

# Programme specification

**Award title: Electrical and Electronic Engineering (CIT) (Full time, Semester A Intake)**

<b>Title of programme:</b>	Electrical and Electronic Engineering (CIT) (Full time, Semester A Intake)
<b>Programme code:</b>	PECICEEE
<b>Awarding institution/body:</b>	University of Hertfordshire
<b>Teaching institution:</b>	University of Hertfordshire
<b>School:</b>	School of Physics, Engineering and Computer Science
<b>University/partner campuses:</b>	Hertfordshire College, Changzhou Institute of Technology
<b>Programme accredited by:</b>	Not Applicable
<b>Final qualification:</b>	Bachelor of Engineering with Honours (BEng (Hons)) [Level 6, 360 credits]
<b>Final award title (qualification and subject):</b>	BEng (Hons) Electrical and Electronic Engineering
<b>UCAS code:</b>	Not Applicable
<b>FHEQ level of award:</b>	6
<b>Language of delivery:</b>	English
<b>This programme specification is relevant to:</b>	2025-26
<b>Students entering at:</b>	Semester A
<b>Related programmes:</b>	
<b>Mode of study:</b>	Full Time
<b>Typical duration:</b>	3 Years
<b>Version:</b>	1.1
<b>Version date:</b>	09 Oct 2025
<b>Version description</b>	Updated entry requirement wording placement
<b>Validation status:</b>	Validated

## What is a programme specification?

A programme specification is a collection of key information about a programme of study (or course). It identifies the aims and learning outcomes of the programme, lists the modules that make up each stage (or year) of the programme, and the teaching, learning and assessment methods used by teaching staff. It also describes the structure of the programme, its progression requirements and any programme-specific regulations. This information is therefore useful to potential students to help them choose the right programme of study, to current students on the programme, and to staff teaching and administering the programme.

This programme specification (PS) is designed for prospective students, enrolled students, academic staff and potential employers. It provides a concise summary of the main features of the programme and the intended 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 teaching, learning and assessment methods, learning outcomes and content for each module can be found in Definitive Module Documents (DMDs) and Module Guides.

## Changes to your course or modules

Although it is never something we do lightly, we may in certain circumstances, make changes to the advertised content or structure or methods of delivery of your course or individual modules after you have accepted your offer, which may in certain cases include discontinuing a module. We cannot cover here every possible example of when we might decide to do so, but in normal circumstances it would only be for one or more of the following reasons:

- to reflect changes to the theory in an area of research or practices around the subject or its delivery
- to improve a course or a module (for example, to take account of feedback from students)
- to safeguard academic standards
- to comply with the requirements of an external professional, commissioning or accrediting body (for example, a requirement that certain course content be added, changed or removed or that a particular module is discontinued or included)
- to comply with legal, regulatory or governmental requirements
- to safeguard the health, safety and wellbeing of our students and staff
- where insufficient students have chosen an optional module making it unviable (*and where we have indicated in this Programme Specification that this might be a possibility*)
- where the University has found it difficult, for reasons beyond its control, to appoint a member of staff with appropriate expertise to ensure that an optional module can proceed where the change results from other circumstances outside our reasonable control

If we decide to make a change (other than one which is minor or insignificant) before you have registered on the course for the first time, we will inform you as soon as reasonably practicable so that you can decide whether or not you still wish to study with us. If as a consequence you decide not to study with us, we will refund any tuition fees and/or deposit that you have paid in advance in respect of the course in question. For further details regarding our refund policy please see our **Fees and Finance Policy**.

If we decide to make a change (other than one which is minor or insignificant) after you have registered, we will similarly inform you as soon as reasonably practicable, and we will also use every reasonable effort to minimise any adverse effect it may have on you. If in spite of our efforts

the change is likely to have a serious adverse effect on you (for example, by prejudicing your future choice of career), we will try to find you a suitable alternative course or module with us or (if you prefer) we will try to suggest a suitable alternative course with another education provider. If you change course or module in these circumstances (or simply withdraw from your course), any entitlement you may have to a refund in tuition fees you have already paid will be determined in accordance with our **Fees and Finance Policy**.

