Programme Specification

MSc Acoustical Engineering – 2019/20

This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

Awarding Institution	University of Southampton
Teaching Institution	University of Southampton (Highfield campus)
Mode of study	Full time
Duration	1 year
Accreditation details	Institute of Mechanical Engineers - PENDING
	Further Learning contribution for CEng registration for intakes 2014-2018.
	PG Diploma accredited as Further Learning for Incorporated Engineer (IEng) registration.
Final award	Master of Science
Name of Award	Acoustical Engineering
	Acoustical Engineering - Structural Vibration
	Acoustical Engineering - Signal Processing
Interim Exit awards	Post Graduate Diploma
	Post Graduate Certificate
FHEQ level of final award	Level 7
UCAS code:	N/A
QAA Subject Benchmark or other	QAA Subject Benchmark in Engineering
	QAA Qualifications and Credit Framework
	Engineering Council, UK-SPEC
External reference	N/A
Programme Lead	Dr Emiliano Rustighi
Date specification was written	28 August 2002
Date programme was validated	May 2015*
Date specification last updated	April 2018

Programme Overview

Brief outline of the programme

There is increasing pressure to make life quieter and to gain a better understanding of how noise and vibration affect people. Our MSc in Acoustical Engineering is a full-time master's degree that offers an academically challenging exposure to modern developments in sound, vibration and signal processing.

Learning and teaching

The programme is split into two components: a 'taught' component (October to June) and a research component (February to September).

Taught Modules

The 'taught' component will consist of a range of modules based on lectures, hands-on demonstrations, laboratory teaching and exercises in small groups.
You are encouraged throughout to contribute your own professional experiences and thoughts to the learning of the whole class through a free exchange of ideas.

Research Project
The research project is the climax of the MSc programme. The project offers an opportunity to perform advanced research supervised by a member of academic staff. A list of projects offered by members of teaching staff is posted during Semester 1. You may also propose your own project.

Work begins on the project in February. The research itself is mostly carried out during the summer period. A planning and literature review report is submitted at an early stage in the project, and an interview/presentation with the internal examiner is held at around the mid-point. On completion a dissertation is produced. This has to be completed and submitted before the start of the new academic year.

Assessment
Testing of the knowledge base is through a combination of unseen written examinations and assessed coursework in the form of problem solving exercises, laboratory reports, design exercises, essays, and individual and group projects.

Analysis and problem solving skills are assessed through unseen written examinations and problem based exercises. Experimental, research and design skills are assessed through laboratory reports, coursework exercises, project reports and oral presentations.

As a research-led University, we undertake a continuous review of our programmes to ensure quality enhancement and to manage our resources. As a result, this programme may be revised during a student's period of registration; however, any revision will be balanced against the requirement that the student should receive the educational service expected. Please read our Disclaimer to see why, when and how changes may be made to a student's programme.

Programmes and major changes to programmes are approved through the University's programme validation process which is described in the University's quality handbook.

Educational Aims of the Programme

This programme aims to provide science or engineering graduates from a diversity of backgrounds with an academically challenging exposure to modern developments in sound, vibration and signal processing. The range of subjects offered is linked to the internationally recognised research activities of staff, and covers engineering acoustics, noise and vibration control, human effects of sound and vibration and applied digital signal processing.

The aims of the programme are to:

- To enable students to acquire some of the advanced knowledge and practical skills needed for a professional career in sound, vibration and signal processing.
- To develop the students' ability to apply the academic knowledge gained to practical situations in your chosen discipline.
- Through a substantial open-ended research project, to develop the critical and analytical abilities as well as project management skills.

Subsidiary aims of the MSc programme are:

- To provide a supply of well-trained and motivated graduates for research positions both in the ISVR and elsewhere.
- To provide career development opportunities in the broad field of sound, vibration and signal processing, for those seeking a change in employment or enhancement of their first degree.

Programme Learning Outcomes

The MSc programme provides opportunities for you to achieve and demonstrate the learning outcomes described below. If students opt for the shorter PG Diploma or PG Certificate, the research training element is not included.

Knowledge and Understanding

On successful completion of the MSc programme, students are expected to have gained:

A1 A thorough understanding of the fundamental scientific aspects of their chosen field, and the interrelationships between them;

A2 Critical ability, as demonstrated by a dissertation which advances a specific area of research;
A3 Sufficient breadth of technical background to permit study of the current literature, identification of gaps in information, and engagement in discussion with peers.

