

Programme Specification

MEng (Hons), BEng (Hons) 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
Mode of study	Full time
Duration in years	5 years (MEng with Industrial Placement Year), 4 years (MEng), 4 years (BEng with Industrial Placement Year), 3 years (BEng),
Accreditation details	Institution of Mechanical Engineers - PENDING MEng accredited for registration as a Chartered Engineer for graduates with a 2.2 and above BEng (Honours) accredited for registration as a Chartered Engineer subject to the completion of approved additional learning
Final award	Bachelor of Engineering (with Honours) Master of Engineering
Name of award	Acoustical Engineering Acoustical Engineering with Industrial Placement Year
Interim Exit awards	Certificate of Higher Education Diploma of Higher Education Bachelor of Science (Ordinary)
FHEQ level of final award	Level 7 (MEng), Level 6 (BEng)
UCAS code	HH72 BEng Acoustical Engineering H34P BEng Acoustical Engineering with Industrial Placement Year (2018/19) H722 MEng Acoustical Engineering FF38 MEng Acoustical Engineering with Industrial Placement Year
QAA Subject Benchmark or other external reference	Engineering (2010), Engineering Council, UK-SPEC
Director of Programme	Dr Matthew Wright
Programme Lead	Dr Keith Holland
Date specification was written	May 2013 (N Ferguson) Amended January 2016 to include Industrial Placement Year for MEng (A Barney, H Glasspool)
Date programme was validated	July 2014*
Date specification last updated	July 2018

Programme Overview

Brief outline of the programme

The degree encompasses a solid mechanical engineering foundation to build upon a scientific and engineering approach to the subject of sound and vibration, the educational aims of which can be found below.

Learning and teaching

Intellectual skills are developed through the teaching and learning activities. Analysis and problem solving skills are further developed through regular problem sheets issued by module lecturers and through small group teaching. Experimental, research and design skills are further developed through coursework exercises, laboratory work, and design and research projects. Individual feedback is provided on all work submitted. Appreciation of the practical application of the skills for learning is provided by interaction with industry, through visiting lecturers and industrial visits.

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.

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

The Acoustical Engineering undergraduate programme is unique in the UK in its combined coverage of acoustics and vibration within the framework of an accredited mechanical engineering degree. Its aims are:

(Blue = both BEng & MEng Mech Eng; green = MEng only, orange = Industrial Placement Year for BEng and MEng)

- To provide you with a firm foundation in a wide range of engineering disciplines that underpin acoustics through a core of compulsory engineering modules in years 1 and 2.
- To deepen your understanding of acoustics, vibration and other engineering disciplines through of specialist modules in year 3.
To broaden and further deepen your understanding of acoustics, vibration and other engineering disciplines through a range of specialist modules in year 4.
- To develop in you the necessary technical skills to fulfil the role of a professional acoustics and vibration engineer in a design or research environment.
To develop in you the necessary technical skills to fulfil the role of a professional acoustics and vibration engineer in a design, consulting or research environment.
- To provide a learning environment in which you are able to develop generic skills needed for management and leadership roles in engineering industry but which are also transferable to other occupations and pursuits unrelated to employment.
To provide a learning environment in which you are able to develop a wide range of generic skills that are vital to management and leadership roles in engineering industry but also transferable to other occupations and pursuits unrelated to employment.
- To offer you a range of projects and realistic tasks that stimulate individual innovation, necessitate problem formulation and solving, promote self-assessment and enhance communication.
To offer you a range of projects and realistic tasks that stimulate individual innovation, necessitate problem formulation and solving, promote self-assessment and enhance communication and build strong teamworking skills To expose you to an intellectually challenging and world leading research environment to stimulate an attitude of enquiry and

independent self-learning, and foster an ethos of life-long learning and professional development.

To expose you to an intellectually challenging and world leading research environment to stimulate an attitude of enquiry and independent self-learning, and foster an ethos of life-long learning and professional development.

