Programme Title: BSc Computer Science with Business Management

Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	Bachelor of Science (BSc) Computer Science with Business Management
Name of Interim Award(s)	Bachelor of Science (BSc)
Duration of Study / Period of Registration	3 year FT
QM Programme Code / UCAS Code(s)	G4N1
QAA Benchmark Group	Computing and General Business Management
FHEQ Level of Award	Level 6
Programme Accredited by	
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
School of Business & Management

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

Programme Outline

This programme focuses on computer science while providing an understanding of business management. The programme includes core computer science and business management modules such as the fundamentals of management, marketing and economics for business. You will gain practical skills and experience in the use and applications of information technology in business. The programme develops high levels of competence and demonstrable skills in core computer science areas such as programming and a greater appreciation of the context in which information technology is used.

Aims of the Programme

This programme aims to combine skills in programming and program design with knowledge of business and financial management, an important IT application context. The first two years of the programme has 10 units of Computer Science and 6 units of Business Management:
The Computer Science element of the programme aims to build practical skills in software engineering. These start with

competence in programming and go on to develop systems analysis and program and database design. Students also gain understanding of computer systems
The Business Management element of the programme aims to develop critical analytical skills and introduce students to the core business subjects. In the Accounting elements students will gain competence in handling and evaluating financial data and be able to appreciate the role of finance and management information systems in business environments.
The aims of the final year are to allow a student to explore more specialised applications and to demonstrate and consolidate the skills gained in a project. A project should normally include substantial work in either a) design and implementation of a computer systems or b) analysis of an IT application problem and specification of a proposed solution. Many projects will include work in both these areas; however, by agreement with the project supervisor the scope of a project may be varied.

What Will You Be Expected to Achieve?

The programme includes threads in software engineering, computer systems, software applications, business management. The learning outcomes are given for each thread in the programme and also for the transferable skills gained.
Software Engineering
• knowledge of the basic theory of programming languages and the ability to write basic programs
• knowledge of fundamental algorithms and the notion of complexity
• experience in applying a range of methods in the development of large-scale software systems
• knowledge of the software life-cycle, software design methodologies and software development tools
• understanding of database principles and techniques and they role they play in information management
Computer Systems
• knowledge of computer system components and architecture
• understanding of the principles of operating systems and networks and the techniques required for their implementation
Applications
• knowledge of some advanced application techniques (depending on the options taken) and experience with using them in practice
Business Management
• fundamentals of management,
• strategy, marketing and organisational behaviour.
• appreciation of the context in which information technology is used
General Knowledge and Transferable Skills
• experience in problem-solving
• work effectively as a member of a team
• knowledge of project management skills
• appreciate the presence of risk in IT practice
• produce well-written reports.

Academic Content:	
A 1	Knowledge and skills related to the key field of software engineering, including the ability to design, implement and test algorithms and basic programmes in a rigorous and principled way, and understanding of the software development life-cycle, relevant methodologies and tools.
A 2	Knowledge and skills related to the key field of applications, including understanding of some of the major application areas in the sciences, medicine, industry and commerce, and the ability to grasp appropriate usability principles and techniques for these areas.
A 3	Knowledge and skills related to the key field of business management, including understanding of the fundamentals of management, strategy, marketing and organisational behaviour, and an appreciation of the context in which information technology is used.
A 4	Knowledge and skills related to the key field of business management, including understanding of the fundamentals of management, strategy, marketing and organisational behaviour, and an appreciation of the context in which information technology is used.