For a PG Diploma students are expected to reach equivalent levels under items (a) and (c).

For a PG Certificate students are expected to acquire knowledge in the field of sound, vibration and signal processing, sufficient to work under supervision.

Teaching and Learning Methods

Knowledge and understanding are taught principally through lectures and practical laboratories. Extensive use is made of tutorial exercises for private learning which is supported by one-to-one support in tutorial classes. At this level students are often required to find out for themselves (e.g. from libraries and e-resources) what is relevant to solving a particular problem.

Assessment Methods

Knowledge and understanding is assessed principally by a combination of unseen written examinations and written assignments such as laboratory and design reports. The relative weightings vary from one module to another and are summarised in Appendix 1. Essays are occasionally set for more qualitative subjects. Oral presentations are often used to assess knowledge and understanding of project work and to report information gathering and research based activities. The dissertation is the research element of the programme and constitutes one third of the award.

Subject Specific Intellectual and Research Skills

Having successfully completed this programme you will be able to:

B1 Approach problem solving by identifying information needs and assembling information from different sources, in order to build a clear overall picture of a complex problem and potential solutions;
B2 Evaluate different types of information critically in a variety of formats (including current research, technical manuals, and standards);
B3 Make use of existing theories and concepts, and be able to apply them independently to new problems and situations;
B4 Synthesise and analyse information and ideas, and apply creative and original thought in order to propose appropriate new solutions to complex problems.

For a PG Diploma students are expected to reach a broadly equivalent level under items (a), (b) and (c).

For a PG Certificate students are expected to develop skills (b) and (c) within the limited range of subjects studied.

Teaching and Learning Methods

A range of introductory modules are taught in parallel during the first semester (see Appendix 1). These are taught via whole-class lectures (typically up to 3 lectures/week). The modules "Fundamentals of Acoustics", "Fundamentals of Vibration" and "Signal Processing" include hands-on demonstrations and exercises in small groups. Students take the module Research Methods 7.5 ECTS (European Credit Transfer and Accumulation Scheme) points, 15 CATS (Credit and Accumulation Transfer Scheme) points) over the whole year, with normally taught optional modules totally four modules (30 ECTS/60 CATS points) in Semester 1 and three modules (22.5 ECTS/ 45 CATS points) in semester II.

Project Development

The Research Methods module covers skills necessary for the research project and includes instruction on the use of the library facilities and training in technical writing and more specific training in research planning at the start of the second semester. This is followed by individual directed study.

Full-time project work

You work individually on a research project (30 ECTS/ 60 CATS points), under the direction of your project supervisor. A planning and literature review report is submitted at an early stage in the project, and an interview/presentation with the internal examiner is held at around the mid-point.

Assessment Methods

Method	Learning outcomes tested	
Formal written examination	Knowledge and understanding:	10.1 (a), (c)
	Intellectual skills:	10.2 (c)
Formal written assignments	Knowledge and understanding	10.1 (a), (c)
	Intellectual skills:	10.2 (c), (d)
	Transferable skills	10.4
Assessment of project work	Knowledge and understanding:	10.1 (a), (b), (c), (d)
	Intellectual skills:	10.2 (a), (b), (c), (d)
	Practical and transferable skills	10.3, 10.4
Laboratory reports	Practical and transferable skills	10.3, 10.4

The following reference points have been used in designing the programme:

- University Teaching and Learning Strategy
- QAA National Qualifications Framework
- Liaison with Industry
- Staff research
- Student feedback
- EPSRC Integrated Graduate Development Scheme (IGDS) framework and meetings (ADSP modules)

Research project

The project work is independently assessed by two individuals: the supervisor and another internal examiner. In addition, the External Examiner may be asked to read and comment on any dissertation.

A dissertation is awarded a grade based on the average of the marks given by the two examiners. Where their marks differ by more than 10%, the examiners will be asked to review their marks following discussion. If this does not resolve the discrepancy a moderator will be appointed to determine the final mark.

