Programme Details - H610 / H613

B.Eng / M.Eng Electronic Engineering

The first two years of these courses are the same as those for many of the other courses in the Electronic and Electrical Engineering suite listed below. The courses are designed to give you as much opportunity as possible to find out about the various specialisations within EEE so that you can make an informed choice at the appropriate time.

H620 / H621	Electrical Engineering	B.Eng / M.Eng
H628 / H629	Electrical and Electronic Engineering	B.Eng / M.Eng
H647 / H645	Electronic and Communications Engineering	B.Eng / M.Eng
H651	Digital Electronics	M.Eng only
H614	Microelectronics	M.Eng only
H6T9	Electronic and Electrical Engineering with a Modern Language	M.Eng only

Note 1 Transfer between Electronic Engineering and the "with Modern Language" programmes, is possible up to the end of year 2 providing you have studied a language in years 1 and 2 and have reached an appropriate standard in that language.

Note 3 Transfer between Electronic Engineering and any other programme listed above is possible up to the end of year 2.

The structure of the M.Eng (H613) and B.Eng (H610) programmes is shown in tables 1 and 2 below.

Table 1: M.Eng programme Structure

<table>
<tr><td></td><td colspan="2">Year 1</td><td colspan="2">Year 2</td><td colspan="2">Year 3</td><td colspan="2">Year 4</td></tr>
<tr><td>Module</td><td>S1</td><td>S2</td><td>S1</td><td>S2</td><td>S1</td><td>S2</td><td>S1</td><td>S2</td></tr>
<tr><td>1</td><td colspan="2" rowspan="4">core topics</td><td colspan="2" rowspan="4">core topics</td><td colspan="2">core topics</td><td colspan="2" rowspan="3">45 credits of M.Eng specialisation 30 credits of choice, 15 credits on non-technical</td></tr>
<tr><td>2</td><td colspan="2" rowspan="3">M.Eng special-isation + 0.5 modules of choice</td></tr>
<tr><td>3</td></tr>
<tr><td>4</td></tr>
<tr><td>5</td><td colspan="4">non-core or non-technical topics</td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>6</td><td colspan="2">coursework</td><td colspan="2">coursework</td><td colspan="2">Project</td><td colspan="2">Group project</td></tr>
</table>

Table 2: B.Eng programme structure

<table>
<tr><td></td><td colspan="2">Year 1</td><td colspan="2">Year 2</td><td colspan="2">Year 3</td></tr>
<tr><td>Module</td><td>S1</td><td>S2</td><td>S1</td><td>S2</td><td>S1</td><td>S2</td></tr>
<tr><td>1</td><td colspan="2" rowspan="4">core topics</td><td colspan="2" rowspan="4">core topics</td><td>core</td><td rowspan="2"></td></tr>
<tr><td>2</td><td colspan="2" rowspan="3">B.Eng special-isation</td></tr>
<tr><td>3</td></tr>
<tr><td>4</td><td colspan="2">Choice</td></tr>
<tr><td>5</td><td colspan="4">non-core or non-technical topics</td><td colspan="2"></td></tr>
<tr><td>6</td><td colspan="2">coursework</td><td colspan="2">coursework</td><td colspan="2">Project</td></tr>
</table>

Each of the first three years is split into two semesters and each year is composed of 6 modules or 12 half modules that are usually evenly split between the semesters. Each module is worth

20 credits and most of our taught units are 20 credit modules; one or two are taught as 10 credit half modules.

The fourth year (MEng only) is split into two semesters. However, the basic size of most modules at this level is 15 credits and these modules generally run across both semesters.

Year 1

The first four modules provide a core of material which is common to all the programmes mentioned on the first page. They provide a broad knowledge base on which the later specialisations can be built. The fifth module offers a choice of Mathematics and other units. In module 4, MAS156 is a mathematics unit that provides a foundation in the engineering mathematics that is used in first and second year EEE modules. In addition EEE112 is a 10 credit mathematics module that concentrates on how to apply mathematical ideas to electrical or electronic problems. EEE112 is designed for those of you who do not have "A" level mathematics grade A or B (or equivalent), ie, those of you with other maths qualifications such as a BTEC mathematics qualification. The aim of EEE112 is to try to make sure that all of you begin your second year with an appropriate mathematical understanding. For those of you with an A or B in mathematics "A" level there is a choice in module 5 of two 10 credit modules of your choice from anywhere within the University or 20 credits of modern language. Module 6 is a 20 credit coursework module involving laboratory sessions, computing and personal skill development activities. Details of the first year structure are shown in table 3.

Table 3 First year structure

Module	Semester 1	Semester 2
1	EEE117 20 credits (Electric Circuits and Signals)	
2	EEE118 20 credits (Electronic Devices in Circuits)	
3	EEE119 20 credits (Digital System Engineering)	
4	MAS156 20 credits (Mathematics (Electrical))	
5	**either**	
	EEE112 (Engineering Applications) 10 credits (extends over semester 1 and semester 2)	
	Unrestricted 10 credit choice	
	or	
	Unrestricted 10 credit choice	Unrestricted 10 credit choice
	or	
	MLTXXX (Modern Language (French, German, Spanish or Italian))	
6	EEE160 (Coursework)	

Year 2

The second year structure is similar the first year one. The first four modules are core to all the programmes mentioned on page 1. There is an element of choice in module 5 and 6. If you studied a modern language in year 1, you may opt to continue to study the same language in year 2 but you may not start a new language. If you did not study a modern language in your first year you may start one in year 2. If you are a direct second year entrant you may study a modern language in year 2. Those of you who study a language in year 2 will not have to attend MGT389, the alternative to languages in module 5, but you will be required to take part in the Industrial Project which forms part of EEE262. Details of the year 2 structure are shown in table 4.