In the case of a material change to a course or module, we will also in appropriate circumstances consult with student representatives with a view to identifying options for, and minimising any adverse effect on, affected students.

Some optional modules may have capacity issues and therefore we may not be able to guarantee you a place on your first choice.

More information about how we will try protect you against changes to your modules or programmes can be found in our **Student Protection Plan** at <https://www.herts.ac.uk/study/your-offer-package>

## **Additional important points**

The normal entry requirements for this programme are:

Level 4 Entry:

Applicants should have passed the minimum control line for undergraduates on the National College Entrance Examination (NCEE), which must include Mathematics and Physics.

Plus:

Demonstrate a proficiency in English to IELTS 6.0 with minimum 5.5 in each band or an equivalent recognised qualification (including pass the Pre-Sessional English course).

Entry is only at level 4.

For more information on features offered in this course, please contact the Programme Leader.

## **Admissions information**

The normal entry requirements for the programme are:

Qualification type	Subjects	Grades
Recognition Prior to Learning		For current entry tariff point requirements, please refer to the relevant page for the Course on the University website or on the online prospectus.
English Language Proficiency		6.0

Equivalent qualifications will be considered on an individual basis, such as the Access to HE Certificate or approved equivalent.

For current entry tariff point requirements, please refer to the relevant page for the Course on the University website or on the online prospectus.

The programme is subject to the University's Principles, Policies and Regulations for the Admission of Students to Undergraduate and Taught Postgraduate Programmes (in UPR SA03), along with

associated procedures. These will take account of University policy and guidelines for assessing accredited prior certificated learning (APCL) and accredited prior experiential learning (APEL).

If you would like this information in an alternative format, please contact us via  
<https://ask.herts.ac.uk/contact-us>

If you wish to receive a copy of the External Examiner's Report for the programme, please email a request to [aqo@herts.ac.uk](mailto:aqo@herts.ac.uk)

## Additional admissions information

Interview/audition required:	No
Portfolio required:	No
DBS check required:	No
Occupational health check required:	No
GTC check required:	No

## The academic year

The University's academic year is made up of 3 Semesters. For most undergraduate students the academic year is split into two Semesters (A & B). Each of these is made up of teaching weeks followed by exams (the re-sit period falls within Semester C). For further information please follow the link below

[Term and semester dates | Study | Uni of Herts](#)

## Expected workload

In the UK, a full-time student is expected to spend 1200 hours on their studies each year. Please find below an estimate of how your time will be spent on this course during each year of study.

Year	Lectures, seminars, tutorials	Independent study	Placement
Year 1	31%	69%	0%
Year 2	31%	69%	0%
Year 3	21%	79%	0%

## Method of assessment

Year	Test	Written exam	Coursework	Practical
Year 1	19%	20%	61%	0%
Year 2	0%	36%	64%	0%
Year 3	20%	26%	51%	3%

## Additional expenses

Please see below a list of expected materials you will need for your studies. You will be given detailed lists when the course starts.

Title	Description	Value type	Cost (£)
None	For more information on student costs for this course, please contact the Programme Leader.	Approximate	£0

\*Costs vary subject to supplier.

\*\* This is an indicative cost – how much you use and need to replace these supplies will depend on your own style of working and process.

# Programme specification detail

## A: Programme rationale

The BEng (Hons) in Electrical and Electronic Engineering programme, offered by the University of Hertfordshire through its franchise partner, Hertfordshire College, CIT enables students to develop knowledge and skills in a range of topics, such as digital signal processing, microelectronic and VLSI (very-large-scale integration) design practice, robotics and neural networks, power systems applications, and advanced power conversion and control application trends.

Furthermore, as China rapidly advances with its industrialisation initiatives, the presence of qualified professionals in Electrical and Electronic Engineering becomes crucial, making this programme a timely and valuable option for the China employment context.

