Programme Title: MEng Electronic Engineering and Computing

Programme Specification

Awarding Body/Institution: Queen Mary, University of London
Teaching Institution: Queen Mary, University of London
Name of Final Award and Programme Title: Master of Engineering (MEng) Electronic Engineering & Computing
Name of Interim Award(s): Master of Engineering (MEng)
Duration of Study / Period of Registration: Four years full time
QM Programme Code / UCAS Code(s): H16C
QAA Benchmark Group: Engineering
FHEQ Level of Award: Level 7
Programme Accredited by: Institute of Engineering and Technology (IET)
Date Programme Specification Approved: N/A
Responsible School / Institute: School of Electronic Engineering & Computer Science

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

The MEng includes all the material from the BEng (digital circuit design elements of the electronic engineering programmes, while emphasising computer systems and software. You will also study the increasingly important areas of artificial intelligence and network computing, internet computing, and e-commerce engineering.)

The extra year allows you to study advanced modules on music, speech, video and image processing, quality management and network modeling and performance. You can transfer onto the MEng from the BEng until the end of the second year, subject to satisfactory performance.

Aims of the Programme

This is one of our MEng programmes, which is an integrated masters programme that both include technical content beyond normal first degree level and additional content on economic, social and environmental issues. In addition they provide enhanced experience of project management in a group activity.

The accredited degrees form a group of programmes with the same broad aims and objectives; the difference being that they
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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 use 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 wide coverage of telecommunications systems from physical layer, through network layer to applications.
- To emphasise Electromagnetics as the key underlying theoretical base for wireless communications.
- To provide practical skills in Electromagnetics.

Level-based aims and objectives

Additional objectives for MEng degree

- To provide greater technical depth by including 5 modules in the final year from a Department MSc degree (level 7 modules).
- To provide greater experience of group project working.
- To provide enhanced problem-solving skills through case-study investigations.
- To provide a greater understanding of business and financial matters

Academic Content:

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**Disciplinary Skills - able to:**

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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 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?**

**Semester 1**
- ECS401U Procedural Programming
- ECS402U Professional Applications and Research Themes
- ECS404U Computer Systems and Networks
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ECS408U Electronic Engineering Mathematics I
Semester 2
ECS417U Fundamentals of Web Technology
ECS411U Signals and Information
ECS403U Communication & Networks
ECS414U Object Oriented Programming
Semester 3
ELE335 Digital Systems Design
DCS234 Software Engineering
ELE374 Signals and Systems Theory
ELE403 Internet Protocols
Semester 4
ELE490 Design & Build Project in Electronic Engineering
DCS225 Database Systems t
ELE404 Internet Applications
ELE475 Microprocessor Systems Design
Semester 5
ELE614 Group Project for MEng (30 credits)
ELE595 Software Tools for Engineers
ELE502 Digital Signal Processing
DCS302 Multimedia (optional module)
DCS341 Entrepreneurship in Information Technology (optional module)
Semester 6
ELE614 Group Project for MEng (cont)
ELE606 Product Development
ELE611 Artificial Intelligence
DCS318 Interaction Design (optional module)
ELE014 Security and Authentication (optional module)
Semester 7
ELE700 Project (30 credits)
ECS792U Mobile and WLAN Technologies (optional module)
ECS703U 21st Century Networks (optional module)
DCS434 XML and Structured Information (optional module)
ECS713U Functional Programming (optional module)
AMCM048 Advanced Program Design
Semester 8
ELE700 Project (cont)
two modules from
ELE019 Real-Time Digital Signal Processing
DCS306 High Performance Computing
ELExxxx Real-Time and Critical Systems
one module from (if DCS341 not selected in semester 6)
ECS728U Business Technology Strategy or DCS341 Entrepreneurship in Information Technology

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 detailed below. There shall also be an approved threshold requirement, specifying an average mark higher than the pass mark that is required to progress to the next year of the integrated masters. This mark shall be set as standard at a minimum of 50.0. Individual programme regulations may specify higher thresholds, and/or that the threshold mark should be calculated across multiple developmental years.

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 the value of 120 credits, and pass modules (excluding modules at Level 3) to the value of 105 credits.
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from developmental year one;

iii. developmental year two to developmental year three: take modules to the value of 120 credits, and pass modules (excluding modules at Level 3) to the value of 210 credits from developmental years one and two;

iv. developmental year three to developmental year four:
Take modules to the value of 120 credits, pass modules (excluding modules at Level 3) to the value of 315 credits from developmental years one, two, and three, and meet any approved threshold requirement that specifies a higher average level achievement than the pass mark;

Academic Year of Study

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What Are the Entry Requirements?

Passes in three GCE A-levels are normally required for admission to the MEng programmes. Typical grades asked for would be ABB for MEng, 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) is 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 five distinctions at Level 3, including a distinction in Level 3 Maths. Also welcomed are equivalent UK or overseas qualifications, such as the International Baccalaureate (30 points MEng, with at least 5 points in Maths at higher level), as well as appropriate Access qualifications (assessed on an individual basis).

For international students, English Language skills are required to a 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
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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 tutor in their first year and the tutor 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)
- 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.

Vodafone and Juniper Networks both come in and give guest lectures to students on our ELEM005 module.
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<td><strong>Person completing Programme Specification</strong></td>
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