Transferable and Generic Skills

Having successfully completed this programme you will be able to:

C1 Learning: independent study and skills development;
C2 Problem solving: recognition, definition, analysis and solution;
C3 Awareness of your present knowledge limitations, and readiness to gain new knowledge through further study and teamwork in your professional field.
C4 Information processing (including IT skills): literature searching, abstracting documents, and collating information for the purposes of technical writing;
C5 Data manipulation (including IT skills): analysis of data, application of statistical methods, interpretation of results;
C6 Communication: oral and written presentation of information, technical writing, communicating across disciplines;
C7 Individual: decision-making, initiative-taking, self-motivation and direction, personal responsibility;
C8 Management: safe and effective project planning and execution, time management (more highly developed for MSc through the research project).

Teaching and Learning Methods

The development of transferable skills is embedded in the programme through the teaching and learning content of individual modules and builds on the transferable and generic skills that students will have obtained in their undergraduate degree. Depending on module choice the proportion of teaching and learning of each transferable and generic skill will vary.

Assessment Methods

Transferable skills are assessed by word processed reports (laboratories, design exercises, mock consulting type activities and research projects) and oral presentations. Assessment methods vary across modules. See Appendix.

Subject Specific Practical Skills

Having successfully completed this programme you will be able to:

(a) Students will develop practical laboratory skills through experimental work incorporated within the semester I and II taught modules.
(b) There is a module on Research methods which includes computer programming and its use in mathematical modelling.
(c) The students will also develop skills in technical writing, research planning, presentation of their research and execution through full-time work on a research project.

Programme Structure

Typical course content

Full-time MSc

The full-time MSc programme lasts for 12 months, during which you will be in continuous residence at the University apart from the Christmas and Easter closure periods. The first 8 months are spent mainly on the taught component, with lectures divided into two 12-week periods (Semesters 1 and 2), and with exams at the end of each semester. The modules are listed in Appendix 1. The final 4 months are spent full-time on a research project, for which some preparation is done in Semester 2. You are encouraged to commence project work before the Semester 2 exams to allow yourself maximum time, especially where practical work is involved.

Part-time MSc

The taught component of the MSc programme can be studied by arrangement on a part-time basis. Similar arrangements apply to the PG Diploma (60 ECTS/120 CATS point total) and PG Certificate (30 ECTS/60 CATS points total). In some cases the semester II modules can be taken before completion of semester I modules, so long as there are no prerequisite semester I modules or sufficient prior learning has been approved in lieu of the normal prerequisite.

Part-time MSc students may only begin practical work on the MSc research project after successful completion of at least 30 ECTS/ 60 CATS points plus the Research Methods module. It must be recognised that you may only submit a dissertation once you have satisfactorily completed the taught element of the programme.

It is anticipated that you will complete the MSc in two to three years. You may be registered on the programme for up to five years, after which your registration will be reviewed.

Programme details

The MSc award depends on passing the examinations and on successful completion of a dissertation on the project. The diagram below shows the overall structure and alternative exit points.

Additional Costs
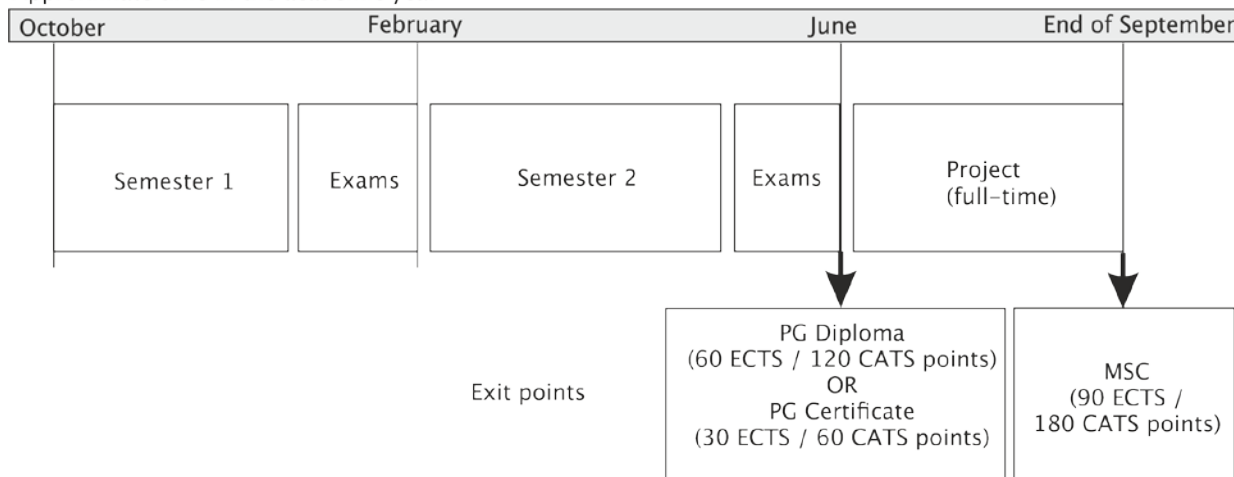
Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. Costs that students registered for this programme typically also have to pay for are included in Appendix 2.