Graduates can expect to gain employment within the industries directly associated with the fields of Electrical and Electronic Engineering. Alternatively, graduates may continue their education to a post-graduate level and the University of Hertfordshire has a range of taught MSc or research awards that graduates may consider.

## B: Educational aims of the programme

The programme has been devised in accordance with the University's graduate attributes of programmes of study as set out in UPR TL03.

Additionally, this programme aims to:

Provide a high-quality education in Electrical and Electronic Engineering.

Provide an education for the individual which enhances their prospects of professional employment in engineering and business both in national and international industries.

Provide studies which develop an awareness of and underpinning knowledge and understanding of a broad range of Electrical and Electronic Engineering areas of expertise.

## C: Intended learning outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills and other attributes in the following areas. The programme outcomes are referenced to the QAA benchmark statements for Engineering and the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (2014) and relate to the typical student. Additionally, the SEEC Credit Level Descriptors for Further and Higher Education (2021) have been used as a guiding framework for curriculum design.

### Programme outcomes

Learning outcomes are split into four different types.

#### Intellectual skills

On successful completion of this programme, a student will be able to:

- IS1 Analyse and solve electrical and electronic engineering problems using appropriate techniques.
- IS2 Model and analyse engineering systems.
- IS3 Select appropriate computer-based methods for engineering and communication.

- IS4 Evaluate external influences on the design process.
- IS5 Design electrical and electronic systems, components or processes.

### **Knowledge and understanding**

On successful completion of this programme a student will have knowledge and understanding of:

- KU1 Demonstrate knowledge and understanding of analytical methods employed by Engineers.
- KU2 Demonstrate knowledge and understanding of fundamental engineering sciences.
- KU3 Demonstrate knowledge and understanding of design principles and design-to-build processes appropriate to electrical and electronic systems.
- KU4 Demonstrate knowledge and understanding of basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- KU5 Demonstrate knowledge and understanding of professional engineering practice principles.

### **Practical skills**

On successful completion a student will be able to:

- PS1 Apply analytical and modelling techniques to solve engineering problems.
- PS2 Perform experimental work in electrical and electronic engineering and draw conclusions.
- PS3 Use computer-based engineering tools.
- PS4 Prepare and evaluate technical documentation.
- PS5 Evaluate the design of electrical and electronic systems, components or processes.
- PS6 Plan and manage a project, considering economic, social, legal, ethical and sustainability constraints.

### **Transferable skills**

On successful completion of this programme, a student will be able to:

- TS1 Communicate effectively, both orally and in writing.
- TS2 Use commonly available IT tools.
- TS3 Manage time and resources effectively.
- TS4 Work effectively within a team as a member.
- TS5 Manipulate, sort and present data.
- TS6 Solve problems in a logical manner.
- TS7 Learn effectively and independently, in all aspects of life.

### **Graduate Attributes**

Graduate Attributes are delivered in the constituent modules. It provides (i) an aid to academic staff in understanding how individual modules contribute to the development of the Graduate Attributes (ii) a checklist for quality control purposes and (iii) a means to help students monitor their own personal and professional development as the programme progresses.

- GA1 Professionally Focused
- GA2 Globally Minded
- GA3 Sustainability Driven

- GA4    Digitally capable and confident
- GA5    Inclusive and collaborative
- GA6    Evidence based and ethical

## **D: Teaching methods**

Knowledge and Understanding (KU): Acquisition of knowledge and understanding is through the following approaches: Acquisition of KU1 and KU2 is through a combination of lectures, small group tutorials, coursework, and laboratory work at levels 4 and 5 of the programme. Specialist aspects of KU2 are further developed at level 6. Acquisition of KU3, KU4, and KU5 is through a combination of lectures, projects and coursework throughout the programme.

Staff deploy a range of teaching and learning strategies in the most appropriate way for each individual module. A more didactic approach will tend to be adopted at lower levels, in particular for KU1 and KU2. An increasingly self-directed and interactive approach will be adopted at higher levels, particularly for KU3, KU4 and KU5. Throughout, the learner is encouraged to undertake independent study both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject.