Programme Title: BSc Computer Science with Business Management

Disciplinary Skills - able to:	
B 1	Analyse and solve technical problems effectively, both individually and as part of a design team
B 2	Understand and apply technical project management techniques and skills
B 3	Demonstrate awareness and understanding of the mathematical, scientific and engineering foundations of the discipline of computer science
B 4	Demonstrate awareness and understanding of the historical, social, professional, industrial and ethical context of the discipline of computer science
B 5	Communicate technical detail effectively to a variety of audiences, both through production of well-written technical reports and through oral presentation / demonstration

Attributes:	
C 1	Connect information and ideas within the broader context of the discipline of computer science
C 2	Acquire and apply knowledge in a critical way, evaluating its reliability and relevance, in order to investigate and solve unfamiliar problems
C 3	Explain complex technical concepts clearly in a variety of settings, to a variety of audiences, using a variety of media
C 4	Develop a strong sense of intellectual and professional integrity
C 5	Think and work creatively, using information and experience as the basis for decision-making

QMUL Model Learning Outcomes - Level 4:	
D 1	Identify and discuss their own career aspirations or enterprise skills and knowledge and how they impact on others
D 2	Identify and discuss what their own role in their programme and/or subject discipline might mean to them for future e
D 3	Consider the role of their discipline in diverse cultural and global contexts

How Will You Learn?

Taught courses involve lectures, problem-solving courseworks and practical sessions or seminars. Lectures are used to introduce principles, methods and techniques and, through the use of examples, to illustrate how they can be applied in practice. Courseworks allow students to develop their own skills in design and problem-solving and gain extensive practical experience of building computer systems using a wide range of tools and techniques. On Computer Science courses, students mostly 'learn through doing' and can expect to spend far longer in the teaching laboratory than in lectures.
Business Management seminars allow the testing of comprehension and the evaluation of critical analyses, together with opportunities for oral presentations and interpretations of cases.
Each year of study contains small group teaching sessions to encourage the development of reflective, insightful design and written and verbal communication skills. In year 1 computer science tutorials help students adapt to independent study and develop their study and communication skills through a series of research and presentation exercises. The Software Engineering team project in year 2. In the final year, individual projects include weekly consultancy meetings where students report on their

progress, discuss their designs and plan their future work. These reinforce and develop the ability to communicate technical ideas clearly and effectively.

How Will You Be Assessed?

Almost all taught modules are assessed through a written examination and practical courseworks. Some modules also include in-term tests as a component in assessment. The first year programming courses are assessed by a combination of coursework and in-term test or online examinations, held under exam conditions. Projects are examined on the basis of a written report and formal oral presentation.

How is the Programme Structured?

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

Year 1 Modules
Semester 1
ECS401U Procedural Programming (15 credits)
ECS404U Computer Systems and Networks (15 credits)
ECS427U Professional and Research Practice (15 credits)
BUS001 Fundamentals of Management (15 credits)
Semester 2
ECS414U Object Oriented Programming (15 credits)
ECS417U Fundamentals of Web Technology (15 credits)
ECS419U Information Systems Analysis (15 credits)
BUS017 Economics for Business (15 credits)
Semester 1 and 2
ECS422U Skills for Electronic Engineering and Computer Science (non-credit bearing module)

Year 2 Modules
Semester 3
ECS505U Software Engineering (15 credits)
ECS509U Probability and Matrices (15 credits)
ECS524U Internet Protocols and Applications (15 credits)
BUS021 Financial Accounting (15 credits)
Semester 4
ECS506U Software Engineering Project (15 credits)
ECS519U Database Systems (15 credits)
BUS011 Marketing (15 credits)
plus one module from:
ECS518U Operating Systems (15 credits)
ECS522U Graphical User Interfaces (15 credits)

Final Year Modules
Semester 5
ECS635U Project (30 credits)
BUS204 Strategy (15 credits)
Plus two modules from:
ECS607U Data Mining (15 credits)
ECS610U Computer Graphics (15 credits)
ECS639U Web Programming (15 credits)
ECS640U Big Data Processing (15 credits)

