Programme Information & PLOs - BEng Programmes

Title of the new programme – including any year abroad/ in industry variants

Note: Bold letters refer to module diet columns to the right of the summative assessment maps below.

A: BEng Electronic Engineering with Foundation Year (H604)
B: BEng Music Technology Systems with Foundation Year (H662)
C: BEng Electronic Engineering (H610), BEng Electronic Engineering with a year in industry (H611)
D: BEng Electronic and Computer Engineering (H634), BEng Electronic and Computer Engineering with a year in industry (H635)
E: BEng Electronic Engineering with Nanotechnology (H6F3), BEng Electronic Engineering with Nanotechnology with a year in industry (H6F4)
F: BEng Music Technology Systems (H663), BEng Music Technology Systems with a year in industry (H664), BEng Electronic Engineering with Music Technology Systems (H667), BEng Electronic Engineering with Music Technology Systems with a year in industry (H661)
G: BEng Electronic and Communication Engineering (H621), BEng Electronic and Communication Engineering with a year in industry (H622)
H: BEng Electronic Engineering with Business Management (H6N2), BEng Electronic Engineering with Business Management with a year in industry (H6N3)

Level of qualification

Please select:	Level 6

Please indicate if the programme is offered with any year abroad / in industry variants	**Year in Industry** Please select Y/N	Yes
	Year Abroad Please select Y/N	No

Department(s):
Where more than one department is involved, indicate the lead department

Lead Department	Electronic Engineering
Other contributing Departments:	n/a

Programme Leader

Dr. Andrew Pomfret

Purpose and learning outcomes of the programme

Statement of purpose for applicants to the programme

The Appendices contain the individual Educational Aims statements for each of our programmes. These are intended to be applicant-facing, and to summarise the specialist field and how our programme fits into that field. As an example, here is our statement for BEng Electronic Engineering:

The electronics industry has revolutionised life in the last few decades, and continues to push the boundaries of the physical world to produce faster, more powerful and more cost-effective technologies that enable products such as personal computers, mobile phones and the Internet. This programme provides a solid core of knowledge in the discipline, allowing students to choose specialist options for deeper study later in the degree, providing considerable flexibility for you to develop your subject-specific knowledge according to your own developing interests.
Electronics is an exciting and fascinating world of large-scale projects with ever-increasing demands for solutions and innovation. To succeed in such an environment, graduates need to be knowledgeable, highly-skilled, professional and adept at communication and project management. Drawing on the expertise of the teaching and research staff at York, and including individual and group projects at every stage of the degree to develop practical, organisational, management and business skills, this programme will provide you with precisely the abilities and approaches you will need to operate with confidence – as a designer, operator or manager - in the challenging world of Electronics.
As with all our undergraduate degrees, the BEng Electronic Engineering is fully accredited by the Institute of Engineering and Technology.

Programme Learning Outcomes
Please provide six to eight statements of what a graduate of the programme can be expected to do.
Taken together, these outcomes should capture the distinctive features of the programme. They should also be outcomes for which progressive achievement through the course of the programme can be articulated, and which will therefore be reflected in the design of the whole programme.

PLO	On successful completion of the programme, graduates will be able to:
1	Assess electronic engineering designs by applying detailed knowledge of algorithms, devices and systems and by consulting relevant documentation and research.
2	Evaluate system & component performance through a variety of analytical techniques including computational methods and modelling.
3	Create designs to address real-world problems by synthesising ideas into engineering specifications.
4	Solve technical problems through employing skills in programming, CAD, construction and measurement and by using safe laboratory techniques.
5	Clearly communicate and explain electronic engineering issues and practice in a technically accurate manner to a variety of audiences, verbally, in writing and using multimedia.
6	Coordinate and execute complex projects (with effective time management, team working, and ethical decision-making) in preparation for technical careers in electronics, computing and related disciplines.

	*Please note that the above are **indicative** PLOs, taken from our BEng Electronic Engineering (H604). The PLOs for each programme are given at the top of each programme's map, and in the Appendices .*

Programme Learning Outcome for year in industry (where applicable)

For programmes which lead to the title 'with a Year in Industry' – typically involving an additional year – please provide either a) amended versions of some (at least one, but not necessarily all) of the standard PLOs listed above, showing how these are changed and enhanced by the additional year in industry b) an additional PLO, if and only if it is not possible to capture a key ability developed by the year in industry by alteration of the standard PLOs.

We are choosing the latter option, and introducing an extra PLO for the industrial year. That way, we can leave the rest of the degree unaffected in its mapping, which makes sense, so that the learning ladders of PLOs 1-6 flow consistently for the industry and non-industry variants. PLO7 will only appear in programmes that include an industrial year.

PLO7: Explain and reflect on the role of the engineer in society and in company structure, and on the nature of their own learning style, based on personal experience in a commercial company or academic research institution.

