

## Programme Specification amendment notification

Title of Programme: BEng Honours in Electrical and Electronic Engineering

Programme Code: EIEE

As a result of the ongoing Coronavirus pandemic, the University has been required to make some revisions to this programme for the 2020/21 academic session, affecting sections C and/or D of this Programme Specification. These amendments are as follows:

Section	Amendment
D. Programme Structures, Features, Levels, Modules, and Credits	Unseen written examinations will not be returning for the semester A which typically runs from September to January each academic year. Use of alternative methods such as Online Timed Assessments and quizzes that incorporate several features to create valid assessments. There will be practice quizzes through the module prior to any assessment using the Canvas quiz.
	The School has revised the assessment structure where unseen examinations and practical sessions were key sections of the assessment. The practical sessions will still take place but not be mandatory in the assessment for the final grade in order to protect any student as a result of national Covid guidelines e.g. lockdown and self-isolation. The modules show <b>AW</b> which means there has been a change to <b>Assessment Weighting</b> where weighting is the percentage amount of the assessment, whether coursework or exam or practical, contributes to the overall grade of the module. <b>CS</b> means there has been a <b>Change to the Semester</b> the module is being taught on due to other issues.
	The table below shows the structure for the modules in Semester A 2020 2021 at all levels 4, 5 ,6 and 7 where appropriate. Table 1a in the Programme Specification module assessment structure will be replaced where applicable with the structures shown below for the affected <b>AW</b> and <b>CS</b> modules.

Level 4 2020 2021

2020-21 Programmes	Module Title	Module Code	Coursework %	Exam %	Practical %	Semester	Credit Points	DMD Change: AW = assessment weighting CS = Change Semester
EIEE	Engineering Mathematics	4PAM1007	100	0	0	A	15	AW
EIEE	Digital Electronics & Computer Organisation	4ELE0050	100	0	0	A	15	AW

Level 5 2020 2021

2020-21 Programmes	Module Title	Module Code	Coursework %	Exam %	Practical %	Semester	Credit Points	DMD Change: AW = assessment weighting CS = Change Semester
EIEE	Further Engineering Mathematics	5PAM1005	100	0	0	A	15	AW
EIEE	Digital Design & Embedded Systems	5ELE0060	100	0	0	A	15	AW
EIEE	Electronic Communication Systems	5ENT1113	100	0	0	A	15	AW
EIEE	Dynamics	5ENT1114	100	0	0	A	15	AW
EIEE	Electrical Engineering & Power Control	5ELE0058	100	0	0	A	15	AW

Level 6 2020 2021

2020-21 Programmes	Module Title	Module Code	Coursework %	Exam %	Practical %	Semester	Credit Points	DMD Change: AW = assessment weighting CS = Change Semester
EIEE	Microelectronics & VLSI	6ENT1027	100	0	0	A	15	<b>AW</b>
EIEE	Control Systems	6AAD0007	100	0	0	A	15	<b>AW</b>
EIEE	Digital Signal Processing	6ELE0066	100	0	0	A	15	<b>AW</b>
EIEE	Power Systems	6ENT1146	100	0	0	A	15	<b>AW</b>
EIEE	Operating System Principles and Design	6ENT1142	100	0	0	A	15	<b>AW</b>

Associate Dean of School (Academic Quality Assurance):

Signature



School of Engineering and Computer Science

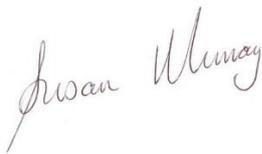
Title of Programme: BEng Honours in Electrical and Electronic Engineering

Programme Code: EIEE

## Programme Specification

This programme specification is relevant to students entering:  
21 September 2020

Associate Dean of School (Academic Quality Assurance):  
Susan Murray



Signature

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.

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**Summary of amendments to the programme:**

Section	Amendment

If you have any queries regarding the changes, please email [AQO@herts.ac.uk](mailto:AQO@herts.ac.uk)

# Programme Specification

## BEng Honours in Electrical and Electronic Engineering

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.

