

School of Engineering and Computer Science

Title of Programme: MEng Honours Electrical and Electronic Engineering

Programme Code: ENMENG

Programme Specification

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

Associate Dean of School (Academic Quality Assurance):

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.

Section	Amendment

If you have any queries regarding the changes please email AQO@herts.ac.uk

Programme Specification

MEng 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

Awarding Institution/Body	University of Hertfordshire
Teaching Institution	University of Hertfordshire
University/partner campuses	College Lane
Programme accredited by	See Page 8
Final Qualification	MEng
All Final Award titles	Electrical and Electronic Engineering*
(Qualification and Subject)	Electrical and Electronic Engineering (Sandwich) Electrical and Electronic Engineering with Year Abroad* Electrical and Electronic Engineering with Study Abroad*
	(* Accreditation is in progress)
FHEQ level of award	7
UCAS code(s)	H603
Language of Delivery	English

A. Programme Rationale

The School of Engineering and Technology offers a variety of MEng/BEng degrees. This programme specification covers those under the general category of Electronic and Communication Engineering. The programme has been developed to (i) satisfy the QAA Engineering Benchmark requirements (ii) to fulfil the initial 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 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 student progresses.

The additional study involved in the MEng award in comparison with a BEng Honours award aims to provide the opportunity to develop the potential to be a leader in the engineering profession and within the engineering industry. At the same time, greater subject specialism is allowed for by providing further study of the chosen engineering discipline.

BEng 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.

MEng graduates can expect to gain employment across a wide range of industries that require the skills of an electronic engineer. These industries include communications, computing, manufacture, defence, aerospace and automotive. MEng graduates can expect to gain rapid promotion into positions of responsibility with in industry. Alternatively some graduates may wish to extend their studies by taking a research based award.

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 engineering, giving technical breadth and depth beyond BEng Honours level;
- provide an education for the individual which enhances his/her prospects of professional employment in engineering and business both in national and international industries in a leadership capacity;
- provide studies which are accredited by one or more of the Professional Engineering institutions;
- provide studies which develop a depth of knowledge and understanding of a broad range of Electrical & Electronic Engineering area 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.

Knowledge and Understanding	Teaching and learning methods	Assessment strategy
A1- The analytical methods, to a comprehensive level, employed by Engineers.	Acquisition of knowledge and understanding is the following approaches:	Knowledge and understanding are assessed through a combination of unseen examinations (A1, A2, A3 and A5) and in-course assessments (A1-A6) 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 and 7 some aspects of A5 are assessed by case study reports.
A2- The engineering sciences to a comprehensive level.	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.	
A3- The principles and economic, social, legal, ethical, sustainability and technical risk considerations of the business and management of engineering. Design principles and design-to-build processes (including developing technologies) appropriate to electrical and electronic systems.	Additional support is provided through the Mathematics Drop-in Centre. Specialist aspects of A2 are further developed at level 6 and 7.	
A4- Professional engineering practice with an appreciation of likely new developments.	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. This will vary depending on the subject nature of a particular module and the level of study. 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.	
Intellectual skills	Teaching and learning methods	Assessment strategy
<p>B1 - Critically analyse and solve electrical and electronic engineering problems using appropriate techniques.</p> <p>B2 – Model and analyse engineering systems.</p> <p>B3- Fully evaluate external influences on the design processes including those outside of engineering.</p> <p>B4-Evaluate external influences on the design process.</p> <p>B5 - Design electrical and electronic systems, components or processes as applicable to both known and unfamiliar problems.</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 and 7. Feedback is given to all students on all coursework produced. Throughout, the learner is encouraged to develop intellectual skills further by independent study.</p>	<p>Intellectual skills B1, B2 and B3 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 including unfamiliar problems.</p> <p>C2 - Perform experimental work in electrical and electronic engineering and draw conclusions based on critical evaluation, making sound judgement in the absence of complete data.</p> <p>C3-Use computer-based engineering tools.</p> <p>C4- Prepare technical documentation and clearly communicate this to a range of audiences.</p> <p>C5 - Critically evaluate the design of electrical and electronic systems, components or processes.</p> <p>C6-Plan and manage a project, taking into account economic, social, legal, ethical and sustainability</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, 6 and 7.</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>