- To promote awareness of engineering in practice through interaction with industry, e.g. work placements, external speakers, industrial visits and industrial design projects.
- To provide recognition of your skill set on completion of your studies through the award of a highly esteemed degree that partially meets the requirements of the Engineering Council for registration as a chartered engineer.
- To provide recognition of your skill set on completion of your studies through the award of a highly esteemed degree that meets the requirements of the Engineering Council for registration as a chartered engineer.
- Offer you an opportunity to apply the knowledge you have developed during your studies in Parts I and II and gain experience of working within an engineering based organisation

Programme Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have been developed with reference to the Accrediting Institution guidelines and the UK-SPEC Degree Output Standards General and Specific Learning Outcomes

Knowledge and Understanding

Having successfully completed this programme the student will be able to demonstrate knowledge and understanding of:

1. Principles and modelling of acoustics and vibration phenomena, and awareness of inherent modelling assumptions and limitations.
Principles and modelling of acoustics and vibration phenomena, and a clear understanding of inherent modelling assumptions and limitations.
2. Fundamental concepts of sciences and technologies that are interrelated with acoustics and vibration in the context of mechanical engineering design.
3. Mathematical concepts and solution techniques applicable to modelling and simulation of the physical world and engineering systems.
4. Transduction of sound and vibration and associated signal processing techniques.
5. Human response to sound and vibration, measures of human response and relevant standards.
6. The principles of engineering design and manufacture.
The principles and practice of engineering design and manufacture and its application in novel situations.
7. Commercial, economic, legal and ethical context of engineering
8. Business and management practices (including risk, health and safety).
Advanced business and management practices (including risk, health and safety).
9. Current topics in acoustics and vibration and awareness of emerging technologies.
Advanced topics in acoustics and vibration and awareness of current and emerging technologies and their uses and limitations.

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. Sometimes you are required to find out for yourself (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.

Subject Specific Intellectual and Research Skills

Having successfully completed this programme students will be able to:

1. **Define acoustics and vibration problems, perform appropriate analyses using mathematical methods and computer software as necessary, and exercise creativity in problem solving**
Define advanced acoustics and vibration problems, perform appropriate complex analyses using mathematical methods and computer software as necessary, and exercise significant creativity in problem solving.
2. **Design mechanical systems taking into account technical, manufacturing and commercial constraints**
Design complex and integrated mechanical systems taking into account technical, manufacturing and commercial constraints
3. **Evaluate quality and fitness for purpose of design against specifications and needs of the end user.**
Critically evaluate quality and fitness for purpose of design against specifications and needs of the end user and make revisions and improvements based on your analyses
4. **Analyse, interpret and draw conclusions from measured data.**
Analyse, interpret and draw conclusions from large and complex sets of measured data.

Teaching and Learning Methods

Problem solving skills are developed through personal study of tutorial exercises supported by tutorial classes and worked solutions. Such problems are typically well defined and conducive to hand calculation. The treatment of open-ended problems which require defining and solution by numerical means are taught through individual and group assignments. Various programming languages will be taught, including Python and MATLAB, and used extensively. Commercial software is used where appropriate such as for CAD, Finite Element analysis and Boundary Element analysis.

Whilst elementary design principles are generally taught through lectures, design skills are developed through design challenges which are often group based. Use is made of both hand drawn and CAD (Solidworks and AutoCAD) engineering drawings. Different manufacturing technologies will be covered, including metal sheetwork fabrication and 3D plastic printing.

Analysis and interpretation of measured data is taught through experimental laboratories and design exercises.

Assessment Methods

Problem solving by means of hand calculation is assessed by unseen written examination. More realistic open ended problem solving and design skills are assessed through written assignments and submitted engineering drawings. Computing is assessed by a number of specific programming assignments.

Transferable and Generic Skills

Having successfully completed this programme students will be able to:

1. **Communicate effectively – in writing and verbally (and in a foreign language if a language option is taken).**
Communicate effectively – in writing and verbally (and in a foreign language if a language option is taken).
2. **Collate data and analyse both quantitatively and qualitatively via graphical, numerical and statistical means.**
Collate data and analyse both quantitatively and qualitatively via graphical, numerical and statistical means communicating outcomes clearly to a variety of audiences
3. **Use information and communication technology.**
Use information and communication technology. Selecting tools and platforms appropriate to different situations.
4. **Give structured oral presentations including information of a technical nature.**
Give structured oral presentations including information of a technical nature.
5. **Manage yourself and resources to meet deadlines and deliverables in a changing operating environment.**
Manage yourself and resources to meet deadlines and deliverables in a changing operating environment.
6. **Work effectively as a member of a team, and demonstrate leadership skills.**
7. **Exercise judgement and make informed decisions.**
Exercise critical analysis and judgement and make informed decisions.
8. **Learn independently in familiar and unfamiliar situations.**
Learn independently in familiar and unfamiliar situations.
9. **Manage situations which are unfamiliar or uncertain.**
Manage situations which are unfamiliar or uncertain and solve open ended problems