Intellectual Skills (IS): Intellectual skills are developed through the programme by the methods and strategies outlined for section A of the intended learning outcomes above, again moving from a more didactic approach to an increasingly self-directed and interactive approach at higher levels, particularly for IS3, IS4 and IS5. Analysis, problem solving and modelling skills (IS1 and IS2) are further developed through tutorial work, laboratory work, in-course exercises and project work. Design and IT skills (IS3-IS5) are further developed through project work, design exercises and some case study work at level 6. Feedback is given to all students on all coursework produced. Throughout, the learner is encouraged to develop intellectual skills further by independent study.

Practical Skills (PS): Practical skills are developed through the programme by the methods and strategies outlined in sections A and B of the intended learning outcomes above, again moving from a more didactic approach to an increasingly self-directed and interactive approach at higher levels, particularly for PS4, PS5 and PS6. PS1 is developed through laboratory work, coursework assignments and tutorial work. PS2 is developed through laboratory work. PS3 is developed through the use of software simulation tools at all levels.

PS4 is developed through project work, lab exercises and software documentation, particularly at level 4. PS5 is developed through laboratory work at levels 5 and 6. PS6 is developed through lectures and project work.

Transferable Skills (TS): Transferable skills are developed through the programme by the methods and strategies outlined in sections KU, IS and PS of the intended learning outcomes above. TS1 is developed through feedback on coursework reports, oral presentations and project reports. TS2 is developed through their use in preparing project reports, laboratory reports, case studies, design work, etc. TS3 is developed through project work planning and throughout the programme. TS4 is developed through group project and assignment work. TS5 and TS6 are developed through lectures and tutorial work throughout the programme. TS7 is developed and promoted throughout the programme. Throughout, the learner is encouraged to develop transferable skills by maintaining a record of evidence and completing a personal development plan.

## **E: Assessment strategy**

The programme complies with the University's academic regulations (in particular, UPR AS11, UPR AS12/UPR AS13 and UPR AS14) with the exception of those listed below, which have been approved by the University:

Assessment Strategy for:

Knowledge and Understanding (KU): Knowledge and understanding are assessed through a combination of unseen examinations (KU1, KU2, KU3 and KU5) and in-course assessments (KU1-KU5) in the form of laboratory reports, essays and phase tests. Some aspects of KU3 and KU4 are assessed by design exercises and project reports and presentations. At level 6 some aspects of KU5 are assessed by case study reports.

Intellectual Skills (IS): Intellectual skills IS1, IS2 and IS5 are assessed through unseen examination papers, laboratory reports and coursework related to in-course exercises. Intellectual skills IS3 and IS4 are assessed through project reports and presentations.

Practical Skills (PS): Practical skills are assessed through laboratory reports, coursework assignments, design exercise submissions, case study reports, presentations, project reports and logbooks.

Transferable Skills (TS): TS1, TS2, TS5 and TS6 are assessed through coursework, individual major project and technical reports and oral presentations. TS4 is assessed by review of group project work.

TS3 and TS7 are specifically assessed by review of an individual's progress during individual major project work.

## **F: Programme specific assessment regulations**

The programme complies with the University's academic regulations (in particular, UPR AS11, UPR AS13 and UPR AS14) with the exception of those listed below, which have been approved by the University:

BEng Individual Project (Electrical) 6FTC2191 cannot be compensated. Students who are offered a re-enrolment opportunity on the project module in line with University regulations will normally be allocated an entirely different project.

Students exiting with a BEng (Hons) award shall have their degree classification determined in accordance with UPR AS14 and include the individual project in the calculation of degree.

Course Code: PECICEEE

Course Instance: EEECIT3F

Award Title: BEng (Hons) Electrical and Electronic Engineering

Modules: 6FTC2191 – BEng Individual Project (Electrical)

Must be included in classification algorithm: Yes

Professional Statutory Regulatory Bodies thresholds will apply for accredited awards as per the Engineering Council Compensation and Condonement notice November 2018.