Progression Requirements

The programme follows the University's regulations for ***Progression, Determination and Classification of Results: Undergraduate and Integrated Masters Programmes*** as set out in the University Calendar http://www.calendar.soton.ac.uk/sectionIV/progression-regs.html

Intermediate exit points (where available)

You will be eligible for an interim exit award if you complete part of the programme but not all of it, as follows:

Qualification	Minimum overall credit in ECTS/CATS credits	Minimum ECTS/CATS credits required at level of award
Postgraduate Diploma	at least 60/120	45/90
Postgraduate Certificate	at least 30/60	20/40

Support for students and learning

There are facilities and services to support your learning some of which are accessible to students across the University and some of which will be geared more particularly to students in your particular Faculty or discipline area.

The University provides:

- library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources
- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations.

- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)
- standard ICT tools such as Email, secure filestore and calendars.
- access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Student Services Centre
- Enabling Services offering assessment and support (including specialist IT support) facilities if you have a disability, dyslexia, mental health issue or specific learning difficulties
- the Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards
- Career Destinations, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV
- a range of personal support services : mentoring, counselling, residence support service, chaplaincy, health service
- a Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

- an academic student representation system, consisting of Course Representatives, Academic Presidents, Faculty Officers and the Vice-President Education; SUSU provides training and support for all these representatives, whose role is to represent students' views to the University.
- opportunities for extracurricular activities and volunteering
- an Advice Centre offering free and confidential advice including support if you need to make an academic appeal
- Support for student peer-to-peer groups, such as Nightline.

Associated with your programme you will be able to access:

- Induction programme for orientation, introduction of the programme and staff, and dissemination of materials.
- Student Handbook, including guidance on selection of study programmes.
- You will be allocated a personal tutor to assist with organisational and personal matters. This role is taken over by your project supervisor when the research project starts.
- Careers advice and dissemination of available job advertisements.
- Faculty library and study resources.
- Out of hours access to facilities including weekends.
- Formal progress monitoring during research project.

Methods for evaluating the quality of teaching and learning

You will have the opportunity to have your say on the quality of the programme in the following ways:

- Completing student evaluation questionnaires for each module of the programme
- Acting as a student representative on various committees, e.g. Staff: Student Liaison Committees, Faculty Programmes Committee OR providing comments to your student representative to feed back on your behalf.
- Serving as a student representative on Faculty Scrutiny Groups for programme validation
- Taking part in programme validation meetings by joining a panel of students to meet with the Faculty Scrutiny Group

The ways in which the quality of your programme is checked, both inside and outside the University, are:

- Regular module and programme reports which are monitored by the Faculty
- Programme validation, normally every five years.
- External examiners, who produce an annual report
- Professional body accreditation/inspection
- A national Research Assessment Exercise (our research activity contributes directly to the quality of your learning experience)
- Institutional Review by the Quality Assurance Agency

QA procedures

The Education Sub-Committee requires annual reporting of compliance with standards set in the University QA Handbook. Further information on QA processes adopted within the Faculty is given in Section 15.

Taught component

Each of the modules (lectures plus laboratories) that make up the programme will be taught at the University of Southampton, with a named member of academic staff as coordinator. Where non-academic staff (e.g. visiting lecturers, postdoctoral assistants) contribute to the teaching, the academic coordinator is responsible for ensuring appropriate quality and content.

Assessment procedures for each module will be administered by the School, and overseen by the Faculty of Engineering and Physical Sciences to ensure compliance with University policy.

Research component

Each research project will be supervised by a member of academic staff. A co-supervisor will be allocated who will normally be an academic or senior consulting engineer from within the ISVR; in the case of projects carried out externally, the co-supervisor may be from the institution offering project facilities. The supervisor and co-supervisor conduct a formal progress review with the student, normally during July/August.

The final dissertations are made available to the External Examiner for comment on standards.