### Section 1

<b>Awarding Institution/Body</b>	University of Hertfordshire
<b>Teaching Institution</b>	University of Hertfordshire
<b>University/partner campuses</b>	College Lane
<b>Programme accredited by</b>	Institution of Engineering and Technology
<b>Final Qualification</b>	BEng Honours
<b>All Final Award titles</b>	Electrical and Electronic Engineering
<b>(Qualification and Subject)</b>	Electrical and Electronic Engineering (Sandwich) Electrical and Electronic Engineering with Year Abroad Electrical and Electronic Engineering with Study Abroad
<b>FHEQ level of award</b>	6
<b>UCAS code(s)</b>	H600 (Electrical and Electronic Engineering),
<b>Language of Delivery</b>	English

### A. Programme Rationale

The School of Engineering and Technology offers a variety of MEng/BEng degrees. This programme specification covers BEng degrees under the general category of Electrical and Electronic Engineering. The programme has been developed to (i) satisfy the QAA Engineering Benchmark requirements (ii) to fulfil the initial partial academic requirements of UK-SPEC for CEng status and (iii) meet the professional employment needs of industry.

Initially students study a relatively common portfolio of modules covering a broad range of topics necessary for professional Electrical and Electronics Engineering allowing flexibility for students to change their award pathway as they become more familiar with the opportunities available. The differentiating features of the various awards are progressively introduced as the students' progress.

Students with a sufficient level of achievement during levels 4 and 5 are encouraged to consider transfer to the MEng programme.

The School has close contacts with a wide range of engineering companies and students are encouraged to take the sandwich option spending at least 48 weeks on industrial placement between levels 5 and 6. Alternatively, they may consider Study Abroad options.

Graduates can expect to gain employment across a wide range of industries that require the skills of an electrical and electronic engineer. These industries include communications, computing, manufacture, defence, aerospace and automotive. 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 high quality education in electrical and electronic engineering;
- provide an education for the individual which enhances his/her prospects of professional employment in engineering and business both in national and international industries;
- provide studies which are accredited by the Institution of Engineering and Technology;
- 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 (2016) have been used as a guiding framework for curriculum design.

<u>Knowledge and Understanding</u>	<u>Teaching and learning methods</u>	<u>Assessment strategy</u>
A1-The analytical methods employed by Engineers. A2-The fundamental engineering sciences. A3 - The design principles and design-to-build processes appropriate to electrical and electronic systems. A4-The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering. A5-Professional engineering practice.	Acquisition of knowledge and understanding is through the following approaches: Acquisition of A1 and A2 is through a combination of lectures, small group tutorials, coursework and laboratory work at levels 4 and 5 of the programme. Specialist aspects of A2 are further developed at level 6. Acquisition of A3, A4, and A5 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 A1 and A2. An increasingly self-directed and interactive approach will be adopted at higher levels, particularly for A3, A4 and A5. 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.	Knowledge and understanding are assessed through a combination of unseen examinations (A1, A2, A3 and A5) and in-course assessments (A1-A5) in the form of laboratory reports, essays and phase tests. Some aspects of A3 and A4 are assessed by design exercises and project reports and presentations. At level 6 some aspects of A5 are assessed by case study reports

