**PROGRAMME SPECIFICATION**

<table>
<thead>
<tr>
<th>Awarding body/institution:</th>
<th>Queen Mary, University of London</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching institution (if different from above):</td>
<td></td>
</tr>
<tr>
<td>Name of the final award and Programme title:</td>
<td>MSc Digital Signal Processing</td>
</tr>
<tr>
<td>Duration of Study/Period of Registration</td>
<td>One Year, two years by Distance Learning</td>
</tr>
<tr>
<td>UCAS code:</td>
<td>H6S3 Full Time</td>
</tr>
<tr>
<td></td>
<td>H6I4 Distance Learning</td>
</tr>
<tr>
<td>QAA Benchmark Group</td>
<td></td>
</tr>
<tr>
<td>Academic Department/s involved in programme delivery</td>
<td>Electronic Engineering &amp; Computer Science</td>
</tr>
</tbody>
</table>

If accredited by a professional/statutory body, please give the name, date of last accreditation visit, approximate date of next visit and details of exemptions that will be given to QMUL graduates.

| N/A |

**Criteria for admission to the programme**

The entry requirements are a first or upper-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. Applicants with lower-second class degrees may be considered if the undergraduate degree specialised in the relevant subjects.

In addition applicants should have completed an undergraduate module in at least one of the following areas:

- Signals and Systems
- Control
- Analogue Filters

The applicants should also have prior knowledge of the following topics:

Time and Frequency Domains, including Negative Frequency Polynomials and Rational Functions of Complex Variables (real coefficients) and their Singularities (Poles, Zeros), Continuous & Discrete Time LTI systems and signal definitions, Laplace Transform properties (Conv, Mult etc) and principle of inversion, Fourier Series & Transform, Sampling, ADC/DAC.

For international students, English Language skills are required to a recognised standard. The minimum requirement is: IELTS 6.5, TOEFL (CBT) 242 or TOEFL (written test) 580. 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.

**Aims of the programme**

The overall aims are to provide masters level engineering students with training in advanced digital signal processing, and in particular to give them the background and skills they need for careers in related technologies.

**Specific aims** include the completion of a broad range of advanced study in methods of processing, analysis, synthesis and manipulation of digital signals. This involves the use of both established and specialised data analysis and signal processing techniques, an understanding of theory, and an understanding of standards, formats, broadcasting and transmission methods, and multimedia systems.

**Learning outcomes for the programme**

- An understanding of the fundamentals of digital signal processing
- An understanding of the nature and use of advanced transform techniques
• An understanding of the nature and use of statistical methods, particularly with respect to data evaluation for signal processing
• An understanding of the techniques needed for real time digital signal processing
• An appreciation of the techniques underlying the use and transmission of multimedia images, voice and data
• An appreciation of the techniques required for the successful application of intelligence to signal processing in the digital domain
• An ability to use modern digital techniques for the analysis of speech, music, video and image transmission and processing
• A demonstration of the use of taught knowledge via the successful completion of a project in digital signal processing or a cognate subject.

Teaching, learning and assessment strategies

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.

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.

Programme structure(s) and requirements, levels and modules

Semester One

**ELEM018:** Advanced Transform Methods  
**ELEM020:** Fundamentals of DSP*  
Two modules from the three below  
**ELEM019:** Real-Time DSP  
**ELEM032:** Digital Broadcasting*  
**AMCM053:** C++ for image Processing

Semester Two

**ELEM021:** Music & Speech Processing  
**ELEM023:** Image and Video Processing  
**ELEM006:** Multimedia Systems*  
**ELEM041:** Machine Learning*
May-September:
ELEM010: MSc Project

* Indicates modules to be taken in the First Year or Part time study (includes Distance Learning)

Progression Criteria

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%.

Quality assurance mechanism (please include details of: SSLC meetings, student feedback mechanisms, personal tutor arrangements, programme induction, programme review and monitoring.)

There are four SSLC meetings each academic year, two in each teaching semester. The meetings act as a forum for both students and staff to raise issues about the programmes, individual modules or facilities. Each semester students are invited to complete a web-based questionnaire 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.

Employers Links

Please provide details of any links with employers e.g.
- Details of advisory panels that include current or potential employers;
- Organisations that regularly employ graduates from this programme and the roles that graduates undertake.
- Student prizes donated by organisations that may offer employment to graduates from this programme.

If there are no links with employers consider the learning outcomes and transferable skills and explain how these might be used to inform employers about the qualities and skills a graduate from this programme might be expected to have.

The programme is scrutinised by a School Industrial Advisory Panel. The Panel meets annually to discuss research and teaching matters pertinent to our field.
| **Person Completing Programme Specification** | **Mark Jenkinson** |
| **Person responsible for management of programme** | **Dr Tony Stockman** |
| **Date programme specification agreed by Department or teaching and learning committee** | **N/A** |
| **Date of approval by Faculty Board/SMD Education Board** | **N/A** |
| **Date of update/amendment** | **07/09/2010** |