constraints and business strategy.	Feedback is given to all students on all coursework produced.	
Transferable skills	Teaching and learning methods	Assessment strategy
<p>D1-Communicate effectively, both orally and in writing to a range of audiences.</p> <p>D2-Use commonly available IT tools.</p> <p>D3-Manage time and resources effectively.</p> <p>D4-Work effectively within a team as a member or in a leadership role.</p> <p>D5-Manipulate, sort and present data.</p> <p>D6-Solve problems in a logical manner.</p> <p>D7-Learn effectively and independently, in all aspects of life.</p>	<p>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.</p> <p>D1 is developed through feedback on coursework reports, oral presentations and project reports.</p> <p>D2 is developed through their use in preparing project reports, laboratory reports, case studies, design work, etc.</p> <p>D3 is developed through project work planning and throughout the programme.</p> <p>D4 is developed through group project and assignment work.</p> <p>D5 and D6 are developed through lectures and tutorial work throughout the programme.</p> <p>D7 is developed and promoted throughout the programme.</p> <p>Throughout, the learner is encouraged to develop transferable skills by maintaining a record of evidence and completing a personal development plan.</p>	<p>Transferable skills are assessed through the following approaches.</p> <p>D1, D2, D5 and D6 are assessed through coursework, individual major project and technical reports, and oral presentations.</p> <p>D4 is assessed by review of group project work.</p> <p>D3 and D7 are specifically assessed by review of an individual's progress during individual major project work.</p>

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

The programme is offered in full-time (4 years), sandwich (5 years) or part-time (8 years) modes, and in all cases leads to the award of an MEng Degree. 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. It is possible for a BEng Honours student to transfer to the MEng in Engineering provided they have passed the MEng progression requirements for the level they wish to study at. A student who fails to meet the progression requirements to enter the final year of the programme, or wishes to leave at this stage for any other reason, will be eligible for the award of BEng Honours as an exit award.

Professional and Statutory Regulatory Bodies

Accreditation is currently in progress for all degrees on this programme.

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. In order 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. To achieve this, students must start their work experience before 1st October. 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. Since the student will have completed all the modules on the full-time award at UH the degree accreditation is unaffected and the degree classification is based only on modules studied at UH. It is not permissible for students to undertake an exchange year, where studies at a partner institution replace part of

their studies at UH.

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: 4 years; Sandwich: 5 years and Part-time: 8 years.

Entry point: Semester A

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

Electrical and Electronic Engineering = MEE

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	
		MEE							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	1

- Progression to level 5 of MEng requires a minimum of 120 credits with an average of 60%, including 50% or above in each module (from any allowable attempt)
- Progression to level 5 of BEng requires a minimum of 90 credits to remain on the 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(See page 8 for further details about the Exchange Year and Exchange Semester).

Module Title	Module Code	Award	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		MEE							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
Computer Aided Engineering	5ENT1078	-	15	English	-	100	-	A	2	4
Electronic Communication Systems	5ENT1113	c	15	English	70	30	-	A	2	3
Foundations of Safety	5ENT1112	c	0	English	-	100	-	A	2	4
Dynamics	5ENT1114	-	15	English	70	30	-	A	2	4
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
Structural Mechanics	5ENT1012	-	15	English	70	30	-	B	2	3
Mechatronic Systems Modelling & Control	5ENT1056	c	15	English	-	100	-	B	2	4
Integrated Engineering Systems Design	5ENT1033	-	15	English	-	100	-	B	2	4
Mini Projects (Electrical)	5ENT1075	c	15	English	-	100	-	B	2	4
Mini Projects (Communications)	5ENT1076	-	15	English	-	100	-	B	2	4
Mini Projects (Computer Engineering)	5ENT1073	-	15	English	-	100	-	B	2	4
Career Planning	5ENT1082	c	0	English	-	100	-	AB	2	4

- Progression to level 6 of MEng requires a minimum of 240 credits with an average of 60% at level 4 and 5. With at least 50% in each module (from any allowable attempt).
- Progression to level 6 of BEng Honours requires 210 credit points and above at level 4 and 5.
- 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. MEE4 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	
		MEE							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
Health and Safety as an Engineering Professional	6ENT1138	c	0	English	-	100	-	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
MEng Individual Project (Electrical)	6ENT1125	c	30	English	-	100	-	AB	4	6

Progression to level 7 requires: Eligibility for at least an upper second class BEng Honours exit award as defined in UPR AS14, the MEng Individual Project which must be included in the calculation of degree classification. Additionally, every module in the BEng must have been passed with at least 50% (from any allowable attempt).

Level 7

c = compulsory module.

o = optional module.

