

Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	MSc Telecommunication and Wireless Systems with Industrial Experience
Name of Interim Award(s)	PG Certificate and PG Diploma
Duration of Study / Period of Registration	24 months FT
QM Programme Code / UCAS Code(s)	H6M3
QAA Benchmark Group	Engineering
FHEQ Level of Award	Level 7
Programme Accredited by	The Institution of Engineering and Technology
Date Programme Specification Approved	
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

This programme provides training in the principles of converged networking, network planning, network management and network performance through an integrated curriculum designed to respond to rapid developments and growing demand in the discipline. It emphasises networked applications and the underlying information and communication technologies. At the end of the programme, you will be able to address major challenges in networking and understand how the different types of infrastructure affect design and commercial decisions.

The programme includes a year in industry between the taught component and the project.

Aims of the Programme

To provide the students with the background and skills needed for careers in related technologies

To provide an in-depth understanding of telecommunication systems.

To provide an in-depth understanding of network structure, protocols and technologies, network modelling and performance,

wireless and mobile networks and related systems and technologies, and mathematical techniques.

Specific aims include the ability to identify major new networking challenges; solve selected performance problems in converged networks; sort and compare strategies for network planning and management; identify and compare communications strategies; identify and construct logical sub-tasks from a larger project.

The aims of the placement year are to:

- Ground the taught components of the programme in practical experience at a scale not possible within the College;
- Improve career preparation, giving students a better understanding of future career options and enhancing their career prospects.

What Will You Be Expected to Achieve?

You will be able to:

- Identify key networking issues and challenges
- Solve well-formulated performance problems in converged networks
- Compare strategies for optimal network planning and management
- Identify and compare selected physical layer strategies in communication systems as appropriate to converged telecommunication systems
- Identify and construct logical sub-tasks from a larger project focused on telecommunication systems

Academic Content:

A 1	Theory, principles, concepts and methodologies fundamental to the engineering of telecommunications networks.
A 2	Current developments in the engineering of converged, all-packet, next generation networks
A 3	A range of research-led specialities concentrated around telecommunications networking.

Disciplinary Skills - able to:

B 1	Demonstrate comprehension and higher level cognitive skills necessary to solve engineering problems in telecommunications networking.
B 2	Demonstrate the ability to analyse and evaluate using the appropriate mathematical principles and techniques that underpin the analysis of telecommunications networks.
B 3	Demonstrate an understanding of the business, management and other contextual issues relevant to the field of telecommunication networks.

Attributes:

C 1	Develop a global perspective, particularly with respect to the globalization of networking.
C 2	Learn to engage critically with knowledge, and particularly with respect to measured network data in which many parameters are uncertain or non-stationary.
C 3	Understand the importance of learning continuously in a fast-moving world of communications.

QMUL Model Learning Outcomes - Level 4:

D 1

D 2

D 3

How Will You Learn?

Each non-project-based module 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 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.

Individual projects are undertaken during the summer months under the supervision of an academic member of staff with whom there are weekly consultancy meetings. These are used for students to report on their progress, discuss research and design issues and plan their future work. This develops and reinforces students' ability to communicate technical ideas clearly and effectively. The Projects Coordinator also runs a thread of taught sessions to support the project module. A number of industrial-linked projects are offered each year, which students can apply for.

How Will You Be Assessed?

The assessment of taught modules normally consists of a combination of written examination and coursework.

The project is examined on the basis of a written report, a formal oral presentation, and, where applicable, a demonstration of any software and/or hardware developed by the student.

The industrial placement is assessed by a combination of written report, viva, learning journal and 2 employer evaluations. The first employer evaluation takes place a few months into the placement and the second takes place shortly before the end of the placement. Each evaluation involves employer and student jointly setting appropriate objectives within a structured framework of categories; progress is later measured against these objectives using set marking criteria.

How is the Programme Structured?

Please specify the full time and part time programme diets (if appropriate).

The programme is structured to enable students to have some choice within the programme, while compulsory modules cover the essential themes. The programme structure is as follows:

Semester 1

ECS701P Communication Theory (15 credits)
ECS702P Mobile and WLAN Technologies (15 credits)
ECS703P 21st Century Networks (15 credits)
ECS705P Software and Network Service Design (15 credits)

Semester 2

ECS724P Network Modelling & Performance (15 credits)
ECS725P Mobile Services (15 credits)

Select two options from:

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ECS726P Security and Authentication (15 credits)
 ECS728P Business Technology Strategy (15 credits)
 ECS746P Network Planning, Finance and Management (15 credits)
 ECS757P Digital Media and Social Networks (15 credits)
 ECS721P Next Generation Mobile (15 credits)

Semester 3

ECS750P Project

Year 2

ECS768P MSc Industrial Placement Project

QMUL Model

Students are required to undertake the equivalent of one module (15 credits in 2017/18) per year of study which has been identified as meeting the requirements of the QMUL Model. Each of these modules has been designed to combine the best of QMUL's academic excellence with your ability to identify and develop your skills, networks and experience. This will help to ensure you become a graduate who can undertake further study or secure graduate employment in areas that interest you, and will support your ability to position yourself to find the right job or opportunity for you. The relevant module for your first year of study in 2017/18 is indicated below.

