

## PROGRAMME SPECIFICATION

### KEY FACTS

Programme name	Electrical and Electronic Engineering, Electrical and Electronic Engineering with Placement
Award	MEng (Hons)
School	Mathematics, Computer Science and Engineering
Department or equivalent	Electrical and Electronic Engineering
UCAS Code	H607H 609
Programme code	USELEM USELEY
Type of study	Full Time
Total UK credits	485
Total ECTS	242.5
Partner (partnership programmes only)	Not applicable
Type of partnership	Not applicable

## **PROGRAMME SUMMARY**

The MEng Honours Programme is a four-year, or five-year with placement, full time degree comprising 485 credits (4850 study hours) structured as four Programme Stages, each typically delivered over 22 contact weeks, 4 examination weeks, 4 reflective learning (private study) weeks and 8 vacation weeks (which may be used for private study) per academic year. MEng (Hons) Programme therefore requires a commitment of 40 study hours per week during the academic year.

During the degree, engineering knowledge is built-up and nurtured, with specific objectives associated with each component Programme Stage. Development of design skills and team work are at the heart of the City University London engineering degrees throughout the programme. Programme Stage 1 is common across all of the engineering degrees. This introductory year is intended to give you a thorough grounding in the fundamental and applied science and mathematics appropriate for an engineer, as well as developing personal skills such as time and quality management. During Programme Stage 1, you will have the opportunity to undertake preliminary engineering designs through group activity. At the end of Programme Stage 1 (assuming that you have met the academic requirements described below) you will have the opportunity to decide whether to remain on the MEng (Hons) Electrical and Electronic Engineering degree or switch to one of 5 other engineering MEng (Hons) degrees. This flexibility in choice at the end of Programme Stage 1 enables you to follow the discipline that best matches your strengths and most attracts you. In Programme Stage 2 you will start to specialise and learn to apply engineering analysis to simple but representative components of engineering systems. You will also be introduced to the fundamentals of electronic circuit design while also studying mechatronics, measurement, data analysis and programming. As with other years, a significant proportion of Programme Stage 3 is focussed upon project design work. It will be in Programme Stage 3 that you will be provided with a realistic engineering system design task, approaching a professional level exercise. This enables you to draw together and apply knowledge gained over a number of subject areas. In Programme Stage 3 you also study specialist topics including signal processing, telecommunications, control engineering and power engineering together with the numerical tools used for analysis in industry today. These modules involve looking at analysis in increasing depth alongside examining a greater breadth of system complexity. Engineering management studies in Programme Stage 3 focus upon people and organisations, with case studies and invited lectures from industry professionals. At Programme Stages 3 you select one from a range of projects. In addition, at Stage 4, you undertake major group design activities (mentored by industry experts) and Level-7 studies in microelectronics, advanced signal processing & communications and robotics.

If you wish to gain practical experience during your degree, then you have the option of spending 12 months, between either Programme Stages 2 and 3 or 3 and 4, on a paid industrial placement. We strongly recommend this (see the subsequent section entitled 'What Placement opportunities are available?').

At the end of the programme, you will have acquired the knowledge and understanding of analysis and design techniques, practical and personal skills required for a career in engineering. The Integrated Masters (MEng Honours) Programme develops you to a high level of professional as well as engineering competence, through broad engineering experience involving market analysis, commercial operational and regulatory constraints, project and team management, multi-disciplinary design and, where relevant, manufacture.

**Certificate of Higher Education**



## WHAT WILL I BE EXPECTED TO ACHIEVE?

On successful completion of this programme, you will be expected to be able to:

### Knowledge and understanding

- Design solutions for different engineering problems using comprehensive knowledge and systematic understanding of the scientific principles upon which electrical and electronic engineering is based, including those which underpin current and future technological advances in the sector (*UK-SPEC KU1, US1m, US4m, E1m*).
- Design solutions for different engineering problems using a systematic understanding of the mathematical and computational models used to analyse engineering components and systems and an appreciation of their limitations (*UK-SPEC KU1, US2m, US5m, E1*).
- Collect concepts from a range of areas including some outside engineering and evaluate them critically (*UK-SPEC US6m*).
- Apply technical knowledge and understanding in with the engineering design/build/test process, including customer requirements, dependencies, assumptions, constraints and creative solutions to problems; also with recent or planned developments in practice and generate innovative design for systems to fulfill new needs (*UK- SPEC IA2, D1, D2, D3, D4, D6, P1m, P8m*).
- Refer to practical experience of the concept of fitness for purpose and the separate consideration of production, operation, maintenance and disposal of an engineering system and adapt them in unfamiliar situations (*UK-SPEC D2, D5, P7, P8m*).
- Refer to practical experience of the multi-disciplinary character of engineering and making decisions based upon social, environmental/sustainable development, ethical, legal, economic and commercial considerations (*UK-SPEC KU2, KU3, US3, D3, S1m, S2m, S4*).
- Conform with current technological and manufacturing/operational practice in the engineering industry and with future trends in relevant areas while creating solutions that apply quantitative techniques where appropriate (*UK- SPEC S1, S3, P1m, P3, P6*).
- Evaluate concepts from outside engineering which nonetheless drive engineering practice and business development (*UK-SPEC US3m, S2m, P8m*).
- Apply fully the broad range of management tools and techniques required to run an engineering business. This includes project and change management, their limitations and how they may be applied appropriately (*UK-SPEC S2, S3m, S4, P2m, P5*).
- Apply extended knowledge and systematic understanding, of the type described above, specific to the principles and practice of system design in electrical and electronic engineering, manufacture, operation and maintenance and awareness of developments in the field (*UK-SPEC US1m, US3, US4m, E4, P1m*).
- Assess and predict the electrical and electronic engineering industry as a business enterprise in national and international economies (*UK-SPEC E3. S1. S2m. P6*).

## HOW WILL I LEARN?

The majority of learning in Higher Education is typically conducted through private study. Engineering is a practical discipline which benefits from significant supervised study, but it cannot be learnt through lectures alone. In Programme Stages 1 and 2 there is a higher proportion of supervised study (compared with Programme Stages 3 and 4), with typically 20-24 hours of contact timetabled each week. These supervised contact hours are designed to assist and to focus your private study. Teaching involves a combination of theoretical, experimental and computational study. Our approach is to encourage critical thinking and foster your curiosity. By the time that you reach Programme Stage 3, the tutorial and practical elements are managed more by you, especially in relation to your individual project work. . In Programme Stage 4 the MEng Project gives you an opportunity to work independently, under the guidance of a member of staff, to undertake research into a topic that you may not have covered in taught material. You will plan and conduct the project using design work, mathematical modelling, a full experimental investigation and signal/data analysis.

The remaining hours of private study each week are essential to the achievement of the learning outcomes and are guided using both *formative* and *summative* coursework tasks set during the academic year. Your private study is also supported by the use of Moodle, City's Online Learning Environment. This provides online access to module content, feedback, guidance on completing coursework, audio-visual resources etc.

Contact hours are made up of: *lectures*, which direct you towards the most important topics in the field and which allow discussion and clarification of areas of uncertainty with expert staff; *tutorials* where staff are on hand to help with problem-solving exercises; *laboratory and workshop classes* where practical situations and methods are encountered; and *research or design/build projects*, both individually and in groups, where personal skills, teamwork, creativity and critical thinking are developed and where knowledge built up elsewhere in the programme is integrated and developed. Site visits are used to place taught sessions in the context of real-world industries or products.

## **WHAT TYPES OF ASSESSMENT AND FEEDBACK CAN I EXPECT?**

### Assessment and Assessment Criteria

The Programme is subdivided into Programme Stages (years of study) and each Programme Stage into modules (coherent groupings of syllabus topics addressing particular Learning Outcome types). Each module in the programme may have one or more assessment components of differing types. Assessment components may involve more than one assessment task (e.g. they may be an aggregate of different coursework marks or multiple examination papers).

Most modules will have an examination component as well as a coursework (continuous assessment) component. The split between examination and coursework assessment is approximately 50:50 over the programme lifetime. Examinations are used because they provide a controlled environment in which to assess knowledge and understanding and problem-solving skills. The time pressure and lack of prior warning about specific issues to be tackled is representative of real-world situations faced by practicing engineers. Coursework assessments vary from paper assignments (which may be similar to examinations but with longer time scales and with access permitted to information sources) to the assessment of practical skills which cannot be done in the exam hall. For example communication skills (e.g. presentations, drawings and written reports), personal skills (such as team work or leadership), planning and design (both software and hardware), data analysis, critical review of information and the use of workbench are usually assessed by means of coursework tasks.