Intellectual skills	Teaching and learning methods	Assessment strategy
<p>B1 - Analyse and solve electrical and electronic engineering problems using appropriate techniques</p> <p>B2 – Model and analyse engineering systems</p> <p>B3-Select appropriate computer based methods for engineering and communication.</p> <p>B4-Evaluate external influences on the design process.</p> <p>B5- Design electrical and electronic systems, components or processes.</p>	<p>Intellectual skills are developed throughout 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 B3, B4 and B5.</p> <p>Analysis, problem solving and modelling skills (B1 and B2) are further developed through tutorial work, laboratory work, in-course exercises and project work.</p> <p>Design and IT skills (B3-B5) are further developed through project work, design exercises and some case study work at level 6.</p> <p>Feedback is given to all students on all coursework produced.</p> <p>Throughout, the learner is encouraged to develop intellectual skills further by independent study.</p>	<p>Intellectual skills B1, B2 and B5 are assessed through unseen examination papers, laboratory reports and coursework related to in-course exercises.</p> <p>Intellectual skills B3 and B4 are assessed through project reports and presentations.</p>
Practical skills	Teaching and learning methods	Assessment strategy
<p>C1-Apply analytical and modelling techniques to solve engineering problems.</p> <p>C2 - Perform experimental work in electrical and electronic engineering and draw conclusions.</p> <p>C3-Use computer-based engineering tools.</p> <p>C4-Prepare technical documentation.</p> <p>C5 - Evaluate the design of electrical and electronic systems, components or processes.</p> <p>C6-Plan and manage a project, considering economic, social, legal, ethical and sustainability constraints.</p>	<p>Practical skills are developed throughout 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 C4, C5 and C6.</p> <p>C1 is developed through laboratory work, coursework assignments and tutorial work.</p> <p>C2 is developed through laboratory work.</p> <p>C3 is developed through the use of software simulation tools at all levels.</p> <p>C4 is developed through project work, lab exercises and software documentation, particularly at level 4.</p> <p>C5 is developed through laboratory work at levels 5 and 6.</p> <p>C6 is developed through lectures and project work.</p>	<p>Practical skills are assessed through laboratory reports, coursework assignments, design exercise submissions, case study reports, presentations, project reports and logbooks.</p>

Transferable skills	Teaching and learning methods	Assessment strategy
D1-Communicate effectively, both orally and in writing. D2-Use commonly available IT tools. D3-Manage time and resources effectively. D4-Work effectively within a team as a member. D5-Manipulate, sort and present data. D6-Solve problems in a logical manner. D7-Learn effectively and independently, in all aspects of life.	Transferable skills are developed throughout the programme by the methods and strategies outlined in sections A, B and C of the intended learning outcomes above. D1 is developed through feedback on coursework reports, oral presentations and project reports. D2 is developed through their use in preparing project reports, laboratory reports, case studies, design work, etc. D3 is developed through project work planning and throughout the programme. D4 is developed through group project and assignment work. D5 and D6 are developed through lectures and tutorial work throughout the programme. D7 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.	Transferable skills are assessed through the following approaches:  D1, D2, D5 and D6 are assessed through coursework, individual major project and technical reports and oral presentations. D4 is assessed by review of group project work.  D3 and D7 are specifically assessed by review of an individual's progress during individual major project work.

## D. Programme Structures, Features, Levels, Modules, and Credits

The programme is offered in full-time (3 years), sandwich (4 years) or part-time (6 years) modes, and leads to an award of a BEng Degree with Honours in Electrical and Electronic Engineering.

Entry is normally at level 4 (with A-Level, or equivalent qualifications) but is possible at level 5 with suitable qualifications (e.g. an Edexcel HND in Engineering with appropriate subjects studied). Direct entry into level 6 is also possible, for example following successful completion of two years of a similar BEng or MEng degree programme at another HE institution. In this case, the final award will not be accredited.

### Professional and Statutory Regulatory Bodies

All awards on the programme have been accredited by the Institution of Engineering and Technology up to and including those graduating in 2020.

### Work-Based Learning, including Sandwich Programmes

A designated sandwich programme leads to a University award in the sandwich mode and the word "sandwich" appears on the award certificate. For the BEng to lead to an award in the sandwich mode, the student must undertake a period of approved work experience (industrial placement) of not less than 36 weeks, excluding holidays, normally during year 3. A maximum of two (2) separate placements can be taken neither of which should normally be less than 12 weeks in duration. As defined in UPR AS11.

The work experience will normally be completed within the United Kingdom but with approval may be completed within other countries. Progress of the student's training is monitored by visits from University academic staff. Students will be required to document this period of work in accordance with the guidelines produced by the School. Students on industrial placement will be registered on the

Placement Year Module (6AAD0015).

Students who have not achieved the minimum progression requirements at the end of level 5 may be prevented from undertaking a sandwich placement. The policy relating to progression onto the placement year from level 5 is given in the School Guidelines on Industrial Placements. Additionally, students on industrial placement but who have level 4 or 5 modules to repeat, will not normally be allowed to re-enrol on these modules until they return from industrial placement. This is to avoid a conflict between UH attendance requirements and the student's commitment to their employer.