Teaching and Learning Methods

The development of transferable skills is embedded in all parts of the programme starting with induction activities in week 1 of year 1 through to an extensive design project in Part IV. Typically, this takes the form of both individual and group project work, and problem based learning.

Assessment Methods

Transferable skills are assessed by word processed reports (laboratories, design exercises, mock consulting type activities and research projects) and oral presentations. Peer assessment is not currently used for group work. Foreign language competence is assessed by a combination of exams and coursework.

Subject Specific Practical Skills

Having successfully completed this programme, students will be able to:

1. **Carry out planned experiments and perform sound and vibration measurements.**
Design experiments and perform sound and vibration measurements.
2. **Analyse experimental results and assess their validity.**
Analyse experimental results, assess their validity. and suggest reasonable improvements to their design
3. **Prepare technical drawings using CAD.**
4. **Prepare technical reports.**
5. **Use computational tools.**
6. **Make effective use of scientific literature.**
Make effective and critical use of scientific literature.
7. **Interpret and implement standards related to acoustics.**
8. **Machine and manufacture simple components.**
9. **Write computer programs in a suitable high level language**
10. **Build electronics circuits.**

Teaching and Learning Methods

Practical skills are developed in experimental laboratories, computer laboratories, design exercises, workshop skills training and research based investigations.

Voluntary work placements provide opportunities to develop a range employability and application skills.

Assessment Methods

Practical skills are assessed largely by written reports. Where a single assignment covers a range of intellectual and practical skills guidance is given as to the allocation of marks. There is some use of in-class tests to assess computing skills.

Programme Structure

Typical course content

In the engineering modules there is typically a high level of mathematical and analytical content, as appropriate for the nature of the subject, which is then assessed via a combination of examinations, laboratory work or other coursework. In engineering design is of paramount importance and so there are modules in all years which will include computer programming, the use of engineering software and also the application of such tools to produce required designs which can be fabricated and/or tested. These activities are often undertaken in groups, as it is important for engineers to work together, manage activities and be able to communicate to their peers and also the assessors at an appropriate level.

The first two years have compulsory modules, with no options, as it is necessary to cover the fundamental engineering knowledge and understanding. Optional modules do exist in Parts III and IV and encompass management, mathematics, languages and other modules available across the university.

The University uses the European Credit Transfer Scheme (ECTS) to indicate the approximate amount of time a typical student can expect to spend in order to complete successfully a given module or programme. Where 1 ECTS indicates around 20 nominal hours of study. Previously, Credit Accumulation and Transfer Scheme (CATS) points were used for this purpose where 1 CATS credit was 10 nominal hours of study. The University credit accumulation and transfer scheme is detailed at <http://www.calendar.soton.ac.uk/sectionIV/cats.html>.

The teaching is structured on a semester pattern. Students study modules comprising 60 ECTS (120 CATS) in each of Parts I (level 4), II (level 5) and III (level 6), and 75 ECTS (150 credits) in Part IV (level 7). There are several degree possibilities in the programme of study:

- Three years full-time, leading to a Bachelor of Engineering (BEng) with Honours
- Four years full-time, leading to a Bachelor of Engineering with Industrial Placement Year (BEng) with Honours
- Four years full-time, leading to a Master of Engineering (MEng).
- Five years full-time, leading to a Master of Engineering with Industrial Placement Year (MEng with IPY).

Each module is a self-contained part of the programme of study and carries a credit rating.

The duration of all the programmes may be extended by one year through enrolment on the Engineering Foundation Year. This does not apply to those students on the BEng or the MEng Acoustical Engineering with Industrial Placement Year

Special Features of the programme

The students will be encouraged to use the research facilities, within the research groups, for their individual projects and gain some experience in the use of the commercial acoustic chambers as part of their design activities.