Often coursework tasks may be set which are not to be assessed but which are valuable as a learning experience. This is known as formative coursework and is often the key to improving grades on assessed or summative coursework. You will receive feedback from all coursework assessments, both formative and summative, to allow you to learn from mistakes made in the assessment.

Assessment Criteria are descriptions, based on the intended learning outcomes, of the skills, knowledge or attitudes that you need to demonstrate in order to complete an assessment successfully, providing a mechanism by which the quality of an assessment can be measured. Grade-Related Criteria are descriptions of the level of skills, knowledge or attributes that you need to demonstrate in order to achieve a certain grade or mark in an assessment, providing a mechanism by which the quality of an assessment can be measured and placed within the overall set of marks. Assessment Criteria and Grade-Related Criteria will be made available to you to support you in completing assessments. These may be provided in programme handbooks, module specifications, on the virtual learning environment or attached to a specific assessment task.

### Feedback on assessment

Feedback will be provided in line with our Assessment and Feedback Policy. In particular, you will normally be provided with feedback within three weeks of the submission deadline or assessment date. This may be written (on the hard copies and online) or oral (in class), specific to you or generally applicable, and would normally include a provisional grade or mark. If the coursework submitted is a laboratory report, then your work will not be returned until three weeks after the last report has been submitted. Laboratories are undertaken by groups of you in rotation over periods of many weeks and consequently the last group of you may complete the laboratory





## WHAT WILL I STUDY?

### Programme Stage 1

Programme Stage 1 comprises seven core Level-4 modules, totalling 125 credits. To pass Programme Stage 1 you must obtain all 125 credits, as specified in the Programme Scheme. All modules, except for ET1000 and ET1090, are assessed by a combination of course work distributed throughout the academic year and an end of year exam. The proportion of each component is specified in the description for each module. You must achieve a pass mark for the module and any components as set out in each module specification. ET1000 is a pass/fail module assessed by your personal tutor by means of a portfolio of evidence of initial personal and professional development. ET1090 (Design I) is assessed by coursework distributed throughout the academic year for which you must achieve a pass mark.

<b>Module Title</b>	<b>SITS Code</b>	<b>Module Credits</b>		<b>Core/ Elective Compensation Yes/ No</b>			<b>Level</b>		<b>Yes/ No</b>
Mathematics I	EX1010	20	Core	No	4				
Engineering Science	ET1060	20	Core	No	4				
Fluid Mechanics & Thermodynamics I	ET1070	20	Core	No	4	Core	No	4	
Solid Mechanics	ET1080	20	Core	No	4				
Electronics	ET1061	20	Core	No	4				
Design I	ET1090	20	Core	No	4				
Personal & Professional Development	ET1000	5			5	Core	No	4	

### Programme Stage 2

Programme Stage 2 comprises six core Level-5 modules, totalling 120 credits. To pass Programme Stage 2 you must obtain all 120 credits, as specified in the Programme Scheme.

All modules, except for Digital Design, are assessed by a combination of course work distributed throughout the academic year and an end of year exam. The proportion of each component is specified in the description for each module. You must achieve a pass mark for the module and any components as set out in each module specification. Digital Design is assessed by coursework distributed throughout the academic year for which you must achieve a pass mark.

To continue to Programme Stage 3 of the MEng programme, you must have achieved a module average of at least 50% at the end of Programme Stage 2. If you fail to meet the requirement to progress to MEng Programme Stage 3, but pass all modules in Programme Stage 2, then you will be allowed to progress to Programme Stage 3 of the BEng programme in Electrical and Electronic Engineering.

If you wish to gain practical experience you have the option of spending a year on paid industrial placement between Programme Stages 2 and 3 (Module ET3013).

<b>Module Title</b>	<b>SITS Code</b>	<b>Module Credits</b>		<b>Core/ Elective Compensation Yes/ No</b>			<b>Level</b>		<b>Yes/ No</b>
Mathematics II	EX2010	20	Core	No	5				
Computer Science and Programming	EE2702	20	Core	No	5	Core	No	5	
Electromagnetic Fields and Circuits	EE2601	20	Core	No	5	Core	No	5	
Mechatronics	ET2063	20	Core	No	5				
Measurement and Data Analysis	ET2082	20	Core	No	5	Core	No	5	

**TO WHAT KIND OF CAREER MIGHT I GO ON?**

The knowledge and the skills you will gain by completing this programme will enable you to gain a range of jobs in a number of industries, including the energy, telecommunications, digital media and financial industries. Our graduates have excellent problem-solving, team-working and communication skills which makes them very attractive to modern interdisciplinary engineering companies. Recent graduates have joined employers such as: UK Power Networks, BT, National Grid, AECOM, BP, Huawei, British Aerospace and DeltaRail.

