**Programme Title:** BEng Electrical and Electronic Engineering

**Programme Specification**

<table>
<thead>
<tr>
<th>Awarding Body/Institution</th>
<th>Queen Mary, University of London</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Institution</td>
<td>Queen Mary, University of London</td>
</tr>
<tr>
<td>Name of Final Award and Programme Title</td>
<td>Bachelor of Engineering (BEng) in Electrical and Electronic Engineering</td>
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<tr>
<td>Name of Interim Award(s)</td>
<td>Bachelor of Engineering (BEng)</td>
</tr>
<tr>
<td>Duration of Study / Period of Registration</td>
<td>Three years, Full Time</td>
</tr>
<tr>
<td>QM Programme Code / UCAS Code(s)</td>
<td>H600</td>
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<tr>
<td>QAA Benchmark Group</td>
<td>Engineering</td>
</tr>
<tr>
<td>FHEQ Level of Award</td>
<td>Level 6</td>
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<tr>
<td>Programme Accredited by</td>
<td>Institute of Engineering and Technology (IET)</td>
</tr>
<tr>
<td>Date Programme Specification Approved</td>
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<tr>
<td>Responsible School / Institute</td>
<td>School of Electronic Engineering &amp; Computer Science</td>
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**Schools which will also be involved in teaching part of the programme**

N/A

**Institution(s) other than Queen Mary that will provide some teaching for the programme**

N/A

**Programme Outline**

This programme provides you with a solid foundation in the principles of electrical science, systems and electronics. The programme covers a wide range of topics in electronics, control, and programming. In addition, you will study specialisations including power engineering, electronics and microprocessors, and digital signal processing.

**Aims of the Programme**

The accredited degrees form a group of programmes with the same broad aims and objectives; the difference being that they address different technical flavours of the broad spectrum that is now Electronic Engineering.

Skill-based aims and objectives are, therefore, common across the family, but the instantiation of these objectives may make use of different technical aspects within the family.
Context-based aims and objectives describe the differences between the programmes and Level-based aims and objectives between the BEng and MEng degrees.

**What Will You Be Expected to Achieve?**

At the end of his/her degree, each student should be able to demonstrate the following abilities:

- the ability to recall factual knowledge and the ability to apply it in familiar and unfamiliar situations;
- the ability to apply scientific, mathematical and software 'tools' to a familiar or unfamiliar situation;
- the ability to recall Information Technology as a key tool pervading all aspects of Electronic Engineering;
- the ability to understand practical issues concerning real systems (whether hardware or software);
- the ability to recognise insufficient existing knowledge and the ability to search for the necessary scientific, mathematical and software 'tools' relevant to that particular issue;
- the ability to work as part of a team;
- the ability to manage time effectively;
- the ability to appreciate the financial background against which decisions are made in industry;
- the ability to show a certain level of reflection on the role of engineering in society;

and the following skills:

- the perceptive skills needed to understand information presented in the form of technical circuit-diagrams, flow-charts and high-level languages;
- the practical skills needed to implement a piece of hardware or software and to use laboratory test equipment;
- the analytical skills needed to verify the correct behaviour of a hardware or software system or component and to be able to identify faults;
- the design skills needed to synthesise a design (in hardware and/or software) from a specification (including the choice of the best option from a range of alternatives), to implement the design and to evaluate the design against the original specification;
- the written and oral communication skills needed to present information, in particular written information, effectively;
- the critical reasoning skills needed to appraise a particular topic;

Context-based aims and objectives

- To provide a broad coverage across the spectrum of electrical science and maths covering industrial applications and control as well as electronics and computer systems.
- To provide a sound foundation in the principles of electrical science and engineering with specialisation in industrial electronics, microprocessor applications and computer systems.

### Academic Content:

| A 1 |
| A 2 |
| A 3 |

### Disciplinary Skills - able to:

| B 1 |
| B 2 |
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How Will You Learn?
Each non-project-based course unit involves lectures, problem solving coursework and practical sessions. Lectures are used to introduce principles and methods and also to illustrate how they can be applied in practice. Coursework allows students to develop their skills in problem solving and to gain practical experience. Practical sessions provide students with the guidance and help while solving a problem. These lessons take the form of exercise classes and programming laboratories that allow the students to learn-by-doing in order to complement the lectures.

How Will You Be Assessed?
The assessment of the taught course units takes place through a written examination and practical coursework.

The final year project is examined on the basis of a written report, a formal oral presentation, and a demonstration of the piece of software or hardware developed by the student. In addition to the final year project, other modules introduce project and group working skills.

How is the Programme Structured?