Programme Title: BSc Computer Science with Business Management

ECS650U Semi-Structured Data and Advanced Data Modelling (15 credits)
ECS651U Computability, Complexity and Algorithms 15 credits)
Semester 6
ECS635U Project (cont) (30 credits)
BUS324 The Management of Human Resources (15 credits)
Plus two modules from:
ECS612U Interaction Design (15 credits)
ECS624U C++ for Image Processing (15 credits)
ECS629U Artificial Intelligence (15 credits)
ECS637U Digital Media and Social Networks (15 credits)
ECS641U Communicating and Teaching Computing (UAS) (15 credits
ECS647U Bayesian Decision and Risk Analysis (15 credits)
ECS655U Security Engineering (15 credits)
ECS656U Distributed Systems (15 credits)

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 FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Professional and Research Practice	ECS427U	15	4	Compulsory	1	Semester 1	Yes

What Are the Entry Requirements?

General entry requirements
• A-levels: Our A-level entrance requirements are based on 3 A-levels, or 2 A-levels and 2 AS-levels. We are delighted to receive applications from students who have studied Computer Science at GCSE or A-Level (often called Computing by the examination boards), and in general we prefer Maths and Science based A-levels, though we will consider other combinations of subjects.
• Advanced diplomas: The School warmly welcomes applications from students taking Advanced or Extended (level-3) Diplomas in Information Technology or Engineering. We require 320-360 UCAS Tariff points (320 for BSc Computer Science and Mathematics, 340 for BSc(Eng) and BEng, 360 for BSc, MSci and MEng programmes) and applicants must also have passed GCE A-

Queen Mary University of London

level Mathematics at grade C or above. Grade B or above for BSc Computer Science and Mathematics.
• Vocational or applied A-levels: Vocational A-levels are acceptable and are subject to the above tariff requirements for A/AS-levels. They should be subject-related: electronic engineering or engineering for MEng and BEng programmes. Grade B GCSE Mathematics minimum.
• Key skills: Results of key skills tests will not normally form part of an offer of a place.
• BTEC National Diploma (18 units): The BTEC National Diploma is acceptable on its own and combined with other qualifications with minimum grade requirements: DDM for BEng, MEng, DDD (with Distinctions in all modules) for BSc(Eng), BSc. Your BTEC National Diploma must be subject-related: engineering, electronic engineering for MEng and BEng programmes, computing or related subject for BSc programmes. The IT practitioners Diploma is only accepted for BSc(Eng) programmes. Additionally, we require a minimum Grade C GCSE in mathematics.
• International Baccalaureate: We require a minimum of 32 points overall for BEng and BSc programmes, 34 points for MEng and BSc(Eng) programmes. Subjects must include mathematics HL at least five points for all MEng and BEng programmes and at least six points for all BSc programmes; physics is required for selected MEng and BEng programmes; see programme details.
• European Baccalaureate: We require 80% including grade eight minimum Mathematics for all MEng and BEng programmes. Physics at grade eight required for selected MEng and BEng programmes as per A-level subject requirements, please see programmes for specific requirements.
• Access to HE Diploma: Applicants will be considered on a case-by-case basis. Please contact the School for guidance.
• European and international qualifications: The College accepts a wide range of EU and International qualifications, for information please contact the School.
• Other qualifications: The College welcomes applications from those holding qualifications not listed above. The School will be happy to advise you as to the acceptability of your qualification.

Specific programme entry requirements
• A-level or equivalent Mathematics.

International students - English Language entry requirements
For international students, English Language skills are required to a recognised standard. The minimum requirement is IELTS 6.0 or equivalent.

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

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

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

The School also has a Student Support Officer who is the first point of contact regarding all matters.

Every member of Teaching Staff holds 2 open office hours per week during term time.

Programme-specific Rules and Facts

Students must Pass their Final Year Project in order to obtain the BSc. Students who do not pass their Final Year Project will exit with an alternate award.

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

he 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. 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.

Programme Specification Approval

Person completing Programme Specification

Queen Mary University of London

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Person responsible for management of programme	
Date Programme Specification produced/amended by School Learning and Teaching Committee	
Date Programme Specification approved by Taught Programmes Board	

Queen Mary University of London