Module Title	Module Code	Award	Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		MEE							Full Time Mode	Part Time Mode
Successful Project Delivery	7ENT1049	c	15	English	-	100	-	A	5	8
MEng Team Project	7ENT1073	c	45	English	-	100	-	AB	5	8
Human Resource Management	7AAD0062	c	15	English	60	40	-	A	5	7
Advanced Power Electronics and Control	7ENT1051	c	15	English	60	40	-	A	5	7
Renewable Energy Systems and Smart Grids Technology	7ENT1120	c	15	English	-	100	-	B	5	7
Embedded Control Systems	7ENT1042	c	15	English	-	100	-	B	5	7

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 (Honours) or BEng (non-Honours) degree programme. 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 Leader or Associate Dean of School.

The award of a MEng Honours degree requires 480 credit points passed including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project and the MEng Team Project.

Honours classification

The University has approved structure and assessment regulations common to all programmes. Full details are provided in [UPR AS14](#), Section D.

Table 1b Final and interim awards available

The programme provides the following final and interim awards:

Final Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
MEng (Hons) in the named award	Electrical and Electronic Engineering	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project and the MEng Team Project. Compliant with IET compensation requirements	7	All programme learning outcomes for the named award (see Table 2)
MEng (Hons) in the named award (Sandwich)	Electrical and Electronic Engineering	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project, the MEng Team Project and the Placement Year module. Compliant with IET compensation requirements	7	All programme learning outcomes for the named award (see Table 2)
MEng (Hons) in the named award with Study Abroad	Electrical and Electronic Engineering	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project, the MEng Team Project and pass the Semester Abroad modules. Compliant with IET compensation requirements	7	All programme learning outcomes for the named award (see Table 2)
MEng (Hons) in the named award with Year Abroad	Electrical and Electronic Engineering	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7.	7	All programme learning outcomes for the named award (see Table 2)

		Additionally, students must satisfactorily complete an MEng Individual Project, the MEng Team Project and pass the Year Abroad modules. Compliant with IET compensation requirements		
--	--	--	--	--

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: http://sitem.herts.ac.uk/secreg/upr/AS11.htm
Certificate of Higher Education		120 credit points at level 4	4, 5	<i>For untitled awards:</i> See UPR AS11, section 13: http://sitem.herts.ac.uk/secreg/upr/AS11.htm
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	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	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	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	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)

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 either the Exchange Semester or the 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)
MEng (Hons) in the named award	MEng (Hons) Electrical and Electronic Technology**	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project and the MEng Team Project. Compliant with UH compensation requirements	7	All programme learning outcomes for the named award (see Table 2)
MEng (Hons) in the named award (Sandwich)	MEng (Hons) Electrical and Electronic Technology**	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project, the MEng Team Project and the Placement Year module. Compliant with UH compensation requirements	7	All programme learning outcomes for the named award (see Table 2)

MEng (Hons) in the named award with Study Abroad	MEng (Hons) Electrical and Electronic Technology**	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project, the MEng Team Project and pass the Semester Abroad modules. Compliant with UH compensation requirements.	7	All programme learning outcomes for the named award (see Table 2)
MEng (Hons) in the named award with Year Abroad	MEng (Hons) Electrical and Electronic Technology**	480 credit points including 360 at levels 7/6/5 of which 120 must be at level 7. Additionally, students must satisfactorily complete an MEng Individual Project, the MEng Team Project and pass the Year Abroad modules. Compliant with UH compensation requirements	7	All programme learning outcomes for the named award (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.

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 programme is compliant with the University's academic regulations ([UPR AS11](#), [UPR AS12](#) or [UPR AS13](#), [UPR AS14](#)) with the exception of those listed below, which have been specifically approved by the University:

- As specified by the accrediting body, a compensated pass cannot be awarded for the MEng Team Project, or MEng Individual Project and both must be included in the calculation of degree classification.
- As specified by the accrediting body, every module contributing to the 480 credits total must have been passed at 50% (from any allowable attempt) and the average for each of the first three years of the degree must be at least 60%.
- Students who take either of the Study Abroad options (See page 9) can receive an accredited award as they will have taken all the modules required by the accrediting body.
- Students exiting with an accredited BEng (Hons) Award shall have their degree classification determined in accordance with UPR AS14 and the compensation requirements of the accrediting body. Additionally, the MEng Individual Project cannot be compensated and must be included in the calculation of degree classification.
- Students exiting with a non-accredited BEng (Hons) Award or MEng (Hons) shall have their degree classification determined in accordance with UPR AS14. Additionally, the MEng Individual Project cannot be compensated and must be included in the calculation of degree classification.