Students who do not take the sandwich option, progressing directly to level 6, are automatically transferred to the full-time mode and are required to complete a Careers Portfolio to demonstrate their employability skills (6ENT1021). This portfolio will include evidence of any employment experiences the student has, evidence of any voluntary work experience, an audit of their employability skills and a careers action plan to further their employability skills post-graduation. It is expected that much of this evidence will have been gathered during the Career Skills Development module (4ENT1096) and Career Planning module (5ENT1082).

### Erasmus programme

Students may opt to study all, or a single semester, of level 5 abroad as part of a reciprocal agreement with a partner university. To be eligible for an exchange option, students must have passed 120 credits at level 4 with an average of at least 60%. The remaining requirements and details are as set out in Study Abroad Options below.

### Study Abroad Options

Students may also opt to take additional studies through the Year Abroad or Semester Abroad options at a partner institution in place of all or part of the sandwich placement year, i.e. between Levels 5 and 6. To be eligible for these options students will be expected to have passed 120 credits at level 4 and 120 credits at level 5 with an average of at least 60%. In order to maintain registration with UH, students studying abroad for a full year will be registered on 6ENT0001 whilst students studying abroad for a single semester will be enrolled on 6ENT1051. In recognition of the extra study, provided a full transcript of their achievement in the host academic institution is submitted to the Board of Examiners, this will lead to an award of a BEng Degree with Honours in one of the named awards as listed in Section 1 (page 2) "with Year Abroad" or "with Study Abroad" on the award.

### Further Features

In order to recognise the significant programme-related extra-curricular commitment and experience which can be gained by students who participate in Formula Student, the BMFA Heavy/Electric Lift Challenge, IMechE UAS Challenge, Imagine Cup or other similar competitions, there are three zero-credit-rated elective modules which students may take. These are:

Formula Student (6ENT1043)  
UAV Projects (6ENT1042)  
Smart Systems Integration (6ENT1044)

They are assessed on a Pass/Fail basis. If taken, they do not contribute to degree classification, but will appear on a student's results transcript.

### Programme Structure

The programme structure and progression information below (Table 1a and 1b) is provided for the Honours award. Any interim awards are identified in Table 1b. The Programme Learning Outcomes detailed above are developed and assessed through the constituent modules. Table 2 identifies where each learning outcome is assessed.

### Table 1a Outline Programme Structure

**Mode of study** The modes of study are Full Time: 3 years; Sandwich: 4 years and Part-time: 6 years

**Entry point** Semester A

The following notations should be read in conjunction with table below:

Electrical and Electronic Engineering = EE

## Level 4

c = compulsory module

o = optional module

Module Title	Module Code	Award	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		EE							Full Time Mode	Part Time Mode
Career Skills Development	4ENT1096	c	0	English	-	100	-	AB	1	1
Engineering Mathematics	4PAM1007	c	15	English	80	20	-	A	1	1
Introduction to Electronic Systems	4ENT1155	c	15	English	-	100	-	A	1	1
Sustainable Business of Electronics	4ENT1112	c	15	English	-	100	-	A	1	2
Digital Electronics & Computer Organisation	4ELE0050	c	15	English	80	20	-	A	1	2
Engineering Applications of Mathematics	4PAM1033	c	15	English	-	100	-	B	1	1
Electrical and Electronic Theory	4ENT1026	c	15	English	80	20	-	B	1	1
Electronic Engineering Practice	4ENT1113	c	15	English	-	100	-	B	1	2
Computer Programming for Electronics Engineers	4ELE0049	c	15	English	-	100	-	B	1	2
Introduction to Practical Safety for Engineers	4ENT1151	c	0	English	-	100	-	A	1	2

Progression to level 5 requires:

A minimum of 90 credits to remain on honours award.

Progression to non-honours level 5 with 75 credits may be permissible. The maximum study rate in such an instance would normally be 120 credits but students would be expected to remedy any failed modules from level 4 in the first instance.