Towards the end of year 2, you must choose which of the programmes mentioned on page 1 you wish to follow. **You have a wide range of choice and your choice can be different from your original UCAS choice**. The range of choice is constrained as outlined in the notes below the list of courses given on page 1. Your academic performance will be taken into account when deciding whether you will be permitted to proceed to year 3 of the M.Eng. You will be able to discuss the options open to you with members of staff if you find yourself unsure as to what option to take.

Table 4: Second year structure

Module	Semester 1	Semester 2
1	EEE223 Energy Management and Conversion	
2	EEE224 Communication Electronics	
3	EEE225 Analogue and Digital Electronics	
4	MAS241 Mathematics II	EEE226 Engineering Software Design
5 + 6	**either**	
	MGT389 Project Management and HRM for Engineers	
	EEE262 Coursework	
	or	
	MLTYYY (Modern Language (French, German, Spanish or Italian))	
	EEE260 Coursework	

Year 3

At this stage the various programmes begin to diverge. M.Eng students study many modules in common with B.Eng students but there is a difference and the nature of the project is different; B.Eng students undertake a design project whilst M.Eng students undertake an investigative project. With the exception of all the “with ...” variants, you can change programme within the M.Eng suite or within the B.Eng suite at any time up to the end of the third week of semester 1. The third year B.Eng and M.Eng structures are shown in tables 5 and 6.

Table 5: Third year B.Eng Electronic Engineering structure

Semester 1	Semester 2
EEE360 Individual Design Project (30 credits)	
EEE339 Digital Engineering	
EEE348 Electronics & Devices	
ACS342 Feedback systems Design	EEE307 Power Electronics
MGT388 Finance & Law for Engineers	
Plus 20 credits from:	
EEE347 Communication Engineering	
EEE338 Power Engineering	
EEE350 Electromagnetic Fields and Devices	
EEE317 Principles of Communications	EEE334 Antennas, Radar & Navigation
EEE305 Machine Design	EEE345 Engineering Electromagnetics ***or*** EEE349 Power Engineering Electromagnetics
EEE341 Electrical Power Systems	
MAS381 Mathematics III	

Table 6: Third year M.Eng Electronic Engineering structure

Semester 1	Semester 2
EEE371 Individual Research Project (30 credits)	
EEE339 Digital Engineering	
EEE348 Electronics & Devices	
ACS342 Feedback systems Design	EEE307 Power Electronics
MGT388 Finance & Law for Engineers	
MAS381 Mathematics III	
Plus 10 credits from	
EEE317 Principles of Communications	EEE334 Antennas, Radar & Navigation
EEE305 Machine Design	EEE345 Engineering Electromagnetics ***or*** EEE349 Power Engineering Electromagnetics
EEE341 Electrical Power Systems	

Year 4

In year 4 there is plenty of scope for you to choose from a wide range of options according to your interests. You can opt to acquire a breadth of knowledge or you can concentrate on a specialised area. The M.Eng project is a group project designed to help develop your team-working and communication skills as well as the technical skills you would expect to gain from project work. All of the core/optional topics run across semester 1 and semester 2. The year 4 structure is shown in table 7.

Table 7: Fourth year M.Eng Electronic Engineering structure

Semester 1	Semester 2
EEE471 Group Project (30 credits)	
EEE6220 Electromagnetic Communication Technologies (15 credits)	
EEE6215 Nanoscale Electronic Devices (15 credits)	
EEE6205 Power Electronics Converters *or* EEE6206 Power Semiconductor Devices (15 credits)	
EEE6226 Future Electronic and Electrical Engineering Trends (5 credits)*	

options

you must choose *one* from (10 credits each):

CPE414 Environmental Protection
MEC408 Marketing Management
MEC414 Tech. Strategy & Business Planning

you must choose *two** from the following (15 credits each).

EEE6085 Selected Topics in Computer Vision
EEE6200 AC Machines
EEE6201 Advanced Control of Electric Drives
EEE6202 Energy Storage Management
EEE6203 Motion Control and Servo Drive Systems
EEE6204 Permanent Magnet Machines and Actuators
EEE6205 Power Electronics Converters
EEE6206 Power Semiconductor Devices
EEE6207 Advanced Computer Systems
EEE6208 Advanced Integrated Electronics
EEE6209 Advanced Signal Processing
EEE6212 Semiconductor Materials
EEE6213 Principles of Semiconductor Device Technology
EEE6214 Packaging and Reliability of Microsystems
EEE6216 Energy Efficient Semiconductor Devices
EEE6217 Optical Communication Devices and Systems
EEE6218 Visual Information Processing
EEE6219 Computer Vision
EEE6221 Data Coding Techniques for Communications and Storage
EEE6222 Principles of Communications
EEE6223 Antennas, Propagation and Satellite Systems
EEE6224 Mobile Networks and Physical Layer Protocols
EEE6225 Systems Design
EEE6431 Broadband Wireless Techniques
EEE6432 Wireless Packet Data Networks and Protocols

* You may instead not take EEE6226, choose only one option from the list and choose 20 credits from the modules below. You cannot start a modern language in year 4 but if you choose to continue a modern language you must choose a full 20 credits.

CPE414 Environmental Protection
MAS445 Mathematics – Numerical Methods
MEC408 Marketing Management
MEC414 Tech. Strategy & Business Planning
MEC6316 Renewable Energy
MLT*** Modern Languages