



Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	BSc Software Engineering for Business / BSc Software Engineering for Business with Industrial Experience
Name of Interim Award(s)	CertHE, DipHE, BSc
Duration of Study / Period of Registration	3 years FT / 4 year FT with IE
QM Programme Code / UCAS Code(s)	IN10/I1N1
QAA Benchmark Group	Computing
FHEQ Level of Award	Level 6
Programme Accredited by	N/A
Date Programme Specification Approved	3 Feb 2015
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

Software professional roles are the fastest-growing in the sector, so there is increased demand for employable and productive software engineering/design graduates. To meet this demand and address the technical skills gap, e-skills UK has collaborated with employers and universities to design the framework for this Tech Industry Gold degree programme. See <http://www.softwaredevelopmentforbusiness.com/> for further details.

The content of this programme is divided into four main areas:

1. Technology
2. Project management
3. Personal and interpersonal skills
4. Business skills

Tech Industry Gold degrees are unique because:

* The undergraduate skills requirements curriculum has been designed with input from leading employers to ensure it is relevant to the needs of today's businesses. Employers involved include Accenture, BT, Capgemini, CA Technologies, Cisco Systems, Enternships, IBM, Logica, Ministry of Justice, and the NHS.

* Students receive employer support and engagement throughout their degree in the form of employer/student events, CV clinics, real project case studies, work placements and 'guru' lectures to enhance their employability and develop their professional skills.
 * Employers can use these activities to gain early access to students and recruit the graduates who fit their business.
 * Students have access to a wider online community beyond their university, enabling them to network with peers from other establishments and employers involved in the programme.
 * Universities currently involved with e-skills degrees have seen an increase in student numbers, an improvement in the gender balance on the course and a significant increase in employability rates.

This programme also provides the opportunity for you to undertake a one-year industrial placement between the second and final years of study. Support for identifying and applying for placements is provided by a dedicated Industrial Placement Manager.

Aims of the Programme

This programme aims to:

Develop your technical skills: You'll study how software is built from start to finish, including: identifying problems that software can solve; finding out what your users need; developing software to solve these issues; testing the quality of the software; and documenting how to use it. With input from employers, the programme will also cover the latest technologies – hot topics like cloud computing, big data and cyber security.

Teach you project management skills: You'll learn how businesses manage large projects, and develop the skills you need to plan, design and deliver new software on time and within budget – key skills that employers look for.

Enhance your personal and interpersonal skills: Most software development is done in teams. The degree will prepare you for this, by boosting your interpersonal skills – how well you work with other people.

Expose you to opportunities to develop business skills: For long term success in your career, you'll not only need good technical skills, you'll also need to negotiate and communicate effectively with colleagues and customers; lead teams and projects; and understand how companies operate profitably. You'll learn these skills through the programme.

What Will You Be Expected to Achieve?

Students who successfully complete the programme will be able to:

Academic Content:	
A 1	Demonstrate understanding of the entire software development lifecycle from design through to deployment and maintenance
A 2	Demonstrate broad knowledge of the software development sector, from both a technical and a business perspective
A 3	Demonstrate technical knowledge and skills in key areas identified by contributing employers, and adapt this to new situations and contexts
A 4	Understand and articulate business principles, structures, operations, procedures and cultures applicable to a career in a software development environment
A 5	Show awareness of project, people and resource management principles and techniques

Disciplinary Skills - able to:

B 1	Undertake problem-solving and modelling tasks relevant to software development
B 2	Work closely and communicate with employees in non-IT related areas of an organisation
B 3	Investigate, select, analyse, manipulate and manage information from a variety of technical and non-technical sources
B 4	Apply the technical skills learned in the taught component of the programme while on placement, and, vice versa, apply the technical skills learned while on placement when back in the final year of study
B 5	Appreciate the challenges associated with industry standard software development

Attributes:	
C 1	Have a global perspective and engage with the professional world
C 2	Learn continuously and develop the skills to influence, negotiate and lead
C 3	Display initiative and resilience in the face of new challenges
C 4	Use information for evidence-based decision-making and creative thinking
C 5	Apply different forms of communication in various social, professional and cultural settings

How Will You Learn?

The teaching and learning strategies are tailored to the learning outcomes of the different modules. These will include lectures, lab and tutorial sessions, practical and library-based research, presentations and group work. Lectures are used to introduce principles and methods and also to illustrate how they can be applied in practice, e.g. through examples and case studies. Lab and tutorial sessions will allow students to put these theoretical principles and methods into practice. Practical and library-based research will allow them to develop skills in review, investigative methods and critical analysis. Presentations and group work will enhance their team-working and communication skills. The overall profile of teaching and learning strategies is designed to foster the development of (i) Graduate Attributes, as captured in Queen Mary's Statement of Graduate Attributes and (ii) key skills, as captured in the e-skills UK endorsement criteria.