## Level 5

c = compulsory module, o = optional module

Module Title	Module Code	Award	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		EE							Full Time Mode	Part Time Mode
Further Engineering Mathematics	5PAM1005	c	15	English	70	30	-	A	2	3
Digital Design & Embedded Systems	5ELE0060	c	15	English	70	30	-	A	2	3
Real-time Systems & Programming	5ELE0062	c	15	English	-	100	-	B	2	4
Electronic Communication Systems	5ENT1113	c	15	English	70	30	-	A	2	3
Project Management & Product Development	5ENT1080	c	15	English	70	30	-	B	2	3
Electrical Engineering & Power Control	5ELE0058	c	15	English	70	30	-	A	2	4
Mechatronic Systems Modelling & Control	5ENT1056	c	15	English	-	100	-	B	2	4
Mini Projects (Electrical)	5ENT1075	c	15	English	-	100	-	B	2	4
Career Planning	5ENT1082	c	0	English	-	100	-	AB	2	4
Foundations of Safety	5ENT1112	c	0	English	-	100	-	A	2	4

(\*) Note that the DCE and DSCE awards are being phased out.

Progression to level 6 requires:

210 credit points and above to Honours award.

Progression to non-honours level 6 with 180 credits may be permissible. The maximum study rate in such an instance would normally be 120 credits but students would be expected to remedy any failed modules from level 5 in the first instance.

## Level 6

c = compulsory module, o = optional module - all students who do not take the Placement Year module must take the Careers Portfolio module in year 4 (year 5 if Part Time and not employed by an appropriate engineering company). See Page 9 for details of the Study Abroad options. EE4 students must choose either Telecommunication Systems or Micro-Engineering and Micro-Technology.

Module Title	Module Code	Award	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		EE							Full Time Mode	Part Time Mode
Placement Year	6AAD0015	o	0	English	-	100	-	ABC	3	-
Year Abroad	6ENT0001	o	0	English	-	-	-	AB	3	-
Semester Abroad	6ENT1051	o	0	English	-	-	-	A/B	3	-
Careers Portfolio	6ENT1021	o	0	English	-	100	-	A	4	5
Microelectronics & VLSI	6ENT1027	c	15	English	60	40	-	A	4	5
Digital Signal Processing	6ELE0066	c	15	English	60	40	-	A	4	5
Power Systems	6ENT1146	c	15	English	60	40	-	A	4	6
Intelligent Systems and Robotics	6ELE0067	c	15	English	60	40	-	B	4	5
Advanced Power Conversion and Control	6ELE0062	c	15	English	60	40	-	B	4	6
Telecommunication Systems	6ELE0074	o	15	English	60	40	-	B	4	5
Micro-Engineering & Micro-Technology	6ENT1022	o	15	English	-	100	-	B	4	5
BEng Individual Project (Electrical)	6ENT1090	c	30	English	-	100	-	AB	4	6
Health and Safety as an Engineering Professional	6ENT1138	c	0	English	-	100	-	A	4	6

If any of the progression requirements stated above are not met then the Board of Examiners is empowered to require the student to transfer to the BEng (non-Honours). The study pattern for students transferring onto the BEng (non-Honours) route shall be agreed on a case-by-case basis with the BEng Programme Tutor or Associate Dean of School.

### Transitional Arrangements

No transitional requirement required.

### Honours classification

The University has approved structure and assessment regulations common to all programmes. Full details are provided in [UPR AS14](#), Section D. However, this programme has specific regulations relating to the determination of Honours classification given under the Programme Specific Regulations below.