The Centre for Career & Skills Development provides a service to current undergraduates and postgraduates, as well as recent graduates of the University. Their aim is to provide you with advice, information and skills that you need to make a smooth transition into the world of professional engineering. If you would like further information on the careers support available at City, please go to: <http://www.city.ac.uk/careers>.

**WHAT STUDY ABROAD OPTIONS ARE AVAILABLE?**

At present these options are not available; they are still under development.

## **WHAT PLACEMENT OPPORTUNITIES ARE AVAILABLE?**

If you wish to take a professional placement, then you will need to register accordingly prior to the start of your placement. We strongly encourage you to undertake a 12-month placement or 6-8 week Summer Internship, as you will benefit greatly from the experience; providing you with a distinct advantage when you seek employment upon graduation. MCSE's Professional Liaison Unit (PLU) collaborates with the University Career and Skills Development Service to deliver a series of Professional Development workshops to prepare you for searching for and applying for a work placement. The PLU is in regular contact with companies and other organisations concerning the availability of training opportunities and will advise you on making applications.

You are welcome to make your own applications but you will be asked to discuss these with the PLU's Work Based Learning Advisor. Support is provided in the MCSE Placement & Internships Resource Centre module on Moodle.

If you are on an approved Professional Placement then your experience will be graded on the basis of (i) reports from two visits made by the Visiting Tutor (a member of academic staff) familiar to the subject and (ii) your final report. Informal contact is maintained throughout the 12 months, as necessary. Although your placement is reported on the degree transcript, the grading does not contribute to the final degree result.

Placement guidelines are issued to you and your employer at the commencement of training, and these include a placement health and safety booklet. The guidelines also include a section on workplace learning. Early in the placement year, you are required to produce a placement plan in conjunction with your Workplace Supervisor and the Visiting Tutor.

## **WILL I GET ANY PROFESSIONAL RECOGNITION?**

**Accrediting Body:** The Institution of Engineering and Technology

### **Nature of Accreditation**

Accreditation of the MEng leads to fulfilment of the educational requirements for registration as a Chartered Engineer (CEng).

**Accrediting Body:** Institute of Measurement and Control

### **Nature of Accreditation**

Accreditation of the MEng leads to fulfilment of the educational requirements for registration as a Chartered Engineer (CEng).

When accredited, this degree will fully satisfy the educational base for a Chartered Engineer (CEng).

## HOW DO I ENTER THE PROGRAMME?

The following entrance requirements typically apply.

### UCAS tariff points

144.

### A-levels

AAA; including A-Level Mathematics and Physics. You are also required to have passed GCSE English Language at grade 4, or higher.

### IB

35 points total including Higher Level Mathematics and Physics at grade 6.

### English language requirements

For overseas candidates, an IELTS score of 6.0 (with a minimum of 5.5 in all components) is required. TOEFL is not accepted as evidence of English language ability for students that require a Confirmation of Acceptance for Studies.

### Entry via Foundation Course

You will be offered a place on the MEng (Hons) degree in Electrical and Electronic Engineering should you both (i) successfully satisfy the City University London interview panel and (ii) obtain an overall grade of at least 75% on an Electrical and Electronic Engineering Foundation programme at: City and Islington College, INTO City University London International or Kaplan International College.

### RPL/RPEL

Direct entry into Programme Stage 2 may be considered for candidates who have successfully completed the first year of a similar accredited MEng or BEng degree.

### Scholarships

Undergraduate students are considered for a wide range of awards (scholarships, bursaries and prizes) throughout their studies in the School. These (internally and externally funded) awards range from £500-£9000 and they are based on a combination of academic merit and hardship. A number of these awards are also available to international students. Further information can be found at: <http://www.city.ac.uk/study/undergraduate/funding-and-financial-support/scholarships-and-bursaries>

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