Programme details

For specific programme details and structure see Appendix 1

The varied approach to teaching and learning enables students who meet the entry requirements to access the curriculum and demonstrate achievement of all the intended learning outcomes. The Faculty works closely with Enabling Services to ensure a flexible and inclusive approach to all its teaching and learning including making all reasonable individual adjustments.

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 4:

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/sectIV-index.html>

Additional regulations applying to the assessment of Part I of your programme, the Industrial Placement Year and our other BEng (Hons)/MEng regulations may be found here: <http://www.calendar.soton.ac.uk/sectionVIII/sectVIII-index.html>

Intermediate exit points (where available)

There are the following exit points:

- Certificate of Higher education, following successful completion of Part I.
- Diploma of Higher education, following successful completion of Part II.
- Ordinary Degree following successful completion of at least 150 ECTS (300 CATS), including 30 ECTS (60 CATS) at level 6.

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 credits	Minimum ECTS Credits required at level of award
Bachelor of Science	at least 150	30
Diploma of Higher Education	at least 120	45
Certificate of HE	at least 60	45

Programme outcomes for different exit points

Level 4 (Part I)	Students will have a sound knowledge of the basic concepts in Mechanical and Acoustical Engineering, and will have learned how to take different approaches to solving problems. Students will be able to communicate accurately, and will have the qualities needed for employment requiring the exercise of some personal responsibility.
Level 5 (Part II)	Students will have developed a sound understanding of the principles involved in a range of core Mechanical and Acoustical Engineering subjects, and will have learned to apply those principles more widely. Through this, students will have learned to evaluate the appropriateness of different approaches to solving problems. Students will have the qualities necessary for employment in situations requiring the exercise of personal responsibility and decision-making.
Level 6 (Part III) BEng	You will have developed an understanding of a complex body of knowledge relevant to Acoustical Engineering, some of it at the forefront of current developments. Through this, you will have developed analytical techniques and problem-solving skills that can be applied to a range of engineering problems, and learned to communicate these effectively. As an Honours graduate you will be able to evaluate evidence, arguments and assumptions, and to reach sound judgements. You should have the qualities needed for employment in situations requiring the exercise of personal responsibility, and decision-making in complex and unpredictable circumstances.
Level 7 (Part IV) MEng	Much of the study undertaken at Masters level reflects research at the forefront of Acoustical Engineering. You will have shown originality in the application of knowledge, and you will understand how the boundaries of knowledge are advanced through research. You will be able to deal with complex issues both systematically and creatively, and show originality in tackling and solving problems individually and as part of a team. You will have the qualities needed for employment in circumstances requiring sound judgement, personal responsibility and initiative, in complex and unpredictable professional environments.

Support for Student 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, in the Faculty and discipline you will be able to access:

- Programme Handbook and module catalogue online.
- Introductory sessions for all years of the programme.
- Library information retrieval seminar.
- Faculty library containing specialist acoustical engineering textbooks and theses
- Workshop training.
- Group tutorials in Parts I and II of the programme, typically 20- 30 in a class.
- Laboratory classes in Parts I and II, typically 12 to 20 students in smaller groups of 2-4 for each experimental set-up.
- Engineering Development and Manufacturing Centre (EDMC) equipped with a range of workshop equipment, CAD/CAM.
- Engineering and specific software available on all computers.
- Personal tutors to assist them with personal problems and to advise on academic issues (contact maintained during periods of studying abroad). A senior tutor is also available.
- Access to academic staff through an open door policy as well as timetabled tutor meetings, appointment system and e-mail.
- Research seminars and invited lectures.
- Faculty Student Office for the administration of their programme.

Methods for Evaluating the Quality of Teaching and Learning

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

- Anonymous evaluation surveys for each module of the programme.
- Acting as or represented by Student Representatives, for each year of the programme, on the staff-student liaison committee and Acoustical Engineering Education Board. Students are also represented on the Faculty Programmes Committee
- Meetings, individually or as group, with the programme external examiner.

It should be noted that meetings with the personal tutor can also be used to comment on quality related issues.

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

- Evaluation for each module of the programme based on individual student feedback from evaluation surveys and carried out by lecturer(s) involved in the module and a colleague acting as advisor.
- Subject oriented Teaching Panels, convening at the end of each academic year, which consider the outcomes of each module's evaluation.