### Table 1b Final and interim awards available

The programme provides the following final and interim awards:

#### Final Awards

Final Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
BEng (Hons) in the named award	Electrical and Electronic Engineering	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Compliance with IET compensation requirements	6	All programme learning outcomes (see Table 2)
BEng (Hons) in the named award (Sandwich)	Electrical and Electronic Engineering	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Compliance with IET compensation requirements. Additionally, students must satisfactorily complete the Placement Year module.	6	All programme learning outcomes (see Table 2)
BEng (Hons) in the named award with Study Abroad	Electrical and Electronic Engineering	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Compliance with IET compensation requirements. Additionally, students must satisfactorily complete Semester Abroad modules.	6	All programme learning outcomes (see Table 2)

BEng (Hons) in the named award with Year Abroad	Electrical and Electronic Engineering	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Compliance with IET compensation requirements. Additionally, students must satisfactorily complete the Year Abroad modules.	6	All programme learning outcomes (see Table 2)
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## Interim Awards

Interim Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
University Certificate		45 credit points at level 4	4	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>
Certificate of Higher Education		120 credit points at level 4	4, 5	<i>For untitled awards:</i> 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>
Diploma of Higher Education		240 credit points including at least 120 at level 5	5, 6	A1, A2, A3, B1, B2, C2, C3, D5, D6
BEng in the named award	Electrical and Electronic Engineering;  Electrical and Electronic Technology**;	300 credit points including 180 at level 6/5 of which 60 must be at level 6. For students entering directly at level 6 only, 75 UH specified credits must be at level 6 excluding the individual major project (*).	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, D5, D6
BEng in the named award (Sandwich)	Electrical and Electronic Engineering;  Electrical and Electronic Technology**;	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Additionally, students must satisfactorily complete the Placement Year.	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, C4, C5, C6 D1, D2, D5, D6
BEng in the named award with Study Abroad	Electrical and Electronic Engineering;  Electrical and Electronic Technology**;	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Additionally, students must satisfactorily complete the Semester Abroad modules.	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, D5, D6

BEng in the named award with Year Abroad	Electrical and Electronic Engineering;  Electrical and Electronic Technology**	300 credit points including 180 at level 6/5 of which 60 must be at level 6. Additionally, students must satisfactorily complete the Year Abroad modules.	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, D5, D6
BEng (Hons) in the named award	Electrical and Electronic Technology**	360 credit points including 240 at level 6/5 of which 120 must be at level 6. For students entering directly at level 6 only, 75 UH specified credits must be at level 6 excluding the individual major project (*). (Minimum IET compensation requirements have not been achieved).	6	All programme learning outcomes (see Table 2)
BEng(Hons) in the named award (Sandwich)	Electrical and Electronic Technology**	360 credit points including 240 at level 6/5 of which 120 must be at level 6 (Minimum IET compensation requirements have not been achieved). Additionally, students must satisfactorily complete the individual project and the Placement Year module.	6	All programme learning outcomes (see Table 2)
BEng(Hons) in the named award with Study Abroad	Electrical and Electronic Technology**	360 credit points including 240 at level 6/5 of which 120 must be at level 6 (Minimum IET compensation requirements have not been achieved). Additionally, students must satisfactorily complete the individual project and the Semester Abroad modules.	6	All programme learning outcomes (see Table 2)
BEng(Hons) in the named award with Year Abroad	Electrical and Electronic Technology**	360 credit points including 240 at level 6/5 of which 120 must be at level 6 (minimum IET compensation requirements have not been achieved). Additionally, students must satisfactorily complete the individual project and the Year Abroad modules.	6	All programme learning outcomes (see Table 2)

Notes:

(\*) in accordance with UPR AS11, the maximum APL permitted towards this interim award is 225 points at levels 4/5.

(\*\*) this Interim award is not accredited by the professional bodies.

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## Programme-specific assessment regulations

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:

- The following zero credit modules are taken by students at Level 4 and 5 respectively. They are compulsory modules although they have no academic impact on the student's degree outcome:
  - Career Skills Development - 4ENT1096
  - Career Planning - 5ENT1082
- Students who do not pass at their first attempt may be offered a referral (second assessment) opportunity for these modules. However, students who do not pass their referral assessment will not be given an opportunity to repeat the module in a subsequent year (FREN). If students do not pass the assessment at the second attempt their final transcript will show "FNFA" (Fail No Further Attempts).
- As specified by the accrediting body, a compensated pass cannot be awarded for the BEng Individual Project, which must be included in the calculation of degree classification.
- Limits on compensation are applied as set out below.

