Queen Mary University of London

Programme Specification (PG)

Awarding body / institution:	Queen Mary University of London
Teaching institution:	Queen Mary University of London
Name of final award and title:	MSc PT Advanced Computer Science
Name of interim award(s):	PG Certificate and PG Diploma
Duration of study / period of registration:	2 Years PT
Queen Mary programme code(s):	G5U3
QAA Benchmark Group:	Computing
FHEQ Level of Award:	Level 7
Programme accredited by:	BCS The Chartered Institute for IT
Date Programme Specification approved:	
Responsible School / Institute:	School of Electronic Engineering & Computer Science

Schools / Institutes which will also be involved in teaching part of the programme:
NA

Collaborative institution(s) / organisation(s) involved in delivering the programme:
NA

Programme outline

This MSc provides an advanced programme of study for students obtaining a good first degree in Computer Science or a closely related discipline. The Programme provides two study streams entitled “Software and Data Engineering” and “Interaction Design”. The “Software and Data Engineering” stream provides Advanced MSc study of core Computer Science subjects such as logic, security and functional programming in combination with topics central to modern software and data systems such as NoSQL databases, machine learning and data analytics. The Interaction Design stream provides a specialism in the area of Human-Computer Interaction (HCI), covering topics such as interface design for mobile and ubiquitous systems, human-robot interaction and designing interactions for virtual and alternative reality systems. The programme prepares you for a wide range of careers depending on your chosen stream. Typical jobs after graduating from the Software and Data Engineering stream include Data Scientist, Computer Programmer, Software Engineer, Systems Analyst, Database Developer/Data Engineer. Typical jobs after graduating from the Interaction Design stream include Interface/Interaction designer, User Experience specialist, Usability Engineer.

Aims of the programme

The aim of this Masters programme is to provide advanced study in the conceptual analysis of information and the development of effective technologies for its representation, distribution and use. The programme is multi-disciplinary and in addition to

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Computer Science optionally involves aspects of Interaction/Interface design, Artificial Intelligence, Machine Learning, Cognitive Psychology, Logic and Sociology. The course aims to address both fundamental principles and advanced techniques and to provide students with directly applicable knowledge and skills. The course is aimed at preparing students both for research study and specialist employment, especially in domains such as Software Engineering, Data Science, Human-Computer Interaction, Computer Programming and Semi-structured Data Engineering.

What will you be expected to achieve?

The programme provides opportunities for students:
i) to develop a knowledge of a range of modelling, evaluation and design methods used in research and practice in the focal areas of the programme.
(ii) to gain experience with applying them in practice in a research-oriented project.

Academic Content:	
A 1	Theories, principles and techniques in Computer Science
A 2	Programming languages and environments, systems development methodologies
A 3	Approaches to program and system testing and evaluation
A 4	Optionally the design and evaluation of Interactive systems, including mobile, AR and VR systems, as well as sociological and ethnographic approaches to the evaluation of such systems.

Disciplinary Skills - able to:	
B 1	Design, implement and test software systems
B 2	Critically evaluate alternative technology solutions
B 3	Design and implement data structures that are appropriate to a given software solution
B 4	Critically reflect on their own performance in Computing projects and apply to future projects

Attributes:	
C 1	Integrate scholarship, research and professional activities with the Computing discipline in a developing professional career
C 2	Evaluate their practice and engage in continuing professional development

How will you learn?

Each non-project-based module normally 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 2nd and 3rd semesters under the supervision of an academic member of staff with whom there are normally 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 may be 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 research paper, a reflective essay, a video presentation (usually including a demonstration of any developed software) and a viva involving the supervisor and an independent second examiner.

How is the programme structured?

Please specify the structure of the programme diets for all variants of the programme (e.g. full-time, part-time - if applicable). The description should be sufficiently detailed to fully define the structure of the diet.

The course has two streams and is organised over three semesters: The first semester (Semester A) consists of four compulsory modules. The second semester (Semester B) has four compulsory modules. Students carry out a large project full-time in the third semester (Semester C). This project will be individually supervised by an academic or research staff.

Students taking the Software and Data Engineering stream will take modules in the order described below:

Software and Data Engineering Stream (Default Stream)

Year 1 - Semester 1
ECS713P Functional Programming
ECS7071P Semi-Structured Data Engineering

Year 1 - Semester 2
ECS726P Security and Authentication
ECS773P Bayesian Decision and Risk Analysis

Year 2 - Semester 1
ECS708P Machine Learning
ECS7018P Logic in Computer Science

Year 2 - Semester 2
ECS733P Interactive Systems Design
ECS784P Data Analytics

Semester 3
ECS750P Project

Students taking the Interactive Design stream will take modules in the order described below:

Interaction Design Stream

Year 1 - Semester 1
ECS713P Functional Programming
ECS7071P Semi-Structured Data Engineering

Year 1 - Semester 2
ECS726P Security and Authentication
ECS773P Bayesian Decision and Risk Analysis

Year 2 - Semester 1
ECS712P Design for Human Interaction
ECS7029P Research Methods

Yeaer 2 - Semester 2
ECS661P User Experience Design
ECS733P Interactive Systems Design

Semester 3
ECS750P Project

Academic Year of Study PT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Functional Programming	ECS713P	15	7	Compulsory	1	Semester 1
Semi-Structured Data Engineering	ECS7071P	15	7	Compulsory	1	Semester 1
Security and Authentication	ECS726P	15	7	Compulsory	1	Semester 2
Bayesian Decision and Risk Analysis	ECS773P	15	7	Compulsory	1	Semester 2

Academic Year of Study PT - Year 2

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Machine Learning	ECS708P	15	7	Compulsory	2	Semester 1
Logic in Computer Science	ECS7018P	15	7	Compulsory	2	Semester 1
Interactive Systems Design	ECS733P	15	7	Compulsory	2	Semester 2
Data Analytics	ECS784P	15	7	Compulsory	2	Semester 2
Design for Human Interaction	ECS712P	15	7	Compulsory	2	Semester 1
Research Methods	ECS7029P	15	7	Compulsory	2	Semester 1
User Experience Design	ECS661P	15	7	Compulsory	2	Semester 2
Project Module	ECS750P	60	7	Core	2	Semester 3

What are the entry requirements?

Information on the entry requirements can be found at: www.qmul.ac.uk/postgraduate/taught/coursefinder/courses/computer-science-msc/

How will the quality of the programme be managed and enhanced? How do we listen to and act on your feedback?

The Student-Staff Liaison Committee (SSLC) 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. The SSLC 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 Education Committee (EduComm).

The School's EduComm advises the Director of Education 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 University'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

Student Experience Action Plan, which records progress on learning and teaching related actions on a rolling basis. Students' views are considered in the APR process through module questionnaires, among other data.

What academic support is available?

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.

Programme-specific rules and facts

Special regulations apply for programmes accredited by the Engineering Council. Please refer to the Academic Regulations for full details. Students who complete the programme but do not meet the Engineering Council's requirements will graduate with an alternate award title.

How inclusive is the programme for all students, including those with disabilities?

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, META, Google, 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. Merril 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 final 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 - these are very competitive.

Programme Specification Approval

Person completing Programme Specification:	Dr Tony Stockman
Person responsible for management of programme:	Dr Tony Stockman
Date Programme Specification produced / amended by School / Institute Education Committee:	27 Nov 2023
Date Programme Specification approved by Taught Programmes Board:	