Course Code	Course Instance	Award Title	Modules	Must be included in Award degree algorithm
-------------	-----------------	-------------	---------	--

ENMENG	MEE4F, MEE5S, MEE8P	MEng Honours in Electrical and Electronic Engineering	7ENT1073-0906 MEng Team Project 6ENT1125 -0906 MEng Individual Project (Electrical)	Yes
--------	---------------------------	---	--	-----

Progression and Compensation

To comply with IET accreditation 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, and 40% (in any allowable attempt) at level 7, 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, 6 and 7.

Major projects (group and individual) i.e. Final year project, MSc individual project and MEng Team project cannot be compensated.

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).

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;
- a Programme Administrator and administrative assistants in the school office;
- 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 Mathematics Drop-in Centre;
- 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.

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>

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).

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 ago@herts.ac.uk

MEng 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											
		A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	D7					
Module Title	Module Code																												
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		X													
Career Skills Development	4ENT1096					X												X	X	X		X	X	X					
Level 5	Further Engineering Mathematics	5PAM1005	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						
	Mobile & Digital Communication Networks	6ELE0069				X					X		X																
	Microelectronics & VLSI	6ELE0068				X					X		X				X												
	Digital Signal processing	6ELE0066				X	X					X	X				X												
	MEng Individual Project (Electrical)	6ENT1125					X		X	X					X		X	X	X	X	X	X	X	X					
	Telecommunication Systems	6ELE0074				X	X					X	X				X												
	Power Systems	6ENT1146				X	X	X			X	X	X	X			X												
	Micro-Engineering & Micro Technology	6ENT1022		X	X		X				X		X	X			X												
	Advanced Power Conversion & Control	6ELE0062									X		X				X												
	Careers Portfolio	6ENT1021					X												X		X		X						
Level 7	MEng Team Project	7ENT1073			X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X					
	Successful Project Delivery	7ENT1049				X	X			X					X	X	X	X	X	X	X	X	X	X					
	Advanced Power Electronics and Control	7ENT1051			X			X			X	X	X				X				X	X	X						
	Renewable Energy Systems and Smart Grids Te	7ENT1052		X		X	X				X				X			X											
	Embedded Aerospace Systems	7AAD0037		X	X						X			X	X	X			X										
	Human Resource Management	7AAD0062				X		X									X												

Key to Programme Learning Outcomes for Electrical and Electronic Engineering

Knowledge and Understanding e.g.

- A1 The analytical methods, to a comprehensive level, employed by Engineers.
- A2 The engineering sciences to a comprehensive level.
- A3ee The design principles and design-to-build processes (including developing technologies) appropriate to electrical and electronic systems.
- A4 The principles and economic, social, legal, ethical, sustainability and technical risk considerations of the business and management of engineering.
- A5 Professional engineering practice with an appreciation of likely new developments.

Intellectual Skills e.g.

- B1ee Critically analyse and solve Electrical and Electronic Engineering problems using appropriate techniques.
- B2 Model and critically analyse engineering systems.
- B3 Appreciate the limitations, and make sound judgement, when selecting appropriate computer based methods for engineering and communication.
- B4 Fully evaluate external influences on the design process including those outside of engineering.
- B5ee Design electrical and electronic systems, components or processes as applicable to both known and unfamiliar problems.

Practical Skills

- C1 Apply analytical and modelling techniques to solve engineering problems including unfamiliar problems.
- C2ee Perform experimental work in Electrical and Electronic engineering, and draw conclusions based on critical evaluation, making sound judgement in the absence of complete data.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation and clearly communicate this to a range of audiences.
- C5ee Critically 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 and business strategy.

Transferable Skills

- D1 Communicate effectively, both orally and in writing to a range of audiences.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member or in a leadership role.
- 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

Relevant QAA subject benchmarking statements

Type of programme

Date of validation/last periodic review

Date of production/ last revision of PS

Relevant to level/cohort

Administrative School

Engineering

Enhanced Undergraduate

October 15

April 2020

Level 4 entering September 2020

School of Engineering and Technology

Table 3 Course structure

Course details		
Course code	Course description	HECOS
ENMENGEE	MEng (Hons) Electrical and Electronic Engineering	100163