BEng (Hons) accredited awards:

To comply with professional body regulations students must achieve in all 15 credit point modules, after all available attempts under the University regulations, a minimum of 30% (in any allowable attempt) at levels 4, 5 and 6, before the board of examiners will be able to consider compensation for an accredited honours degree. A maximum of 30 credit points can be compensated across the programme, in line with University regulations and professional body accreditation requirements.

For non-honours awards, the standard University regulations on progression and compensation shall apply.

## **G: Professional accreditation requirements**

Not Applicable

## **H: Management of programme and support for student learning**

### **Management**

The programme is managed and administered through:

- The programme is managed and administered through: Dean of Hertfordshire College, CIT. UH Executive Dean UH SPECS International Franchise Manager. Associate Dean (AQA, Learning and Teaching) of Hertfordshire College, CIT. Associate Dean (Student Experience) of Hertfordshire College, CIT. The Programme Leader at Hertfordshire College, CIT who has overall responsibility for the effective operationalisation of the programme, ensuring that academic standards are maintained, and an effective student learning experience is provided. The Programme Leader is also responsible for chairing the programme committee. A Collaborative Partnership Leader, based at UH, to provide support and facilitate communication between UH and Hertfordshire College, CIT. Module Leaders at Hertfordshire College, CIT who are responsible for individual modules. A Programme committee that includes the above key stakeholders and student representatives. An Admissions Tutor at Hertfordshire College, CIT with specific responsibility for admissions and open days, who, where necessary, liaises with UH CPL and/or admissions tutor regarding special admissions cases. A designated administrative team to deal with day-to-day administration associated with the modules within the programme.

### **Support**

Students are supported by:

- An induction week at the beginning of each new academic session. A Programme Handbook which provides information about the programme, the support services available and the calendar of events for the year. A Student Development Centre that provides advice on issues such as finance, accommodation, University regulations and study abroad. A Student Support Hub which includes full-time Personal Tutor(s) and Assistant Programme Leader(s) who will be an important point of contact. Personal Tutor(s) can provide advice on non-academic issues, Assistant Programme Leader(s) can provide one-to-one guidance on academic issues. A versatile on-line inter-active intranet and learning environment. Guided student-centred learning on Canvas module sites. Access to extensive digital and print collections of information resources. Attractive modern study environment in library. An Academic Support Hub which includes academic English support, Maths support. Computer Programming support and Technical Writing support. Technical support staff and access to computer and technical laboratories. Programme Leader who can advise on programme issues. Module teaching teams who provide academic support. A project supervisor. A Careers and Employment Centre that supports students looking for graduate employment. A Special Education Needs Support Office that assists students with various special needs. Medical Centre. Mental Health Advisory Support Centre. Changzhou Institute of Technology Student Union. Dedicated programme site.

# I: Programme structures, features, levels, modules, and credits

## Programme structure

<b>Year 1</b> Progression to level 5 requires a minimum of 90 credits. Maximum credits: 120					
<b>Semester</b>	<b>Module Code</b>	<b>Module Title</b>	<b>Credits</b>	<b>Level</b>	<b>Core/optional</b>
A	4FTC2136	Engineering Mathematics	15	4	Core
A	4FTC2137	Digital Electronic Circuits	15	4	Core
A	4FTC2138	Circuit Theory and Analysis	15	4	Core
A	4FTC2139	Project Planning and Design	15	4	Core
B	4FTC2140	Professional Engineering	15	4	Core
B	4FTC2141	Programming	15	4	Core
B	4FTC2142	Analogue Circuits and Devices	15	4	Core
B	4FTC2143	Electronic Product Development	15	4	Core
<b>Year 2</b> Progression to level 6 requires a minimum of 210 credit points at level 4 and 5, including 90 credits at level 5. Maximum credits: 120					
<b>Semester</b>	<b>Module Code</b>	<b>Module Title</b>	<b>Credits</b>	<b>Level</b>	<b>Core/optional</b>
A	5FTC2176	Signals and Systems	15	5	Core
A	5FTC2177	Digital Design and Embedded Systems	15	5	Core
A	5FTC2178	Electric Power and Energy Conversion	15	5	Core
A	5FTC2179	Analogue and Mixed-Signal Design	15	5	Core
B	5FTC2180	Real-Time Systems and Programming	15	5	Core
B	5FTC2181	Connected Systems and IoT	15	5	Core
B	5FTC2182	Mechatronics	15	5	Core
B	5FTC2183	Communication System Principles	15	5	Core