There are three basic ways in which the programme is monitored and evaluated:
- By feedback from students;
- By periodic internal review (programme committee) and continuous monitoring (individual lecturers);
- By the External Examiner.
More information is provided under the three headings below.

Feedback from students

- The Programme Organiser meets regularly with students during the taught component in order to deal informally with problems as they arise.
- There is a regular Staff-Student Liaison meeting for all ISVR students at which issues of student concern are aired, with responsible academics present.
- Student ratings of individual modules are sought via anonymous survey at the end of each module.
- An elected programme representative attends the Education Board for Acoustical Engineering Programmes and the Faculty Programme Committee (FPC) meetings and brings comments and suggestions.

Internal Review

In addition to continuous monitoring of their own modules by individual lecturers, the following processes operate within the faculty:
- The Education Board meetings three times per year take note of student feedback. Examination question papers are all moderated by a second academic staff member before being sent to the External Examiner.
- A review by the faculty Subject Panels who consider the content, assessment and delivery of the modules within their remit.

External Examiner

The External Examiner for the Acoustical Engineering postgraduate programme acts as Programme Examiner. He/she
- Ensures that the taught component is of an appropriate level, by moderating the examination papers and assignments.
- Monitors the level of difficulty of projects, by interviewing all project students at an early stage in their projects.
- Ensures that assessment procedures are properly carried out, by attending the Examiners' Board in June and by checking scripts as appropriate.
- Carries out a formal check on marking standards by examining a sample of scripts and assignments.

In addition, he/she has the opportunity to read and comment on each submitted dissertation.

The objective in each case is to validate the level of the programme, and the achievement of the students, against internationally-recognized standards of excellence in the field of Acoustical Engineering.

Summary of mechanisms

- Acoustical Engineering Education Board meetings and faculty Subject panels review the taught content and its delivery
- ISVR Staff-Student Liaison meetings held regularly
- Student representation on the Education Board
- External Examiner monitors teaching and assessment standards of taught component, and research projects.
- Module reviews and Programme Review submitted annually
- Peer teaching development (internal and external staff)
- Annual staff appraisal (internal staff)
- University Training and Development Programme for staff support

Career Opportunities

Through the wide choice of modules available in the Acoustical Engineering Programme, you have the possibility to specialise in one of the two following areas:

Signal Processing

The Signal Processing pathway provides in-depth training on modern signal processing techniques for biomedical applications and audio signal processing.

Structural Vibration

The Structural Vibration pathway emphasises the advanced techniques to model, measure and control vibration in mechanical systems such as railways and automotive applications.

External Examiners(s) for the programme

Name: Professor Arthur Lees
Institution: College of Engineering, Swansea University

In accordance with standard University practice, the examination setting and marking procedures will be evaluated by the External Examiner at all stages. The External Examiner will be a senior academic from a UK University actively involved in teaching and research. He/she will serve a period of office of normally 3 years.

Students must not contact External Examiner(s) directly, and external examiners have been advised to refer any such communications back to the University. Students should raise any general queries about the assessment and examination process for the programme with their Course Representative, for consideration through Staff: Student Liaison Committee in the first instance, and Student representatives

on Staff: Student Liaison Committees will have the opportunity to consider external examiners' reports as part of the University's quality assurance process.

External examiners do not have a direct role in determining results for individual students, and students wishing to discuss their own performance in assessment should contact their personal tutor in the first instance.

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided. More detailed information can be found in the programme handbook at http://www.southampton.ac.uk/studentservices/academic-life/faculty-handbooks.page and at http://www.southampton.ac.uk/engineering/postgraduate/taught_courses/engineering/msc_sound_and_vibration_studies.page