Programme Learning Outcome for year abroad programmes (where applicable)

For programmes which lead to the title 'with a Year Abroad' – typically involving an additional year – please provide either a) amended versions of some (at least one, but not necessarily all) of the standard PLOs listed above, showing how these are changed and enhanced by the additional year abroad or b) an additional PLO, if and only if it is not possible to capture a key ability developed by the year abroad by alteration of the standard PLOs.

N/A

Explanation of the choice of Programme Learning Outcomes

Please explain your rationale for choosing these PLOs in a statement that can be used for students (such as in a student handbook). Please include brief reference to:

i) Why the PLOs are considered ambitious or stretching?

The PLOs are intended to form the top rung of a learning ladder which helps the student progress from school-based A-level (or equivalent) knowledge to being employment-ready in the engineering sector. They give structure to gaining and using IET-accredited subject knowledge, applying this through professional practical skills, and being able to communicate clearly and accurately.

ii) The ways in which these outcomes are distinctive or particularly advantageous to the student:

Our PLOs are all based on a core set of competencies which align well with the AHEP3 (Accreditation of Higher Education Programmes) learning outcomes which are at the core of our industry body – the IET's accreditation policy. However, our different programmes give the students a range of application areas (e.g. music technology, nanotechnology etc.), each with their own inflections of the PLOs.

The main advantage to the student is that the core degree is professionally accredited, but that there are a range of subject-specialisms which are reflected in the programme title, content and PLOs.

iii) How the programme learning outcomes develop students' digital literacy and will make appropriate use of technology-enhanced learning (such as lecture recordings, online resources, simulations, online assessment, 'flipped classrooms' etc)?

In all our programmes students are fully immersed in digital literacy, not just from a user's point of view, but in actively understanding and being able to contribute to the design and development of the next generation of computing hardware and software.

We have built in a wide range of assessment styles throughout the degree. Core knowledge is assessed in closed and open book examinations, as well as formatively in workshops, tutorials and on-line exercises. Many assignments are designed to give real-world scenarios, allowing students to create solutions and technically document them (by computer code, creating a video demo, public presentation, keeping a blog, and a variety of documentation formats to mimic the real-world expectations).

The Department's own internal website is the main repository of student-facing reading materials, giving access to lecture and support material for each module. We are using the VLE almost exclusively to handle assessment submission and feedback to students, and some modules include much interactive learning material.

The programmes help students gain a wide variety of practical experience and teamwork (working in pairs in labs, and in year-long group projects in Stages 1 and 2) and culminating in a major solo project entirely managed by the student with support throughout from a project supervisor.

iv) How the PLOs support and enhance the students' employability (for example, opportunities for students to apply their learning in a real world setting)?
The programme's employablity objectives should be informed by the University's Employability Strategy:

Each of our programmes comes with an industrial variant, where students will take a one year placement in a related company or academic research institution. In this year students gain a thorough grounding in how the company operates, and get to work in a variety of job-roles in the company before finalising on a major research and production project.

As mentioned above we provide a variety of assessment scenarios and formats which are based on realistic situations that the students might encounter after graduation.

All students benefit from a thread of self-management and project-management opportunities in the group projects in stages 1 and 2, which build to give realistic experience of research, design, construction, testing and marketing of novel products.

vi) How will students who need additional support for academic and transferable skills be identified and supported by the Department?

The Department has a strong academic and pastoral supervision system, which allows students to get to know other members of a 6-student team during their first year. They meet in the group and individually with a supervisor (academic member of staff) to discuss their work, progress and general wellbeing. It is usually at this point that problems are picked up, especially as various group activities in the first year are based around the supervision group.

Lecturers are happy to give extra support related to their subject material, but those struggling with specific aspects of work will discuss this with their supervisor and can be referred (such as to the University's Maths Skills Centre, which we helped to establish).

If it appears that a student may have an undiagnosed disability we have a Disability Support Officer who can provide initial confidential discussion before referring to University Disability Services.

The Department also runs a successful mentoring scheme where 3rd and 4th years and postgraduates can provide one-to-one support, advice and encouragement for struggling students.

Students with significant personal difficulties or seen as underperforming academically may be directed to see the Chair of the Board of Studies, who may be more experienced than the supervisor in certain cases and may be better positioned to advise on students' options, involving contacts with the Open Door Team, Student Support Office, taking a Leave of Absence, or, in some extreme cases, voluntary withdrawal from studies.

vii) How is teaching informed and led by research in the department/ centre/ University?

All our students must demonstrate an understanding of the state of the art in tools and technologies, assessed via a literature review as part of the final-year project.

All academic (ART) staff members are expected to carry out research, and T&S staff are expected to keep up to date with their discipline. Research is organised in research groups and all staff are linked to one or more groups. These research groups align well with our teaching specialist streams. Staff are expected to keep up with their fields of research interest through conferences and literature, to supervise PhD and MSc by Research students, to write grant applications and to supervise PDRAs. New lecturers are given lighter teaching loads in their first year or two to enable them to have additional time to develop their research.