<b>Year 3</b> <b>The award of an Honours degree in Electrical and Electronic Engineering requires 360 credit points including 240 at level 6/5 of which 120 must be at level 6. Maximum credits: 120</b>						
<b>Semester</b>	<b>Module Code</b>	<b>Module Title</b>	<b>Credits</b>	<b>Level</b>	<b>Core/optional</b>	
A	6FTC2185	Microelectronics and VLSI	15	6	Core	
A	6FTC2186	Intelligent Systems and Robotics	15	6	Core	
A	6FTC2187	Digital Communication Systems	15	6	Core	
AB	6FTC2191	BEng Individual Project (Electrical)	30	6	Core	
B	6FTC2188	Digital Signal Processing	15	6	Core	
B	6FTC2189	Power Systems and Renewable Energy	15	6	Core	
B	6FTC2190	Wireless Networking	15	6	Core	

## Final and interim awards available

<b>Final award</b>	<b>Award title</b>	<b>Minimum requirements</b>	<b>Available at the end of level</b>
BEng (Hons)	Electrical and Electronic Engineering	See UPR AS11, section 13: <a href="http://sitem.herts.ac.uk/secreg/upr/AS11.htm">http://sitem.herts.ac.uk/secreg/upr/AS11.htm</a> 360 credits, including at least 240 @ Level 6/5, of which at least 120 must be @ Level 6. The title 'Bachelor of Engineering' is reserved for programmes which provide a technologically broad education with an emphasis on engineering applications, primarily those programmes that may lead to registration with the Engineering Council.	6
<b>Interim award</b>	<b>Award title</b>	<b>Minimum requirements</b>	<b>Available at the end of level</b>
BEng	Electrical and Electronic Engineering	See UPR AS11, section 13: <a href="http://sitem.herts.ac.uk/secreg/upr/AS11.htm">http://sitem.herts.ac.uk/secreg/upr/AS11.htm</a> 300 credits, including at least 180 @ Level 6/5, of which at least 60 must be @ Level 6. The title 'Bachelor of Engineering' is reserved for programmes which provide a technologically broad education with an emphasis on engineering applications.	6
CertHE	(Untitled)	See UPR AS11, section 13: <a href="http://sitem.herts.ac.uk/secreg/upr/AS11.htm">http://sitem.herts.ac.uk/secreg/upr/AS11.htm</a> 120 credits @ Level 4	4
DipHE	(Untitled)	See UPR AS11, section 13: <a href="http://sitem.herts.ac.uk/secreg/upr/AS11.htm">http://sitem.herts.ac.uk/secreg/upr/AS11.htm</a> 240 credit points including at least 120 at level 5	5
Uni Cert	(Untitled)	See UPR AS11, section 13: <a href="http://sitem.herts.ac.uk/secreg/upr/AS11.htm">http://sitem.herts.ac.uk/secreg/upr/AS11.htm</a> 45 credits @ Level 4 This award is available as an unnamed interim award or a named final intended award only.	4

## Other sources of information

In addition to this Programme Specification, the University publishes guidance to registered students on the programme and its constituent modules:

- A dedicated programme site on the University's Virtual Learning Environment (Canvas);
- A Definitive Module Document (DMD) for each constituent module;

The [Ask Herts](#) website provides information on a wide range of resources and services available at the University of Hertfordshire including academic support, accommodation, fees, funding, visas, wellbeing services and student societies.

As a condition of registration, all students of the University of Hertfordshire are required to comply with the University's rules, regulations and procedures. These are published in a series of documents called 'University Policies and Regulations' (UPRs). The University requires that all students consult these documents which are available on-line, on the UPR web site, at:

<http://www.herts.ac.uk/secreg/upr/>. In particular, [UPR SA07](#) 'Regulations and Advice for Students' Particular Attention - Index' provides information on the UPRs that contain the academic regulations of particular relevance for undergraduate and taught postgraduate students.