Revision History

1.   Version 1.3: 28 August 2002 (CLM, Final version after drafting process)
2.   Version 2.3: 13 July 2004 (DJT, Changes to include reflect amalgamation of MSc Applied Digital Signal Processing into Sound and Vibration Studies and availability of alternative degree titles
3.   Version 2.4: 5 May 2005 (DJT)
4.   Version 2.5: 9 August 2006 (DJT)
5.   Version 2.6: 30 August 2007 (DJT)
6.   Version 2.7: 7 August 2008 (DJT)
7.   Version 2.8: 17 September 2008 (DJT; rebranding)
8.   Version 3.0: 17 September 2008 (DJT/CJJ, draft including MSc Biomedical Signals and Systems)
9.   Version 3.1: 21 July 2009 (CJJ/DJT)
10. Version 3.2: 14 September 2010 (DJT; MSc Biomedical Signals and Systems removed, changes to reflect new progression rules)
11. Version 3.3: Aug 2012 Contact details updated and regulations signposted to the university site (NSF).
12. Regulations updated March 2013 (D Mead)
13. Revised Structure for 2014/15 (NSF/PRW)_CQA_251113
14. CQA_110614
15. Update to Programme Overview (CMA changes) – September 2015
16. Change of name: October 2015
17. CQA textual updates – August 2016
18. CQA/ER textual updates, module changes – July 2017
19. Updated to reflect 201819 version and removal of Admissions Criteria – CQA March 2018
20. Updated Faculty name to Faculty of Engineering and Physical Sciences July 2018

Appendices

Appendix 1: Learning outcomes and Assessment Mapping

Module Code	Module Title	Knowledge and Understanding			Subject Specific Intellectual Skills				Transferable/Key Skills							
		A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	C5	C6	C7	C8
FEEG6012	MSc Research Project		•		•	•	•	•	•	•	•	•	•	•	•	•
ISVR6143	Research methods		•			•			•		•	•	•	•	•	•
ISVR6130	Signal Processing	•			•				•	•				•		
ISVR6136	Fundamentals of Acoustics	•			•				•	•				•		
ISVR6141	Fundamentals of Vibration	•			•				•	•				•		
ISVR3063	Musical Instrument Acoustics	•		•		•			•	•	•	•	•	•		•
ISVR3064	Noise Control Engineering	•		•	•		•		•	•	•		•	•		•
ISVR3070	Ocean Acoustics & Biomedical Ultrasound	•		•			•		•	•	•			•		
ISVR6137	Electroacoustics	•		•			•		•	•	•			•		
FEEG6004	Aeroacoustics	•		•			•		•	•	•			•		•
FEEG6011	Architectural and Building Acoustics			•			•		•	•	•		•	•		•
ISVR3061	Human Responses to Sound and Vibration			•			•		•	•	•		•	•		•
ISVR3071	Applied Audio Signal Processing			•	•		•		•	•	•		•	•		•
ISVR6133	Advanced Vibration			•	•		•		•	•	•		•	•		•
ISVR6138	Biomedical Applications of Signal and Image Processing			•	•		•		•	•	•		•	•		•
ISVR6139	Active Control of Sound and Vibration	•		•	•	•	•		•	•	•		•	•		•
ISVR6142	Numerical Methods for Acoustics	•		•	•	•	•		•	•	•		•	•		•

Methods of Assessment for MSc Acoustical Engineering

Module Code	Module Title	Course-work 1	Course-work 2	Course-work 3	Presen-tation	Lab 1	Lab 2	Test 1	Test 2	Exam
FEEG6012	MSc Research Project	90%			10%					
ISVR6143	Research methods	60%	20%		20%					
ISVR6130	Signal Processing	10%	10%							80%
ISVR6136	Fundamentals of Acoustics					10%	10%	2.5%	2.5%	75%
ISVR6141	Fundamentals of Vibration					10%	10%			80%
ISVR3063	Musical Instrument Acoustics	60%				20%	20%			
ISVR3064	Noise Control Engineering	40%	60%							
ISVR3070	Ocean Acoustics & Biomedical Ultrasound	15%	15%							70%
ISVR6137	Electroacoustics					10%				90%
FEEG6004	Aeroacoustics	15%	15%							70%
FEEG6011	Architectural and Building Acoustics	50%	50%							
ISVR3061	Human Responses to Sound and Vibration									100%
ISVR3071	Applied Audio Signal Processing	34%	33%	33%						
ISVR6133	Advanced Vibration	10%	15%	15%						60%
ISVR6138	Biomedical Applications of Signal and Image Processing	60%								40%
ISVR6139	Active Control of Sound and Vibration	70%			30%					
ISVR6142	Numerical Methods for Acoustics	25%	25%							50%

APPENDIX 2: PROGRAMME STRUCTURE

The information in this appendix is liable to change in minor ways from year to year. It is accurate at the time of writing. For the latest information, see the programme handbook issued in September each year.

No more than 15 ECTS/ 30 CATS points at level 6 to be included in the year taught total of 60 ECTS/ 120 CATS points, all other modules and the Project (which is core) are at level 7.