One of the most commonly cited reasons for coming to York Electronics Department is the choice of undergraduate specialisms. York was the first University in the UK to produce courses in 'MusTech', firstly at Masters Level and then at Undergraduate. Its ongoing success means that we have a thriving community of students who are just at home with creativity and production as they are at engineering analysis and design. Employers have noticed what successful all-round creative engineers they are and constantly return for new employees.

York's growing Nanotechnology infrastructure has enabled the development of the UK's first IET accredited degree programme in this area. The Nanotechnology Research Centre (http://www.york.ac.uk/nanocentre/) is linked closely to our taught provision in this area.

Stage-level progression

Please complete the table below, to summarise students' progressive development towards the achievement of PLOs, in terms of the characteristics that you expect students to demonstrate at the end of each year. This summary may be particularly helpful to students and the programme team where there is a high proportion of option modules.

Note: it is not expected that a position statement is written for each PLO, but this can be done if preferred (please add information in the 'individual statement' boxes). For a statement that applies across all PLOs in the stage fill in the 'Global statement' box.

Stage 0 (if your programme has a Foundation year, use the toggles to the left to show the hidden rows)							
Stage 1							
On progression from the first year (Stage 1), students will be able to:			Understand and appreciate the fundamentals of electronic engineering - principles, components and devices				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6		
Understand fundamental algorithms and devices, and appreciate their limitations.	Use laboratory and programming tools to execute well-defined experiments and engineering solutions.			Work with others and communicate effectively, verbally and in writing.	Engage with team working, ethics, project management, Intellectual Property, and applied numeracy.		
Stage 2							
On progression from the second year (Stage 2), students will be able to:			Have a theoretical and practical awareness of larger-scale electronic systems - how components work together to form operational units				
PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6		
Understand systems and select appropriate solutions.	Design, execute and test hardware and software components and systems to meet defined specifications.			Summarise and show understanding of engineering issues and practice.	Organise and manage a project team to produce a business plan and marketing strategy for a product.		

Programme Structure

Module Structure and Summative Assessment Map

Please complete the summary table below which shows the module structure and the pattern of summative assessment through the programme.

'Option module' can be used in place of a specific named option. If the programme requires students to select option modules from specific lists these lists should be provided in the next section.

From the drop-down select 'S' to indicate the start of the module, 'A' to indicate the timing of each distinct summative assessment point (eg. essay submission/ exam), and 'E' to indicate the end of the module (if the end of the module coincides with the summative assessment select 'EA') . It is not expected that each summative task will be listed where an overall module might be assessed cumulatively (for example weekly problem sheets).

If summative assessment by exams will be scheduled in the summer Common Assessment period (weeks 5-7) a single 'A' can be used within the shaded cells as it is understood that you will not know in which week of the CAP the examination will take place.

Stage 0

Credits	Module		Autumn Term										Spring Term										Summer Term									
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
15	ELE00001F	Maths I	S									EA																				
15	ELE00002F	Physics & Electronics I	S									EA																				
10	ELE00003F	Fundamentals of Electronic Measurement	S																							E						
40	ELE00004F	Maths II											S									A				E				A		
40	ELE00005F	Physics & Electronics II											S									A				E				A		

Stage 1

Credits	Module		Autumn Term										Spring Term										Summer Term									
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
30	ELE00023C	Analogue Electronics & Physics	S																							E			A			
10	ELE00024C	Audio Technology	S									E		A																		
15	ELE00025C	Digital Circuits	S																							E			A			
20	ELE00026C	Digital Systems											S													E	A		A			

10	ELE00027C	Engineering Design	S																						E		A				
20	ELE00028C	Intro to Nanoscience & Nanotechnology											S												EA						
15	ELE00029C	Introduction to Programming	S																						E	A					
30	ELE00030C	Mathematics	S										A												E			A			
10	ELE00031C	Recording Studio Techniques											S												E						

Stage 2

Credits	Module		Autumn Term										Spring Term										Summer Term									
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
20	ELE00031I	Engineering Mathematics, Systems & Signals	S										A													E			A			
20	ELE00034I	Noise, Waves & Fields	S																							E			A			
10	ELE00030I	Digital Design with HDL	S									E	A																			
15	ELE00040I	Java Programming											S													E	A	A				
15	ELE00041I	Design, Construction & Test											S													E		A				
20	ELE00035I	Semiconductor Devices & Circuits	S																							E			A			
20	ELE00028I	Algorithms & Numerical Methods	S																							E	A		A			
20	ELE00027I	Acoustics & Psychoacoustics	S																							E		A				
20	ELE00033I	Nanofabrication & Nanoanalysis											S									EA										