### BEng (Hons) accredited awards

To comply with IET accreditation regulations students entering the first year in 2018-2019 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. Compensation is not permitted for individual modules worth 30 or more credit points at level 4, 5 and 6.

For non-accredited awards, the standard University regulations on progression and compensation shall apply, and the Programme Board of Examiners shall have discretion to transfer a student onto a non-accredited award where it is to the advantage of the student to do so (for example, where the criteria for progression on an accredited award have not been met).

Course Code	Course Instance	Award Title	Modules (child instance codes & title)	Must be included in classification algorithm?
EIEE	EE3F, EE4S, EE6P	BEng (Hons) Electrical and Electronic Engineering	6ENT1090-0906	yes
EIEE	EEM3F, EEM4S, EEM6P	BEng (Hons) Electronic Engineering Technology***	6ENT1090-0906	yes

\*\*\* As an Interim award

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## E. Management of Programme & Support for student learning.

### Management

The programme is managed and administered through:

- Dean of School;
- Associate Dean of School (AQA) who has overall responsibility for Quality Assurance;

- Associate Dean of School (L&T) who has overall responsibility for Learning & Teaching;
- the Programme Leader who is responsible for the day to day management of the programme, chairing the programme committee and advising students on the programme;
- an Admissions Tutor, with specific responsibility for selection;
- a programme committee that includes the above plus student representation;
- module leaders who are responsible for individual modules.

## Support

Students are supported by:

- an induction week at the beginning of each new academic session;
- an extensive Learning Resources Centre, incorporating a library and computer centre;
- guided student-centred learning through the use of StudyNet;
- a student handbook that is specific to the programme;
- a Programme Leader who can advise on programme issues;
- Module teaching teams who provide academic support;
- Computer and technical laboratories facilities and technical support staff;
- a project supervisor;
- student representatives on the programme committee;
- the Study Success hubs
- the Careers, Employment and Enterprise Service that support students looking for either graduate employment or an industrial placement.
- a visiting tutor for students on placement;
- a Study Abroad Tutor who can advise on study abroad opportunities;
- a substantial Student Centre that provides advice on issues such as finance, University regulations and legal matters;
- the Medical Centre;
- the Accommodation Office;
- the International Students Centre who organise an Overseas Student Orientation induction programme;
- printing, photocopying, laminating and document binding facilities;
- Nightline – a confidential student listening and information service in the evening when other services are not available;
- a confidential counselling service;
- University Disability Advisors;
- an Equal Opportunities Officer;
- the Students' Union.

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## F. 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 Programme (or Student) Handbook;
- A Definitive Module Document (DMD) for each constituent module;
- A Module Guide 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 outstanding teaching, learning and outcomes for its students. It is of the highest quality found in the UK. Consequently, the University received a Gold award in the 2018 Teaching Excellence and Student Outcomes (TEF) exercise. This award was made in June 2018 and is valid for up to 3 years. The TEF panel's report and conclusions can be accessed at: <https://www.officeforstudents.org.uk/advice-and-guidance/teaching/tef-outcomes/#/provider/10007147>

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## G. Entry requirements

The normal entry requirements for the programme are:

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).

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If you wish to receive a copy of the latest Programme Annual Monitoring and Evaluation Report (AMER) and/or the External Examiner's Report for the programme, please email a request to [aqo@herts.ac.uk](mailto:aqo@herts.ac.uk)

## BEng with Honours in Electrical and Electronic Engineering

Table 2: Development of Intended Programme Learning Outcomes in the Constituent Modules

This map identifies 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.