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
<th>Semester 3</th>
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<tbody>
<tr>
<td>ECS401U Procedural Programming</td>
<td>ECS412U Digital Circuit Design</td>
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<tr>
<td>ECS403U Professional and Research Themes</td>
<td>ECS408U Electronic Engineering Mathematics I</td>
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<td>ECS409U Analogue Electronic Systems</td>
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<td>ECS411U Signals and Information</td>
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<td>ECS416U Introduction to Multimedia</td>
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<td>ECS403U Communications and Networks</td>
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ELE302 Telecom Systems  
ELE335 Digital Systems Design  
ELE374 Signals and Systems Theory  
ELE403 Internet Protocols  
Semester 4  
ELE490 Design & Build Project in Electronic Engineering  
ELE293 Electrical Power Engineering  
ELE475 Microprocessor Systems Design  
ELE303 Electronic Devices & Applications  
Semester 5  
ELE613 Project  
ELE502 Digital Signal Processing  
ELE569 Microwave Electronics  
ELE591 Integrated Systems Design  
Semester 6  
ELE613 Project  
ELE606 Product Development  
ELE444 Communications Systems Electronics  
ELE366 Microwave & Optical Transmission (optional module)  
ELE014 Security and Authentication (optional module)  

Progression Criteria  
To progress from one developmental year to the next, a student must meet any programme and pathway requirements and take and pass modules as follows:  
i. foundation year to developmental year one: take modules to the value of 120 credits and pass modules to the value of 90 credits;  
ii. developmental year one to developmental year two: take modules to a value of 120 credits and pass modules (excluding modules at Level 3) to the value of 90 credits from developmental year one;  
iii. developmental year two to developmental year three: take modules to the value of 120 credits and pass modules (excluding module

<table>
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<tr>
<th>Academic Year of Study</th>
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<tbody>
<tr>
<td>Module Title</td>
<td>Module Code</td>
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What Are the Entry Requirements?  
Passes in three GCE A-levels are normally required for admission to the BEng programmes. Typical grades asked for would be BBC/BCC for BEng, but actual grade offers are carefully considered at interview alongside an applicant’s overall abilities and engineering aptitudes.

GCE A-level Maths (either Pure and Applied, or Pure) and Physics are essential. Vocational A levels in Science, Engineering, or Information and Communication Technology are acceptable, provided the appropriate level of Maths is also offered.

A good BTEC National Diploma in an appropriate discipline is acceptable: an overall merit with at least four distinctions at Level 3, including a distinction in Level 3 Maths. Also welcomed are equivalent UK or overseas qualifications, such as the International Baccalaureate (26 points BEng, with at least 5 points in Maths at higher level), as well as appropriate Access qualifications (assessed on an individual basis).

Queen Mary  
University of London
For international students, English Language skills are required to recognised standard. The minimum requirement is: IELTS 6.5, TOEFL (CBT) 242 or TOEFL (written test) 580. For students not quite meeting this requirement (e.g. IELTS 6.0), enrolling on a pre-sessional English Language course is required. These conditions are higher than standard College conditions.

How Do We Listen and Act on Your Feedback?

The Staff-Student Liaison Committee provides a formal means of communication and discussion between Schools and its students. The committee consists of student representatives from each year in the school/institute together with appropriate representation from staff within the school/institute. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. Staff-Student Liaison Committees meet regularly throughout the year.

Each school operates a Learning and Teaching Committee, or equivalent, which advises the School/Institute Director of Taught Programmes on all matters relating to the delivery of taught programmes at school level including monitoring the application of relevant QM policies and reviewing all proposals for module and programme approval and amendment before submission to Taught Programmes Board. Student views are incorporated in this Committee’s work in a number of ways, such as through student membership, or consideration of student surveys.

All schools operate an Annual Programme Review of their taught undergraduate and postgraduate provision. The process is normally organised at a School-level basis with the Head of School, or equivalent, responsible for the completion of the school’s Annual Programme Reviews. Schools/institutes are required to produce a separate Annual Programme Review for undergraduate programmes and for postgraduate taught programmes using the relevant Undergraduate or Postgraduate Annual Programme Review pro-forma. Students’ views are considered in this process through analysis of the NSS and module evaluations.

Academic Support

Each student is allocated a personal adviser in their first year and the adviser remains with them until they complete their programme.

Programme-specific Rules and Facts

N/A

Specific Support for Disabled Students

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific learning difficulties and mental health issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate, postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:
- Finding out if you have a specific learning difficulty like dyslexia
- Applying for funding through the Disabled Students’ Allowance (DSA)
- Arranging DSA assessments of need
- Special arrangements in examinations
- Accessing loaned equipment (e.g. digital recorders)
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- Specialist one-to-one "study skills" tuition
- Ensuring access to course materials in alternative formats (e.g. Braille)
- Providing educational support workers (e.g. note-takers, readers, library assistants)
- Mentoring support for students with mental health issues and conditions on the autistic spectrum.

Links With Employers, Placement Opportunities and Transferable Skills

The programme is scrutinised by a School Industrial Advisory Panel. The Panel meets annually to discuss research and teaching matters pertinent to our field.

Programme Specification Approval

<table>
<thead>
<tr>
<th>Person completing Programme Specification</th>
<th>Dr. John Schormans</th>
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<tbody>
<tr>
<td>Person responsible for management of programme</td>
<td>Ms. Jane Reid</td>
</tr>
<tr>
<td>Date Programme Specification produced/amended by School Learning and Teaching Committee</td>
<td></td>
</tr>
<tr>
<td>Date Programme Specification approved by Taught Programmes Board</td>
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</table>