15	ELE00042I	Design, Construction & Test for Audio											S												E		A				
Stage 3																															
Credits	**Module**		**Autumn Term**										**Spring Term**										**Summer Term**									
	Code	**Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
40	ELE00004H	BEng Individual Project	S																							E		A				
10	ELE00049H	Control	S									E	A																			
10	ELE00048H	Communication Systems	S									E	A																			
10	ELE00055H	Principles of DSP											S													E			A			
20	ELE00046H	Applications of EM	S									E	A																			
20	ELE00051H	iOS Audio Programming	S									E		A																		
20	ELE00054H	Multimedia Sound Design											S													E	A					
10	ELE00008H	Management & Marketing of Technology	S									E	A																			
10	ELE00009H	Law for Engineering Management	S									E		A																		
10	ELE00045H	Analogue Engineering											S													E			A			
10	ELE00057H	State Space & Digital Control											S													E			A			
10	ELE00050H	Digital Communication Systems											S													E			A			
10	ELE00052H	LAN & Internet Protocols											S									E							A			
10	ELE00012H	Mobile Communication Systems											S									E							A			

10	ELE00047H	Cloud & Distributed Computer Systems											S													E	A					
10	ELE00011H	Digital Engineering											S									E	A									
10	ELE00015H	Accounting & Finance											S									E							A			
10	ELE00023H	Nanoelectronics											S									E							A			
10	ELE00025H	Photonics & Nanophotonics											S									E							A			

Programme Information & PLOs - MEng Programmes

Title of the new programme – including any year abroad/ in industry variants

Note: Bold letters refer to module diet columns to the right of the summative assessment maps below.

I: MEng Electronic Engineering (H609), MEng Electronic Engineering with a year in industry (H608)
J: MEng Electronic and Computer Engineering (H639), MEng Electronic and Computer Engineering with a year in industry (H638)
K: MEng Electronic Engineering with Nanotechnology (H6FH), MEng Electronic Engineering with Nanotechnology with a year in industry (H6FG)
L: MEng Music Technology Systems (H666), MEng Music Technology Systems with a year in industry (H668), MEng Electronic Engineering with Music Technology Systems (H669), MEng Electronic Engineering with Music Technology Systems with a year in industry (H668)
M: MEng Electronic and Communication Engineering (H629), MEng Electronic and Communication Engineering with a year in industry (H628)
N: MEng Electronic Engineering with Business Management (H6NG), MEng Electronic Engineering with Business Management with a year in industry (H6NF)

Level of qualification

Please select:	Level 7

Please indicate if the programme is offered with any year abroad / in industry variants	**Year in Industry** Please select Y/N	Yes
	Year Abroad Please select Y/N	No

Department(s):
Where more than one department is involved, indicate the lead department

Lead Department	Electronic Engineering
Other contributing Departments:	

Programme Leader

Dr. Andrew Pomfret

Purpose and learning outcomes of the programme

Statement of purpose for applicants to the programme
Please express succinctly the overall aims of the programme as an applicant facing statement for a prospectus or website. This should clarify to a prospective student why they should choose this programme, what it will provide to them and what benefits they will gain from completing it.

The Appendices contain the individual Educational Aims statements for each of our programmes. These are intended to be applicant-facing, and to summarise the specialist field and how our programme fits into that field. As an example, here is our statement for MEng Electronic Engineering:

The electronics industry has revolutionised life in the last few decades, and continues to push the boundaries of the physical world to produce faster, more powerful and more cost-effective technologies that enable products such as personal computers, mobile phones and the Internet. This programme provides a solid core of knowledge in the discipline, allowing students to choose specialist options for deeper study later in the degree, providing considerable flexibility for you to develop your subject-specific knowledge according to your own developing interests.

Electronics is an exciting and fascinating world of large-scale projects with ever-increasing demands for solutions and innovation. To succeed in such an environment, graduates need to be knowledgeable, highly-skilled, professional and adept at communication and project management. Drawing on the expertise of the teaching and research staff at York, and including individual and group projects at every stage of the degree to develop practical, organisational, management and business skills, this programme will provide you with precisely the abilities and approaches you will need to operate with confidence – as a researcher, expert designer or technical manager - in the challenging world of Electronics.

The final year of this Masters-level programme extends the Bachelors (BEng) programme by providing an opportunity for further engagement with research staff, technology and literature. Students will manage a large-scale individual project, and extend their knowledge and experience in a variety of core and optional topic areas; together these opportunities allow you to develop the knowledge and skills required to take a leadership role in pushing forward this specialist subject area.

As with all our undergraduate degrees, the MEng Electronic Engineering is fully accredited by the Institute of Engineering and Technology, and satisfies the educational requirements for becoming a Chartered Engineer.

Programme Learning Outcomes

Please provide six to eight statements of what a graduate of the programme can be expected to do.

Taken together, these outcomes should capture the distinctive features of the programme. They should also be outcomes for which progressive achievement through the course of the programme can be articulated, and which will therefore be reflected in the design of the whole programme.