In addition, the programme includes a significant component of industrial input and experience. The series of "guru" lectures offers the opportunity for students to increase their awareness of the broader context of their discipline, hear a range of industrial speakers and ask questions. The industrial placement offers a real-world opportunity for them to apply the technical skills that they have learnt in the taught component of the programme. Students will receive full training in preparation for the placement, supported by the dedicated Industrial Placement Manager, who also provides support while they are out on placement.

Learning materials will be hosted on Queen Mary's tailored virtual learning environment, QMPlus. This will also provide access to announcement and discussion forums used for asynchronous support.

How Will You Be Assessed?

Taught modules are usually assessed through a combination of examination and coursework, as appropriate for the content and focus of each individual module. Laboratory-based modules are often assessed through practical coursework, while more theoretical modules may be assessed through in-class tests, exercise sheets or written assignments. Project work, both group and individual, forms a significant component of the assessment - project modules are assessed on the basis of a written report, oral presentation and demonstration of the concrete outcomes of the module, e.g. developed software. The assessment for the placement year includes an employer evaluation and the production of a reflective learning log, in addition to a report and oral presentation.

In addition to summative assessment, the programme provides regular opportunities for formative feedback, e.g. through the submission of a draft report for project modules. The School has a feedback policy, which stipulates standard requirements for acceptable types and timing of feedback. The School also uses the TurnItIn plagiarism detection system, and students will have the opportunity to submit some formative assignments to TurnItIn for feedback on the correctness and effectiveness of their referencing.

How is the Programme Structured?

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

The programme structure is:

Semester 1

ECS401U Procedural Programming
ECS402U Professional and Research Themes
ECS404U Computer Systems and Networks
ECS407U Logic and Discrete Structures

Semester 2

ECS414U Object-Oriented Programming
ECS417U Fundamentals of Web Technology
ECS418U Business Modelling
ECS419U Information System Analysis

EECS422U - Skills for Electronic Engineering and Computer Science (runs in sem1/2. Non credit bearing)

Semester 3

ECS501U C Programming
ECS505U Software Engineering
ECS510U Algorithms and Data Structures in an Object-Oriented Framework
ECS524U Internet Protocols and Applications

Semester 4

ECS506U Software Engineering Project
ECS518U Operating Systems
ECS519U Database Systems
ECS522U Graphical User Interfaces

YEAR 3 (OF 4-YEAR PROGRAMME):

Semester 5 and 6

ECS550U Industrial Placement Project

FINAL YEAR

Semester 5 (Semester 7 of 4 year programme)

ECS635U Project (30 credits)
ECS646U Software Development and Quality

At least one of:

ECS642U Embedded Systems (sem 5/7)
ECS639U Web Programming (sem 6/8)

Plus options from:

ECS604U Entrepreneurship in Information Technology
ECS607U Data Mining
ECS609U Project Risk Management
ECS610U Computer Graphics
ECS612U Interaction Design

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ECS640U Big Data Processing
ECS650U Semi-Structured Data and Advanced Data Modelling

Semester 6 (Semester 8 of 4 year programme)
ECS635U Project (cont)

At least one of:

ECS642U Embedded Systems (sem 5/7)
ECS639U Web Programming (sem 6/8)

Plus option(s) from:

ECS608U Distributed Systems and Security
ECS622U Product Development
ECS624U C++ for Image Processing
ECS629U Artificial Intelligence
ECS637U Digital Media and Social Networks
ECS647U Bayesian Decision and Risk Analysis

Academic Year of Study

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

What Are the Entry Requirements?

Software Engineering with Business

A/AS-levels - Tariff/Grades requirement: ABB(320 points) GCSE Maths grade B or above.

Vocational or applied A-levels -Acceptability: Accepted and subject to the above tariff requirements for A/AS-levels.

Must be in related subject, ICT/Computing.

BTEC Extended Diploma - Pass with D*D*D in ICT/Computing with grade B GCSE Maths.

BTEC Diploma (120 Credit)- Pass with D*D in ICT/Computing with grade B in A-level Maths.

BTEC Subsidiary Diploma (60 Credit)- Pass with D*. These qualifications are acceptable ONLY if offered with two appropriate A-levels, ie Maths/ICT grade B.

HNC - These qualifications will be considered on a case by case basis.

HND - These qualifications will be considered on a case by case basis.

Access - Pass with 45 credits in Access in Computing at level 3, of which 30 credits must be Distinction and 15 credits at Merit or Higher. An additional entry maths test will be required if you do not hold GCSE Mathematics grade B.

International Baccalaureate - Acceptability: Acceptable on its own and combined with other qualifications. Subjects and grades required: 34 points overall. Must include either HL English grade 4 or SL English grade 4 or above.