Where more than one module is specified, this is because pertinent elements from these modules have been identified as being appropriate to the QMUL Model and when studied together, deliver the equivalent content of one 15-credit QMUL Model module.

The QMUL Model modules for future years and associated Learning Outcomes will be identified as your studies continue.

Should Professional, Statutory and Regulatory Body requirements apply to your programme of study, these will be taken into account in the specification of QMUL Model requirements.

Academic Year of Study

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
							<input type="checkbox"/>
							<input type="checkbox"/>
							<input type="checkbox"/>

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							<input type="checkbox"/>

What Are the Entry Requirements?

The entry requirements are a good Honours degree (first or upper-second class honours) in Electronic Engineering, Computer Science, Mathematics or a related discipline. Applicants with unrelated degrees will be considered if there is evidence of significant relevant industrial experience.

For international students, English Language skills are required to a recognised standard. The minimum requirement is: IELTS 6.5 or TOEFL (IBT) 92. For students not quite meeting this requirement (e.g. IELTS 6.0), enrolling on a one month 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 Student-Staff Liaison Committee provides a formal means of communication and discussion between the School and its students. The committee consists of student representatives from each cohort, together with appropriate representation from School staff. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. Student-Staff Liaison Committees meet four times a year, twice in each teaching semester.

Each semester, students are invited to complete a web-based module questionnaire for each of their taught modules, and the results are fed back through the SSLC meetings. The results are also made available on the student intranet, as are the minutes of the SSLC meetings. Any actions necessary are taken forward by the relevant Senior Tutor, who chairs the SSLC, and general issues are discussed and actioned through the School's Learning and Teaching Committee.

The School's Learning and Teaching Committee advises the 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, including through student membership and consideration of student surveys and module questionnaires.

The School participates in the College's Annual Programme Review process, which supports strategic planning and operational issues for all undergraduate and taught postgraduate programmes. The APR includes consideration of the School's Taught Programmes Action Plan, which records progress on learning and teaching related actions on a rolling basis. Students' views are considered in the APR process through analysis of the NSS and module questionnaires, among other data.

Academic Support

All students are assigned an academic advisor during induction week. The advisor's role is to guide their advisees in their academic development including module selection, and to provide first-line pastoral support.

In addition, the School has a Senior Tutor for postgraduate students who provides second-line guidance and pastoral support for students, as well as advising staff on related matters.

Every member of teaching staff holds 2 open office hours per week during term-time.

Additional academic support is provided to those students who are successful in securing an industrial-linked project.

The year in industry is supported by a dedicated Industrial Placements Manager.

Programme-specific Rules and Facts

The programme adheres to the standard Academic Regulations for taught postgraduate programmes, with a special regulation for a progression point after the taught component.

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 School has a wide range of industrial contacts secured through research projects and consultancy, our Industrial Experience programme and our Industrial Advisory Panel.

The Industrial Advisory Panel works to ensure that our programmes are state-of-the-art and match the changing requirements of this fast-moving industry. The Panel includes representatives from a variety of Computer Science oriented companies ranging from SMEs to major blue-chips. These include: Microsoft Research, IBM, The National Physical Laboratory, National Instruments, PA Consulting, Rohde and Schwarz, O2, Cisco Systems, ARM, Selex and BAE Systems.

Recent graduates have found employment as IT consultants, specialist engineers, web developers, systems analysts, software designers and network engineers in a wide variety of industries and sectors. A number of students also go on to undertake PhDs in electronic engineering and computer science. Merrill Lynch, Microsoft, Nokia, Barclays Capital, Logica,, Credit Suisse, KPMG, Transport for London, Sky and Selex ES are among the organizations that have recently employed graduates of EECS programmes.

Transferable skills are developed through a variety of means, including embedding of QM Graduate Attributes in taught modules and the summer project, together with the opportunity to participate in extra-curricular activities, e.g. the School's E++ Society, the School's Annual Programming Competition and external competitions with support from the School.

Students have the opportunity to undertake an industrial-linked project in the summer - these are very competitive.

Programme Specification Approval

Person completing Programme Specification

Jennifer Richards

Programme Title: MSc Telecommunication and Wireless Systems with Industrial Experience

Person responsible for management of programme

Rupal Vaja

**Date Programme Specification produced/amended
by School Learning and Teaching Committee**

18th Jan 2017

**Date Programme Specification approved by
Taught Programmes Board**