In accordance with section 4(5) of the Higher Education and Research Act 2017 (HERA), the UK Office for Students (OfS) has registered the University of Hertfordshire in the register of English higher education providers. The Register can be viewed at:

<https://www.officeforstudents.org.uk/advice-and-guidance/the-register/the-ofs-register/>.

Furthermore, the OfS has judged that the University of Hertfordshire delivers consistently very high-quality teaching, learning and outcomes for its students. Consequently, the University received a Silver award in the 2023 Teaching Excellence Framework (TEF) exercise. This award was made in October 2023 and is valid for up to 4 years. The TEF panel's report and conclusions can be accessed [via this link](#).

## J: Development of intended programme learning outcomes in the constituent modules

These maps identify where the programme learning outcomes are assessed in the constituent modules. It provides (i) an aid to academic staff in understanding how individual modules contribute to the programme aims (ii) a checklist for quality control purposes and (iii) a means to help students monitor their own learning, personal and professional development as the programme progresses.

**X = Delivered and Assessed**

Module Code	IS 1	IS 2	IS 3	IS 4	IS 5	KU 1	KU 2	KU 3	KU 4	KU 5	PS 1	PS 2	PS 3	PS 4	PS 5	PS 6	TS 1	TS 2	TS 3	TS 4	TS 5	TS 6	TS 7
4FTC2136	X	X				X	X																
4FTC2137	X	X	X			X	X	X		X	X	X				X		X					
4FTC2138	X	X	X			X	X			X	X	X						X					
4FTC2139			X	X				X	X	X				X	X	X	X	X	X	X	X	X	X
4FTC2140								X	X					X	X	X	X	X	X	X	X	X	X
4FTC2141					X	X				X	X			X				X					
4FTC2142	X	X	X			X	X				X	X	X					X					
4FTC2143	X	X	X								X	X				X	X		X	X	X	X	X
5FTC2176	X	X	X			X	X				X	X						X					
5FTC2177	X	X	X							X		X	X	X				X					
5FTC2178	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	
5FTC2179	X	X						X	X							X	X		X	X	X	X	X
5FTC2180	X	X	X							X	X	X	X	X				X					
5FTC2181			X	X	X			X	X	X		X	X			X	X	X	X	X	X	X	X
5FTC2182	X	X	X	X	X	X	X	X	X		X	X	X			X	X		X				
5FTC2183	X	X	X			X	X				X	X	X					X					
6FTC2185	X	X	X								X	X							X				
6FTC2186	X	X	X			X	X					X	X						X				
6FTC2187	X	X	X			X	X					X	X	X					X				
6FTC2188	X	X	X			X	X					X	X	X					X				
6FTC2189	X	X	X					X				X	X				X	X	X		X		

## Key to module codes

Module code	Level	Title
4FTC2136	4	Engineering Mathematics
4FTC2137	4	Digital Electronic Circuits
4FTC2138	4	Circuit Theory and Analysis
4FTC2139	4	Project Planning and Design
4FTC2140	4	Professional Engineering
4FTC2141	4	Programming
4FTC2142	4	Analogue Circuits and Devices
4FTC2143	4	Electronic Product Development
5FTC2176	5	Signals and Systems
5FTC2177	5	Digital Design and Embedded Systems
5FTC2178	5	Electric Power and Energy Conversion
5FTC2179	5	Analogue and Mixed-Signal Design
5FTC2180	5	Real-Time Systems and Programming
5FTC2181	5	Connected Systems and IoT
5FTC2182	5	Mechatronics
5FTC2183	5	Communication System Principles
6FTC2185	6	Microelectronics and VLSI
6FTC2186	6	Intelligent Systems and Robotics
6FTC2187	6	Digital Communication Systems
6FTC2188	6	Digital Signal Processing
6FTC2189	6	Power Systems and Renewable Energy
6FTC2190	6	Wireless Networking
6FTC2191	6	BEng Individual Project (Electrical)

## **Key to programme learning outcomes for Intellectual Skills**

- IS1 Analyse and solve electrical and electronic engineering problems using appropriate techniques.
- IS2 Model and analyse engineering systems.
- IS3 Select appropriate computer-based methods for engineering and communication.
- IS4 Evaluate external influences on the design process.
- IS5 Design electrical and electronic systems, components or processes.

