evidence of achievement in Mathematics at GCSE Grade C or equivalent. Plus, any additional award-specific requirements.

Direct Entry (Top-up) level 3 students must hold a Foundation degree, HND or equivalent to be eligible for AL/EL for UWE level 1 and 2 modules.

Tariff points as appropriate for the year of entry - up to date requirements are available through the [courses database](#)

### Part 8: Reference Points and Benchmarks

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

This programme has been prepared with reference to a number of external benchmarks, including the QAA Subject Benchmark Statement for Engineering, the QAA Framework for HE Qualifications, the university's Learning & Teaching Strategy, and a number of more specialised publication relating to motorsport education as referenced below.

The Subject Benchmark Statement for Engineering outlines a set of skills expected of a graduate in an engineering discipline (Section 4 of the Statement refers), while noting that they should be interpreted in the context of the particular engineering discipline which is being studied. These skills map closely to the skills contained in the learning outcomes for this programme, and hence we have confidence that the programme is in accordance with the precepts of the Statement.

The university's Learning & Teaching Strategy has informed the faculty's policy for the delivery of its programmes.

What methods have been used in the development of this programme to evaluate and improve the quality and standards of learning? This could include consideration of stakeholder feedback from, for example current students, graduates and employers.

## Part 8: Reference Points and Benchmarks

### **Academic Support**

Academic advice and support is the responsibility of the staff delivering the module in question. Staff are expected to be available outside normal timetabled hours, either by appointment or during published "surgery" hours, in order to offer advice and guidance on matters relating to the material being taught and on its assessment.

Peer Assisted Learning (PAL) is used to support learning at levels 1 and 2. Each student has access to at least one PAL session per week to assist them on problems of understanding they face in any of the modules they are studying.

### **Pastoral Care**

The University divides responsibilities for pastoral care between academic personal tutors who look after the academic well-being of students and Student Advisors who provide comprehensive, full-time student support on a range of issues including funding, academic regulations, personal and health issues. The service operates on a drop-in basis or by appointment.

### **Technology Enhanced Learning**

A variety of e-based learning and assessments are utilised through the programme. These are designed to give immediate and bespoke feedback to students and enhance their learning experience.