COMPULSORY MODULES:

Module Code	Module Name	Semester	ECTS Credit Points (CATS in brackets)	Level
FEEG6012	MSc Research Project	Semester 2 and until submission	30(60)	7
ISVR6143	Research methods	1 & 2	7.5(15)	7
ISVR6136	Fundamentals of Acoustics	1	7.5(15)	7

Semester I: Choose 1 or 2 from the following 2 modules:

Module Code	Module Name	ECTS Credit Points (CATS in brackets)	Level
ISVR6130	Signal Processing	7.5(15)	7
ISVR6141	Fundamentals of Vibration	7.5(15)	7

Semester I Options (all 7.5 ECTS/ 15 CATS points): Choose 2 or 1 from:

Module Code	Module Name	Level
ISVR3064	Noise Control Engineering	6
ISVR3070	Ocean Acoustics & Biomedical Ultrasound	6
ISVR6137	Electroacoustics	7

Semester II Options (all 7.5 ECTS/ 15 CATS points): Remaining taught credits should be obtained from the following list of modules, **with no more than 15 ECTS/ 30 CATS points at level 6** overall to be included. Choose up to 3 from:

Module Code	Module Name	Level
FEEG6004	Aeroacoustics	7
FEEG6011	Architectural and Building Acoustics	7
ISVR3061	Human Responses to Sound and Vibration	6
ISVR3063	Musical Instrument Acoustics	6
ISVR3071	Applied Audio Signal Processing	6
ISVR6133	Advanced Vibration	7
ISVR6138	Biomedical Applications of Signal and Image Processing	7
ISVR6139	Active Control of Sound and Vibration	7
ISVR6142	Numerical Methods for Acoustics	7
ISVR3072	Mathematical Methods For Acoustics	6

Structural Vibration theme

To exit via the Structural Vibration theme the candidate must undertake an Individual Project (core) which is relevant to Structural Vibration and obtain **60 ECTS/120 CATS taught credits** according to the following criteria.

The following modules are **compulsory:**

Module Code	Module Name	Semester	ECTS Credit Points (CATS in brackets)	Level
FEEG6012	MSc Research Project	Semester 2 and until submission	30(60)	7
ISVR6133	Advanced Vibration	2	7.5(15)	7
ISVR6143	Research methods	1 & 2	7.5(15)	7
ISVR6136	Fundamental of Acoustics	1	7.5(15)	7

Choose 1 or 2 from the following 2 modules:

Module Code	Module Name	ECTS Credit Points (CATS in brackets)	Level
ISVR6130	Signal Processing	7.5(15)	7
ISVR6141	Fundamentals of Vibration	7.5(15)	7

Remaining taught credits of 37.5 ECTS/75 CATS points should be obtained from the following list of modules, **with no more than 15 ECTS/ 30 CATS points at level 6** to be included.

Module Code	Module Name	Semester	ECTS Credit Points (CATS in brackets)	Level
FEEG6004	Aeroacoustics	2	7.5(15)	7
FEEG6011	Architectural and Building Acoustics	2	7.5(15)	7
ISVR3061	Human Responses to Sound and Vibration	2	7.5(15)	6
ISVR3063	Musical Instrument Acoustics	1	7.5(15)	6
ISVR3064	Noise Control Engineering	1	7.5(15)	6
ISVR3071	Applied Audio Signal Processing	2	7.5(15)	6
ISVR6130	Signal Processing	1	7.5(15)	7
ISVR6137	Electroacoustics	1	7.5(15)	7
ISVR6138	Biomedical Application of Signal and Image Processing	2	7.5(15)	7
ISVR6139	Active Control	2	7.5(15)	7
ISVR6142	Numerical Methods of Acoustics	2	7.5(15)	7

Signal Processing theme

To exit via the Signal Processing theme the candidate must undertake an Individual Project (core) which is relevant to Signal Processing and obtain **60 ECTS/120 CATS taught credits** from the following modules.