PLO	On successful completion of the programme, graduates will be able to:
1	Conduct research in applied electronic engineering and computing to advance the state of knowledge in algorithms, devices and systems.
2	Extract and critically evaluate data from complex systems through a variety of analytical techniques including computational methods and modelling.
3	Create innovative and optimised designs to address real-world problems by synthesising ideas into engineering specifications.
4	Apply professional skills of programming, CAD, construction and measurement, combined with an understanding of engineering systems and components, to solve technically challenging problems.
5	Debate, defend and contextualise information in a succinct and technically accurate manner for audiences of engineers and members of the public, and to write and interpret technical documentation.
6	Proficiently manage themselves, teams and complex projects in preparation for technical careers as leaders in electronics, computing and related disciplines.

	Please note that the above are ***indicative*** *PLOs, taken from our MEng Electronic Engineering (H609). The PLOs for each programme are given at the top of each programme's map, and in the Appendices* .
Programme Learning Outcome for year in industry (where applicable) For programmes which lead to the title 'with a Year in Industry' – typically involving an additional year – please provide either a) amended versions of some (at least one, but not necessarily all) of the standard PLOs listed above, showing how these are changed and enhanced by the additional year in industry b) an additional PLO, if and only if it is not possible to capture a key ability developed by the year in industry by alteration of the standard PLOs.	
We are choosing the latter option, and introducing an extra PLO for the industrial year. That way, we can leave the rest of the degree unaffected in its mapping, which makes sense, so that the learning ladders of PLOs 1-6 flow consistently for the industry and non-industry variants. PLO7 will only appear in programmes that include an industrial year. **PLO7**: Explain and reflect on the role of the engineer in society and in company structure, and on the nature of their own learning style, based on personal experience in a commercial company or academic research institution.	
Programme Learning Outcome for year abroad programmes (where applicable) For programmes which lead to the title 'with a Year Abroad' – typically involving an additional year – please provide either a) amended versions of some (at least one, but not necessarily all) of the standard PLOs listed above, showing how these are changed and enhanced by the additional year abroad or b) an additional PLO, if and only if it is not possible to capture a key ability developed by the year abroad by alteration of the standard PLOs.	
N/A	
Explanation of the choice of Programme Learning Outcomes Please explain your rationale for choosing these PLOs in a statement that can be used for students (such as in a student handbook). Please include brief reference to:	
i) Why the PLOs are considered ambitious or stretching?	
The PLOs are intended to form the top rung of a learning ladder which helps the student progress from school-based A-level (or equivalent) knowledge to being employment-ready in the engineering sector. The MEng PLOs are based on those for the BEng programmes, and give structure to gaining and using IET-accredited subject knowledge, applying this through professional practical skills, and being able to communicate clearly and accurately. They stretch the students further by emphasising engagement with cutting-edge research, critical evaluation, debate and contextualisation, and the management of complex projects.	
ii) The ways in which these outcomes are distinctive or particularly advantageous to the student:	
Our PLOs are all based on a core set of competencies which align well with the AHEP3 (Accreditation of Higher Education Programmes) learning outcomes which are at the core of our industry body – the IET's accreditation policy. However, our different programmes give the students a range of application areas (e.g. music technology, nanotechnology etc.), each with their own inflections of the PLOs. The main advantage to the student is that the core degree is professionally accredited, but that there are a range of subject-specialisms which are reflected in the programme title, content and PLOs.	

iii) How the programme learning outcomes develop students' digital literacy and will make appropriate use of technology-enhanced learning (such as lecture recordings, online resources, simulations, online assessment, 'flipped classrooms' etc)?
In all our programmes students are fully immersed in digital literacy, not just from a user's point of view, but in actively understanding and being able to contribute to the design and development of the next generation of computing hardware and software. We have built in a wide range of assessment styles throughout the degree. Core knowledge is assessed in closed and open book examinations, as well as formatively in workshops, tutorials and on-line exercises. Many assignments are designed to give real-world scenarios, allowing students to create solutions and technically document them (by computer code, creating a video demo, public presentation, keeping a blog, and a variety of documentation formats to mimic the real-world expectations). The Department's own internal website is the main repository of student-facing reading materials, giving access to lecture and support material for each module. We are using the VLE almost exclusively to handle assessment submission and feedback to students, and some modules include much interactive learning material. The programmes help students gain a wide variety of practical experience and teamwork (working in pairs in labs, and in year-long group projects in Stages 1 to 3) and culminating in a major solo project entirely managed by the student with support throughout from a project supervisor.
iv) How the PLOs support and enhance the students' employability (for example, opportunities for students to apply their learning in a real world setting)? The programme's employablity objectives should be informed by the University's Employability Strategy:
Each of our programmes comes with an industrial variant, where students will take a one year placement in a related company or academic research institution. In this year students gain a thorough grounding in how the company operates, and get to work in a variety of job-roles in the company before finalising on a major research and production project. As mentioned above we provide a variety of assessment scenarios and formats which are based on realistic situations that the students might encounter after graduation. MEng students benefit from a thread of self-management and project-management opportunities in the group projects in stages 1 to 3, which build to give realistic experience of research, design, construction, testing and marketing of novel products. In Stage 3, this consists of a major Software Engineering project in which groups of 8 or 9 students form companies and engage in the entire process of tendering ideas, producing marketing plans, designing, coding and testing software, and operating throughout as a company with official documentation and Quality Assurance.
vi) How will students who need additional support for academic and transferable skills be identified and supported by the Department?

