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 in Sound and Music Computing
Name of Interim Award(s)	PG Certificate and PG Diploma
Duration of Study / Period of Registration	12 Months FT, 24 Months PT
QM Programme Code / UCAS Code(s)	H6T8 / H6T4
QAA Benchmark Group	
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 MSc provides interdisciplinary training in sound and music computing. The course offers specialist modules and projects in a wide range of areas including music signal processing, music analysis and synthesis, sound recording and engineering, music perception and cognition, expressive musical performance and digital musical instruments, interfaces & effects. Optional modules include machine learning, interactive system design, social networks, information retrieval, and the semantic web. You will graduate with an deep understanding of today's leading edge music technologies, with the potential to become a pioneer in developing future generations of technologies.

Aims of the Programme

The overall aims are to provide engineering students with training in advanced music and audio technologies, and in particular to give them the background and skills they need for careers in the technical aspects of audio production, audio engineering, and broadcasting, music information and information retrieval and other areas of sound and music computing.

Specific aims include the completion of a broad range of advanced study in methods of processing, analysis, synthesis and

manipulation of musical signals. This involves the use of both established and specialised data analysis and signal processing techniques, an understanding of acoustics, music perception and cognition, and basic music theory, and of standards, formats, broadcasting and transmission methods, and multimedia systems.

What Will You Be Expected to Achieve?

Discipline-specific skills
• An understanding of the fundamentals of digital signal processing and of the techniques needed for real time digital signal processing
• An ability to use modern digital techniques for the analysis of speech, music, video and image transmission and processing
• An appreciation of the techniques underlying the use and transmission of multimedia images, voice and data
• An understanding of the general signal processing techniques appropriate to the processing of musical signals such as automatic music transcription, computational auditory scene analysis, and music information retrieval.
• An understanding of automatic music transcription, computational auditory scene analysis, and music information retrieval.
• A demonstration of the use of taught knowledge via the successful completion of a project in digital music processing or a cognate subject.
• An understanding of the human processing of sound and music, including the perception and cognition of musical sounds
• Knowledge of the algorithms for pattern recognition in audio and symbolic representations of music.
• Knowledge of the relative merits of the various modern approaches to signal processing of audio and music.
• An understanding of the statistical properties of speech and music.
• The ability to implement statistical approaches to the modeling and filtering of musical signal analysis.
• A general and theoretical understanding of musical signal analysis using the full range of statistical, intelligent and/or real-time processing methods.
• An understanding of how audio is streamed, transmitted, or broadcast.
• An understanding of the role of audio and music in the context of a multimedia system.
• An understanding of how music processing fits into the greater scheme of multimedia processing.
• Knowledge of the standards bodies and standards used for audio and music.
• Knowledge of the copyright issues involved with music and its distribution.
• An understanding of the issues related to the use of audio in a video broadcasting system, including satellite, terrestrial, and cable broadcasting.

Academic Content:	
A 1	An ability to use modern digital techniques for the analysis of speech, music, video transmission and processing.
A 2	An understanding of automatic music transcription, computational auditory scene analysis, and music information retrieval and other aspects of sound and music processing by humans and machines.
A 3	The ability to implement statistical and rule-based approaches to musical analysis and synthesis.
A 4	A general and theoretical understanding of musical analysis using the full range of statistical, intelligent and/or real-time processing methods.
A 5	An understanding of the human perception of music and ability to apply this understanding in empirical experiments and computational models.

Disciplinary Skills - able to:	

B1	Analyse information and experiences, formulate independent judgements, and articulate reasoned arguments through reflection, review and evaluation
B2	Source, navigate, select, retrieve, evaluate, manipulate and manage information from a variety of sources
B3	Carry out extended critical and analytic writing through a dissertation on their research project.
B4	Take a practical approach to designing empirical experiments for testing hypotheses, including selection of appropriate methods, stimuli, participants, and methods for analysis.

Attributes:	
C1	Work independently on a practical or research-based project under supervision
C2	Analyse complex, novel and diverse situations, and identify appropriate methods of working and communicating
C3	Able to engage confidently with others in identifying and communicating problems, identifying goals and solutions and work with others and individually towards achieving them.

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 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.

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 re-inforces students' ability to communicate technical ideas clearly and effectively.

How Will You Be Assessed?

The assessment of taught courses takes place through a written examination and coursework.

The project is examined on the basis of a written report, a formal oral presentation, and a demonstration of the piece of software developed by the student.

How is the Programme Structured?

Semester 1
ECS707P - Fundamentals of DSP (required if equivalent background is missing)
ECS741P Music Perception and Cognition

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Plus maximum one of:
ECS749P Sound Recording and Production Techniques
ECS742P Interactive Digital Multimedia Techniques

Plus further option(s) from:
ECS708P Machine Learning (highly recommended)
ECS765P Big Data Processing

Semester 2
At least two from:
ECS730P - Digital Audio Effects
ECS731P - Music Analysis & Synthesis
ECS732P - Real-Time DSP
ECS792P - Music & Speech Modelling

Plus further option(s) from:
ECS733P - Interactive System Design
ECS735P - The Semantic Web

Semester 3
ECS750P Project

Academic Year of Study

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

What Are the Entry Requirements?

The entry requirements are a good second class degree 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 7, TOEFL (CBT) 242 or TOEFL (written test) 580. For students not quite meeting this requirement (e.g. IELTS 6.5), 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 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.

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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 advisor during induction week. The advisor role is to council students on their academic development including modules selection. The School has one Senior Tutor for Postgraduate students who responsible for the pastoral care of students.

Programme-specific Rules and Facts

To obtain an MSc a student must gain passes in six of the eight taught modules taken and must pass the project. The pass mark is 50% for individual modules, but compensation is allowed for failure of up to two modules provided the mark in the module is not less than 30% and the candidate's average over all the taught courses is not less than 50%.

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 of Electronic Engineering & Computer Science has a wide range of industrial contacts secured through research projects and consultancy, our Industrial Experience programme and our Industry Panel.

The Industry Panel works to ensure that our courses 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, 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 programmers, Systems Analysts, Software Engineers, database developers, IT consultants and web developers with well known multinational companies throughout the UK and Europe, the Americas and Asia. Merril Lynch, Microsoft, Nokia, Barclays Capital, Logica, JPMorgan and Bear Sterns are among the organizations that have recently employed graduates of EECS programs.

Programme Specification Approval

Person completing Programme Specification	Jennifer Richards
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	

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