The following modules are **compulsory**:

Module Code	Module Name	Semester	ECTS Credit Points (CATS in brackets)	Level
FEEG6012	MSC Research Project	Semester 2 and until submission	30(60)	7
ISVR3071	Applied Audio Signal Processing	2	7.5(15)	6
ISVR6143	Research methods	1 & 2	7.5(15)	7
ISVR6136	Fundamental of Acoustics	1	7.5(15)	7

Choose 1 or 2 from the following 2 modules:

Module Code	Module Name	ECTS Credit Points (CATS in brackets)	Level
ISVR6130	Signal Processing	7.5(15)	7
ISVR6141	Fundamentals of Vibration	7.5(15)	7

Remaining taught credits of 37.5 ECTS/75 CATS points should be obtained from the following list of modules, with **no more than 15 ECTS/ 30 CATS points at level 6** to be included.

Module Code	Module Name	Semester	ECTS Credit Points (CATS in brackets)	Level
FEEG6004	Aeroacoustics	2	7.5(15)	7
FEEG6011	Architectural and Building Acoustics	2	7.5(15)	7
ISVR3061	Human Responses to Sound and Vibration	2	7.5(15)	6
ISVR3063	Musical Instrument Acoustics	1	7.5(15)	6
ISVR3064	Noise Control Engineering	1	7.5(15)	6
ISVR3070	Ocean Acoustics & Biomedical Ultrasound	1	7.5(15)	6
ISVR6133	Advanced Vibration	2	7.5(15)	7
ISVR6137	Electroacoustics	1	7.5(15)	7
ISVR6138	Biomedical Application of Signal and Image Processing	2	7.5(15)	7
ISVR6139	Active Control of Sound & Vibration	2	7.5(15)	7
ISVR6141	Fundamentals of Vibration	1	7.5(15)	7
ISVR6142	Numerical Methods of Acoustics	2	7.5(15)	7

Contact information
Dr Emiliano Rustighi
Programme Organiser
er@isvr.soton.ac.uk
(Tel. No. +44 (0)23 8059 9406)

Appendix 2:

Additional Costs

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. In addition to this, students registered for this programme typically also have to pay for the items listed in the table below.

In some cases you'll be able to choose modules (which may have different costs associated with that module) which will change the overall cost of a programme to you. Details of such costs will be listed in the Module Profile. Please also ensure you read the section on additional costs in the University's Fees, Charges and Expenses Regulations in the University Calendar available at www.calendar.soton.ac.uk.

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
Approved Calculators		Candidates may use calculators in the examination room only as specified by the University and as permitted by the rubric of individual examination papers. The University approved models are Casio FX-570 and Casio FX-85GT Plus. These may be purchased from any source and no longer need to carry the University logo.
Stationery		You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc). Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile.
Textbooks		Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source. Some modules suggest reading texts as optional background reading. The library may hold copies of such texts, or alternatively you may wish to purchase your own copies. Although not essential reading, you may benefit from the additional reading materials for the module.
Equipment and Materials	Design equipment and materials:	Standard construction/modelling materials will be provided where appropriate, unless otherwise specified in a module profile. For customisation of designs/models calling for material other than standard construction/ modelling materials, students will bear the costs of such alternatives.

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
	Excavation equipment and materials:	
	Field Equipment and Materials:	
	Laboratory Equipment and Materials:	
	Photography:	
	Recording Equipment:	
Printing and Photocopying Costs		In some cases, coursework and/or projects may be submitted electronically. Where it is not possible to submit electronically students will be liable for printing costs, which are detailed in the individual Module Profile and can be found in Appendix 2. Reasonable expenses for travel and materials of up to £300 may be reclaimed through the Faculty Student Office. For project costs in excess of £300 students should discuss possible sources of funding with their supervisor and should not proceed with any expenditure until a further funding source has been agreed. The printing costs associated with dissertation are the responsibility of the student (FEEG2012) Students are expected to cover the costs associated with the printing and binding of reports, including any drawings and graphic presentations. Two copies will need to be submitted. Depending on the quality of printing and binding chosen students can expect to pay approximately £25-30 per copy, totalling approximately £50-60 for both copies.(FEEG2012)
Optional Visits (e.g. museums, galleries)		Some modules may include additional optional visits. You will normally be expected to cover the cost of travel and admission, unless otherwise specified in the module profile.

*Validation is the process by which the University approves its programmes of study. Any taught undergraduate and postgraduate programme leading to a University of Southampton award, including research degrees with a taught component (for example the Engineering Doctorate), are required to go through programme validation, and, after a number of years, to undergo revalidation. The full validation process can be found in the University's Quality Handbook at https://www.southampton.ac.uk/quality/programmes_and_modules/programmevalidation2.page