The Department has a strong academic and pastoral supervision system, which allows students to get to know other members of a 6-student team during their first year. They meet in the group and individually with a supervisor (academic member of staff) to discuss their work, progress and general wellbeing. It is usually at this point that problems are picked up, especially as various group activities in the first year are based around the supervision group.

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vii) How is teaching informed and led by research in the department/ centre/ University?

All our students must demonstrate an understanding of the state of the art in tools and technologies, assessed via a literature review as part of the final-year project.

As students progress through an MEng degree they move from learning about the fundamental principles and techniques through to engaging with the latest research in the area.

All academic (ART) staff members are expected to carry out research, and T&S staff are expected to keep up to date with their discipline. Research is organised in research groups and all staff are linked to one or more groups. These research groups align well with our teaching specialist streams. Staff are expected to keep up with their fields of research interest through conferences and literature, to supervise PhD and MSc by Research students, to write grant applications and to supervise PDRAs. New lecturers are given lighter teaching loads in their first year or two to enable them to have additional time to develop their research.

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Stage-level progression

Please complete the table below, to summarise students' progressive development towards the achievement of PLOs, in terms of the characteristics that you expect students to demonstrate at the end of each year. This summary may be particularly helpful to students and the programme team where there is a high proportion of option modules.

Note: it is not expected that a position statement is written for each PLO, but this can be done if preferred (please add information in the 'individual statement' boxes). For a statement that applies across all PLOs in the stage fill in the 'Global statement' box.

Stage 0 (if your programme has a Foundation year, use the toggles to the left to show the hidden rows)

Stage 1

On progression from the first year (Stage 1), students will be able to:	Understand and appreciate the fundamentals of electronic engineering - principles, components and devices

PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6		
Understand fundamental algorithms and devices, and appreciate their limitations.	Use laboratory and programming tools to execute well-defined experiments and engineering solutions.			Work with others and communicate effectively, verbally and in writing.	Engage with team working, ethics, project management, Intellectual Property, and applied numeracy.		

Stage 2

On progression from the second year (Stage 2), students will be able to:	Have a theoretical and practical awareness of larger-scale electronic systems - how components work together to form operational units

PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6		
Understand systems and select appropriate solutions.	Design, execute and test hardware and software components and systems to meet defined specifications.			Summarise and show understanding of engineering issues and practice.	Organise and manage a project team to produce a business plan and marketing strategy for a product.		

Stage 3

(For Integrated Masters) On progression from the third year (Stage 3), students will be able to:	Have a professional understanding of applications - how components and systems are used in real life

PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6		
Critically evaluate and acquire knowledge to create optimised designs.	Develop specifications for electronic systems and design and demonstrate an optimised solution to meet customer requirements.			Communicate and explain engineering issues and practice, to a variety of audiences.	Coordinate complex technical tasks with critical thinking and effective time management.		

Programme Structure

Module Structure and Summative Assessment Map

Please complete the summary table below which shows the module structure and the pattern of summative assessment through the programme.

'Option module' can be used in place of a specific named option. If the programme requires students to select option modules from specific lists these lists should be provided in the next section.

From the drop-down select 'S' to indicate the start of the module, 'A' to indicate the timing of each distinct summative assessment point (eg. essay submission/ exam), and 'E' to indicate the end of the module (if the end of the module coincides with the summative assessment select 'EA') . It is not expected that each summative task will be listed where an overall module might be assessed cumulatively (for example weekly problem sheets).

If summative assessment by exams will be scheduled in the summer Common Assessment period (weeks 5-7) a single 'A' can be used within the shaded cells as it is understood that you will not know in which week of the CAP the examination will take place.

Stage 0

Stage 1

Credits	Module		Autumn Term										Spring Term										Summer Term									
	Code	Title	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10
30	ELE00023C	Analogue Electronics & Physics	S																							E			A			
10	ELE00024C	Audio Technology	S									E		A																		
15	ELE00025C	Digital Circuits	S																							E			A			
20	ELE00026C	Digital Systems											S													E	A		A			
10	ELE00027C	Engineering Design	S																							E		A				
20	ELE00028C	Intro to Nanoscience & Nanotechnology											S													EA						
15	ELE00029C	Introduction to Programming	S																							E	A					
30	ELE00030C	Mathematics	S										A													E			A			