		Programme Learning Outcomes (as identified in section 1 and the last page)																										
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills										
Module Title	Module Code	A1	A2	A3ee	A4	A5	B1ee	B2	B3	B4	B5ee	C1	C2ee	C3	C4	C5ee	C6	D1	D2	D3	D4	D5	D6	D7				
Level 4	Engineering Mathematics	4PAM1007	X											X									X	X				
	Engineering Applications of Mathematics	4PAM1033	X											X									X	X				
	Introduction to Electronic Systems	4ENT1155	X	X			X	X					X															
	Sustainable Business of Electronics	4ENT1112				X			X									X	X		X							
	Digital Electronics & Comp. Org.	4ELE0050		X			X				X		X															
	Comp. Prog. for Electronics Eng	4ELE0049		X				X			X	X																
	Electronic Engineering Practice	4ENT1113			X				X		X			X	X					X								
	Electrical & Electronic Theory	4ENT1026	X	X			X	X					X															
Career Skills Development	4ENT1096					X											X	X	X			X	X	X				
Level 5	Further Engineering Mathematics	5PAM1005	X						X					X										X				
	Digital Design & Embedded Systems	5ELE0060		X	X						X			X														
	Electronic Communication Systems	5ENT1113	X	X									X			X												
	Mechatronic Systems Modelling & Control	5ENT1056		X	X		X	X				X	X			X												
	Project Management & Product Dev.	5ENT1080	X		X		X	X			X			X			X	X				X	X					
	Real-time Systems & Programming	5ELE0062		X			X				X		X			X												
	Electrical Engineering & Power Control	5ELE0058		X			X					X	X			X												
	Mini Projects (Electrical)	5ENT1075					X			X	X		X										X	X				
Career Planning	5ENT1082					X											X					X						
Level 6	Year Abroad	6ENT0001																										
	Semester Abroad	6ENT1051																										
	Placement Year	6AAD0015				X	X								X	X	X	X	X					X				
	Microelectronics & VLSI	6ENT1027					X				X		X															
	Power Systems	6ENT1146				X	X	X			X	X	X	X		X												
	Digital Signal Processing	6ELE0066				X	X					X	X			X												
	BEng Individual Project (Electrical)	6ENT1090					X		X	X					X		X	X	X	X			X	X	X			
	Intelligent Systems and Robotics	6ELE0067			X			X			X	X	X	X		X												
Advanced Power Conversion & control	6ELE0062									X		X			X													
Telecommunication Systems	6ELE0074				X	X					X	X			X													
Micro-Engineering & Micro-Technology	6ENT1022		X	X		X				X		X	X		X													
Careers Portfolio	6ENT1021					X											X		X		X		X					

## **KEY TO PROGRAMME LEARNING OUTCOMES for Electrical and Electronic Engineering**

### **Knowledge and Understanding**

- A1. The analytical methods employed by engineers.
- A2. The fundamental engineering sciences.
- A3. The design principles and design-to-build processes appropriate to electrical and electronic systems.
- A4. The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5. Professional engineering practice.

### **Intellectual Skills**

- B1. Analyse and solve Electrical and Electronic Engineering problems using appropriate techniques
- B2. Model and analyse engineering systems
- B3. Select appropriate computer based methods for engineering and communication
- B4. Evaluate external influences on the design process
- B5. Design appropriate electrical and electronic systems, components or processes

### **Practical Skills**

- C1. Apply analytical and modelling techniques to solve engineering problems.
- C2. Perform experimental work in Electrical and Electronic Engineering and draw conclusions.
- C3. Use computer-based engineering tools.
- C4. Prepare technical documentation.
- C5. Evaluate the design of electrical and electronic systems, components or processes
- C6. Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

### **Transferable Skills**

- D1. Communicate effectively, both orally and in writing.
- D2. Use commonly available IT tools.
- D3. Manage time and resources effectively.
- D4. Work effectively within a team as a member.
- D5. Manipulate, sort and present data.
- D6. Solve problems in a logical manner.
- D7. Learn effectively and independently, in all aspects of life

## Section 2

### Programme management

<b>Relevant QAA subject benchmarking statements</b>	Engineering
<b>Type of programme</b>	Undergraduate
<b>Date of validation/last periodic review</b>	October 15
<b>Date of production/ last revision of PS</b>	April 2020
<b>Relevant to level/cohort</b>	All students entering September 2020
<b>Administrative School</b>	School of Engineering and Computer Science

Table 3 Course structure

Course details		
Course code	Course description	HECOS
EIEE	BEng (Hons) Electrical and Electronic Engineering	100163