Software Engineering with Business with IE

A/AS-levels - Tariff/Grades requirement: AAB(340 points) GCSE Maths grade B or above.

Vocational or applied A-levels - Acceptability: Accepted and subject to the above tariff requirements for A/AS-levels. Must be in related subject, ICT/Computing.

BTEC Extended Diploma - Pass with D*D*D* in ICT/Computing with grade B GCSE Maths.

BTEC Diploma (120 Credit) - Pass with D*D* in ICT/Computing with grade B in A-level Maths.

BTEC Subsidiary Diploma (60 Credit) - Pass with D*. These qualifications are acceptable ONLY if offered with two appropriate A-levels, ie Maths/ICT grade B.

HNC - These qualifications will be considered on a case by case basis.

HND - These qualifications will be considered on a case by case basis.

Access - Pass with 45 credits in Access in Computing at level 3, of which 30 credits must be Distinction and 15 credits at Merit or Higher. An additional entry maths test will be required if you do not hold GCSE Mathematics grade B.

International Baccalaureate - Acceptability: Acceptable on its own and combined with other qualifications. Subjects and grades required: 34 points overall. Must include either HL English grade 4 or SL English grade 4 or above.

How Do We Listen and Act on Your Feedback?

The Staff-Student Liaison Committee provides a formal means of communication and discussion between schools/institutes 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/institute 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 the committee's work in a number of ways, such as through student membership, or consideration of student surveys.

All schools/institutes operate an Annual Programme Review of their taught undergraduate and postgraduate provision. APR is a continuous process of reflection and action planning which is owned by those responsible for programme delivery; the main document of reference for this process is the Taught Programmes Action Plan (TPAP) which is the summary of the school/institute's work throughout the year to monitor academic standards and to improve the student experience. Students' views are considered in this process through analysis of the NSS and module evaluations.

Academic Support

Personal Tutor

All students are allocated a personal tutor for each academic year. tutors are members of academic staff who provide advice and support to students. They have two main roles: academic and pastoral. First year students will meet their tutor for a weekly tutorial.

In their academic capacity, tutors advise on, and approve, programmes of study.

If you are considering changing your programme of study, or taking a module that does not appear on your recommended programme, you must discuss this with your tutor. Any other academic-related concerns, e.g. general academic progress, should be discussed with your tutor in the first instance. Please note that, in this School, the role of tutor is separate from that of senior tutor.

In their pastoral capacity, tutors are the first point of contact in case of personal problems or concerns. Tutors recognise that personal problems can severely affect a student's academic performance, and they will provide a sympathetic and non judgmental ear, as well as practical help. They can also direct students to other College support services, where appropriate.

Discussions with students will always be treated in confidence. However, in cases where academic performance is affected by personal problems, the School must be officially informed, and tutors can also guide students through the correct procedures for doing this.

Tutors can be asked to provide academic references for students for job and other applications after leaving university, and this is another good reason for building and maintaining a good student/tutor relationship.

Senior Tutor

The School has two Senior Tutors. A Senior Tutor is a member of the academic staff who acts as a further point of reference for problems and decisions faced by students. Like advisors, the Senior Tutor has two main roles: academic and pastoral. Students should usually contact their own tutor first for advice, but a tutor may recommend that a student consult the Senior Tutor for either academic or pastoral reasons. If a student finds difficulty talking to their own tutor, they may consult the Senior Tutor directly. The Senior Tutor also serves as the Chair of Student-Staff Liaison Committee (SSLC).

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 framework for this degree has been developed by e-Skills UK as a collaboration between some of the UK's leading companies and universities. It is a unique programme and it has proved over the last seven years that there is a clear demand from students and industry for a degree that combines business and technical learning objectives with business skills in order to produce graduates who are ready for the workplace.

The School of Electronic Engineering & Computer Science also has a wide range of industrial contacts secured through research projects and consultancy, our well-established Industrial Experience programmes and our Industrial Advisory Board. The Industrial Advisory Board includes representatives from a variety of Computer Science oriented companies ranging from SMEs to major blue-chips. These include: Microsoft Research, Royal Bank of Scotland, BT Labs, Oaklodge Consultancy, Intel Research, The Usability Company, Hewlett Packard Labs and Arclight Media Technology Limited

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 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.

Programme Specification Approval

Person completing Programme Specification

Jane Reid

Programme Title: BSc Software Engineering for Business / BSc Software Engineering for Business with Industrial Experience

Person responsible for management of programme Rachel Appleton

**Date Programme Specification produced/amended
by School Learning and Teaching Committee** 3 Feb 2015

**Date Programme Specification approved by
Taught Programmes Board** 3 Feb 2015