10	ELE00031C	Recording Studio Techniques											S													E					
Stage 2																															
Credits	**Module**		**Autumn Term**										**Spring Term**										**Summer Term**								
	Code	**Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
20	ELE00031I	Engineering Mathematics, Systems & Signals	S										A													E			A			
20	ELE00034I	Noise, Waves & Fields	S																							E			A			
10	ELE00030I	Digital Design with HDL	S									E	A																			
15	ELE00040I	Java Programming											S													E	A	A				
15	ELE00041I	Design, Construction & Test											S													E		A				
20	ELE00035I	Semiconductor Devices & Circuits	S																							E			A			
20	ELE00028I	Algorithms & Numerical Methods	S																							E	A		A			
20	ELE00027I	Acoustics & Psychoacoustics	S																							E		A				
20	ELE00033I	Nanofabrication & Nanoanalysis											S									EA										
15	ELE00042I	Design, Construction & Test for Audio											S													E		A				
Stage 3																															
Credits	**Module**		**Autumn Term**										**Spring Term**										**Summer Term**								
	Code	**Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
10	ELE00049H	Control	S									E	A																			
10	ELE00048H	Communication Systems	S									E	A																			
10	ELE00055H	Principles of DSP											S													E			A			
20	ELE00046H	Applications of EM	S									E	A																			
10	ELE00008H	Management & Marketing of Technology	S									E	A																			
10	ELE00009H	Law for Engineering Management	S									E		A																		

10	ELE00045H	Analogue Engineering											S												E			A			
10	ELE00057H	State Space & Digital Control											S												E			A			
10	ELE00050H	Digital Communication Systems											S												E			A			
10	ELE00052H	LAN & Internet Protocols											S								E							A			
10	ELE00012H	Mobile Communication Systems											S								E							A			
10	ELE00047H	Cloud & Distributed Computer Systems											S												E	A					
10	ELE00011H	Digital Engineering											S								E	A									
10	ELE00015H	Accounting & Finance											S								E							A			
10	ELE00023H	Nanoelectronics											S								E							A			
10	ELE00025H	Photonics & Nanophotonics											S								E							A			
40	ELE00056H	Software Engineering Project	S																						E				A		
Stage 4																															
Credits	**Module**		**Autumn Term**										**Spring Term**										**Summer Term**								
	Code	**Title**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
80	ELE00101M	MEng Individual Project											S												E			A			
10	ELE00097M	Advanced Control	S									E	A																			
10	ELE00007M	Electronics for Medicine	S									EA																				
10	ELE00099M	High Frequency Electronics	S									E	A																			
10	ELE00103M	Robotics	S									E	A																			
10	ELE00059M	Sensors & Instrumentation	S									E	A																			
10	ELE00005M	Information Theory & Error Control Coding	S									E	A																			
10	ELE00105M	Wired, Wireless & Optical Transmission	S									E	A																			
10	ELE00017M	Bio-Inspired Computation	S							A		EA																				
10	ELE00062M	Systems Programming for ARM	S									E	A																			

10	ELE00039M	Ideation	S							A		EA	A																		
10	ELE00022M	Strategic Management	S								A	EA																			
10	ELE00104M	Skills for Business Leadership	S									E				A															
10	ELE00102M	Physical Modelling Synthesis	S									E	A																		
10	ELE00074M	Voice:Acoustics & Applications	S									E	A																		
10	ELE00100M	Information Storage & Spintronics	S									E				A															
10	ELE00065M	Music Performance Analysis Systems	S									E	A																		
10	ELE00098M	Emerging Nanotechnologies	S								A	EA																			
10	ELE00127M	Integrated Circuit Design & Simulation	S									EA																			

Management and Admissions Information

This document applies to students who commenced the programme(s) in:	2019/20

Interim awards available Interim awards available on undergraduate programmes (subject to programme regulations) will normally be: Certificate of Higher Education (Level 4/Certificate), Diploma of Higher Education (Level 5/Intermediate), Ordinary Degree and in the case of Integrated Masters the Bachelors with honours. Please specify any proposed exceptions to this norm.

Certificate of Higher Education (Level 4/Certificate) generic
Diploma of Higher Education (Level 5/Certificate) generic

Admissions Criteria

TYPICAL OFFERS
A levels
BEng: ABB
MEng: AAA
IB Diploma Programme
BEng: 34 points
MEng: 36 points
BTEC Extended Diploma
BEng: DDM
MEng: DDD

Length and status of the programme(s) and mode(s) of study

Programme	**Length (years)**	**Status (full-time/part-time)** Please select	**Start dates/months** (if applicable – for programmes that have multiple intakes or start dates that differ from the usual academic year)	**Mode**		
				Face-to-face, campus-based	**Distance learning**	**Other**

BEng Electronic Engineering with Foundation Year BEng Electronic Engineering BEng Electronic and Communication Engineering BEng Electronic and Computer Engineering BEng Music Technology Systems BEng Electronic Engineering with Music Technology Systems BEng Electronic Engineering with Business Management BEng Electronic Engineering with Nanotechnology	3/4	Full-time			Yes		No	

MEng Electronic Engineering MEng Electronic and Communication Engineering MEng Electronic and Computer Engineering MEng Music Technology Systems MEng Electronic Engineering with Music Technology Systems MEng Electronic Engineering with Business Management MEng Electronics Engineering with Nanotechnology	4/5	Full-time			Yes		No	

Language(s) of study

English.