#### **Key to programme learning outcomes for Knowledge and Understanding**

- KU1 Demonstrate knowledge and understanding of analytical methods employed by Engineers.
- KU2 Demonstrate knowledge and understanding of fundamental engineering sciences.
- KU3 Demonstrate knowledge and understanding of design principles and design-to-build processes appropriate to electrical and electronic systems.
- KU4 Demonstrate knowledge and understanding of basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- KU5 Demonstrate knowledge and understanding of professional engineering practice principles.

#### **Key to programme learning outcomes for Practical Skills**

- PS1 Apply analytical and modelling techniques to solve engineering problems.
- PS2 Perform experimental work in electrical and electronic engineering and draw conclusions.
- PS3 Use computer-based engineering tools.
- PS4 Prepare and evaluate technical documentation.
- PS5 Evaluate the design of electrical and electronic systems, components or processes.
- PS6 Plan and manage a project, considering economic, social, legal, ethical and sustainability constraints.

#### **Key to programme learning outcomes for Transferrable Skills**

- TS1 Communicate effectively, both orally and in writing.
- TS2 Use commonly available IT tools.
- TS3 Manage time and resources effectively.
- TS4 Work effectively within a team as a member.
- TS5 Manipulate, sort and present data.
- TS6 Solve problems in a logical manner.

TS7 Learn effectively and independently, in all aspects of life.

### **Development of Graduate Attributes in the constituent modules**

This map identifies where the Graduate Attributes are delivered in the constituent modules. It provides (i) an aid to academic staff in understanding how individual modules contribute to the development of the Graduate Attributes (ii) a checklist for quality control purposes and (iii) a means to help students monitor their own personal and professional development as the programme progresses. [Note that there is no requirement for the Graduate Attributes to be assessed through these modules]

**D = Delivered**

Module Title	Module Code	Level	Professionally Focused	Globally Minded	Sustainability Driven	Digitally Capable & Confident	Inclusive and Collaborative	Evidenced-based and Ethical
Engineering Mathematics	4FTC2136	4	D			D		D
Digital Electronic Circuits	4FTC2137	4	D		D	D		D
Circuit Theory and Analysis	4FTC2138	4	D			D		D
Project Planning and Design	4FTC2139	4	D			D	D	D
Professional Engineering	4FTC2140	4	D	D	D	D	D	D
Programming	4FTC2141	4	D			D		D
Analogue Circuits and Devices	4FTC2142	4	D			D		D
Electronic Product Development	4FTC2143	4	D			D	D	D
Signals and Systems	5FTC2176	5	D			D		D
Digital Design and Embedded Systems	5FTC2177	5	D			D		D
Electric Power and Energy Conversion	5FTC2178	5	D		D	D		D
Analogue and Mixed-Signal Design	5FTC2179	5	D			D	D	D
Real-Time Systems and Programming	5FTC2180	5	D			D		D
Connected Systems and IoT	5FTC2181	5	D			D	D	D

Mechatronics	5FTC2182	5	D	D	D
Communication System Principles	5FTC2183	5	D	D	D
Microelectronics and VLSI	6FTC2185	6	D	D	D
Intelligent Systems and Robotics	6FTC2186	6	D	D	D
Digital Communication Systems	6FTC2187	6	D	D	D
Digital Signal Processing	6FTC2188	6	D	D	D
Power Systems and Renewable Energy	6FTC2189	6	D	D	D
Wireless Networking	6FTC2190	6	D	D	D
BEng Individual Project (Electrical)	6FTC2191	6	D	D	D