Language(s) of assessment

English.

Programme accreditation by Professional, Statutory or Regulatory Bodies (PSRB)

Is the programme recognised or accredited by a PSRB

Please Select Y/N:	Yes	if No move to next Section if Yes complete the following questions

Name of PSRB

Institution of Engineering and Technology

Are there any conditions on the approval/ accreditation of the programme(s)/ graduates (for example accreditation only for the full award and not any interim award)
Accreditation only for the full award. Limit on compensation per stage that is more stringent than the University's rule.

Additional Professional or Vocational Standards

Are there any additional requirements of accrediting bodies or PSRB or pre-requisite professional experience needed to study this programme?

Please Select Y/N:	No	if Yes, provide details

University award regulations

The University's award and assessment regulations apply to all programmes: any exceptions that relate to this programme are approved by University Teaching Committee and are recorded at the end of this document.

Are students on the programme permitted to take elective modules?

Please Select Y/N:	No	

Careers & Placements - 'With Placement Year' programmes

Students on all undergraduate and integrated masters programmes may apply to spend their third year on a work-based placement facilitated by Careers & Placements. Such students would return to their studies at Stage 3 in the following year, thus lengthening their programme by a year. Successful completion of the placement year and associated assessment allows this to be recognised in programme title, which is amended to include 'with Placement Year' (e.g. BA in XYZ with Placement Year'). The Placement Year also adds a Programme Learning Outcome, concerning employability. (See Careers & Placements for details).

In exceptional circumstances, UTC may approve an exemption from the 'Placement Year' initiative. This is usually granted only for compelling reasons concerning accreditation; if the Department already has a Year in Industry with criteria sufficiently generic so as to allow the same range of placements; or if the programme is less than three years in length.

Programme excluded from Placement Year?	No	If yes, what are the reasons for this exemption:

Study Abroad (including Year Abroad as an additional year and replacement year)

Students on all programmes may apply to spend Stage 2 on the University-wide North America/ Asia/ Australia student exchange programme. Acceptance onto the programme is on a competitive basis. Marks from modules taken on replacement years count toward progression and classification.

Does the programme include the opportunity to undertake other formally agreed study abroad activities? All such programmes must comply with the Policy on Study Abroad

Please Select Y/N:	No	

Additional information

Transfers out of or into the programme

ii) Transfers into the programme will be possible? (please select Y/N)	Yes	

Additional details:

a) Transfer between BEng and MEng Students registered on BEng programmes can transfer to equivalent MEng programmes at the end of Stage 1 provided they satisfy the appropriate Part 1 examination progression rules. The continued registration on MEng programmes beyond Stage 2 is dependent on students satisfying the Part 2a progression rule. Details of all progression rules can be found in the Statement of Assessment document. Transfer from MEng to BEng can occur up to the end of Stage 2.

b) Transfers between 'with' and 'without' Year in Industry

Students transferring from 'without' to 'with' need to do so in sufficient time for them to be able to secure and organise an industrial placement. The reverse transfer should occur in sufficient time for the student to be able to select optional modules and a project.

c) Transfers across streamed programmes

Transfer across streamed programmes is dependent upon the student satisfying the necessary prerequisites. These are summarised in the Transfer Matrix, which can be viewed on the Departmental website and in the student handbook.

ii) Transfers out of the programme will be possible? (please select Y/N)	Yes	

Additional details:

a) Transfer between BEng and MEng Students registered on BEng programmes can transfer to equivalent MEng programmes at the end of Stage 1 provided they satisfy the appropriate Part 1 examination progression
rules. The continued registration on MEng programmes beyond Stage 2 is dependent on students satisfying the Part 2a progression rule. Details of all progression rules can be found
in the Statement of Assessment document. Transfer from MEng to BEng can occur up to the end of Stage 2.
b) Transfers between 'with' and 'without' Year in Industry
Students transferring from 'without' to 'with' need to do so in sufficient time for them to be able to secure and organise an industrial placement. The reverse transfer should occur in
sufficient time for the student to be able to select optional modules and a project. c) Transfers across streamed programmes
Transfer across streamed programmes is dependent upon the student satisfying the
necessary prerequisites. These are summarised in the Transfer Matrix, which can be viewed
on the Departmental website and in the student handbook.

Exceptions to University Award Regulations approved by University Teaching Committee

Exception Please detail any exceptions to University Award Regulations approved by UTC	**Date approved**

Date on which this programme information was updated:

09/04/2019

Please note:

The information above provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided.

Detailed information on the learning outcomes, content, delivery and assessment of modules can be found in the module descriptions.

The University reserves the right to modify this overview in unforeseen circumstances, or where the process of academic development, based on feedback from staff, students, external examiners or professional bodies, requires a change to be made. Students will be notified of any substantive changes at the first available opportunity.