- Moderation of examination papers, coursework and projects, both internally and externally.
- Comments by external examiners, who produce an annual report.
- Peer development of teaching for each member of staff contributing to learning and teaching, once per academic year.
- Annual examiners' meetings and examiners' boards.
- Annual programme and module reviews considering your feedback from all sources, feedback from teaching panels, external examiners and other bodies and student performance.
- Periodic meetings of the Faculty Industrial Advisory Board.
- Response to results from the National Student Survey
- Accreditation by professional institutions.
- Periodic Programme Review by the University.

Note that quality assurance of part of the programme taken abroad, where applicable, e.g. as part of Erasmus exchange, is subject to the quality procedures of the relevant institutions. These procedures are subject to periodic monitoring by members of staff of the Faculty of Engineering and Physical Sciences.

Career Opportunities

Many of the graduates embark on successful careers in the field of acoustic consultancy, R&D in acoustics at some of the largest UK employers (JLR, Rolls-Royce and Dyson, for example) in addition to staying in higher education to study for a higher degree. We support voluntary summer placements in acoustic consultancy through the university careers office in addition to hosting a day for employers to come and present their companies, inspect the student CVs and also conduct formal interviews for either summer placements or permanent graduate positions. The students also receive free membership of the Institute of Acoustics, which disseminates job opportunities to the cohort.

External Examiners(s) for the programme

Name Professor David Sharp
Institution. Open University

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 (or other appropriate guide) or online at (<http://www.southampton.ac.uk/studentservices/academic-life/faculty-handbooks.page>).

Revision History

February 2003 (N.S. Ferguson)
 July 2003 (N.S. Ferguson)
 January 2009 (T.P. Waters)
 February 2012 (A Barney)
 July 2012 (B. Leigh)
 May 2013 (N.S. Ferguson)_CQA_261113
 May 2014 (N.S. Ferguson)
 June 2014 (R. Stanton) – transfer to new template_CQA
 March 2015 (M.Wright)_FPC 04 March 2015

Update to Programme Overview (CMA Changes) – September 2015

Update to External Examiner and module to correct semester (CQA) December 2015

Addition of Industrial Placement Year and textual edits - CQA August 2016

February 2017 (M C M Wright) Closure of ISVR6140 and ISVR3060, Introduction of ISVR3xxx Advanced Audio Signal Processing, Renaming of some other modules.

Addition of information for summative assessment of part I – CQA July 2017

Updated to reflect 2018/19 version and removal of Admissions Criteria – CQA March 2018

Updated Faculty name to Faculty of Engineering and Physical Sciences July 2018

MEng (Hons), BEng (Hons) Acoustical Engineering, MEng, BEng Acoustical Engineering with Industrial Placement Year

Programme Structure

The information within this Appendix is liable to change in minor ways from year to year. It is accurate at the time of writing.

Part 1

The first year provides a background in engineering science, emphasising acoustical engineering aspects.

All modules below are at level 4 and are core, i.e. all required assessments must be taken and passed at the required pass mark. They total 60 ECTS (120 CATS). No option modules will be undertaken in Part I. All modules in Part I are taught over two semesters with any formal examinations held at the end of semester 2. Feedback on progress is provided throughout the year in many ways including via laboratory work, example sheets, tests and coursework.

For information on summative assessment of Part I please see Appendix 3

Over both semesters	ECTS Credit Points (CATS in brackets)
FEEG1001 Design and Computing	15(30)
FEEG1002 Mechanics, Structures and Materials	15(30)
FEEG1003 Thermofluids	7.5(15)
FEEG1004 Electrical and Electronic Systems	7.5(15)
ISVR1032 Acoustics I	7.5(15)
MATH1054 Mathematics for Engineering and the Environment	7.5(15)

Part II

The second year covers the main acoustical engineering subjects with modules tailored to the discipline. Modules totally 60 ECTS (120 CATS) are taken over two semesters. At the end of Part II you have the opportunity to select specialist themes or to follow an interdisciplinary programme.

Modules at level 5 totalling 60 ECTS (120 CATS) credits; all modules compulsory

Module Code	Module Name	Semester Taught	ECTS Credit Points (CATS in brackets)
FEEG2001	Systems Design and Computing	Full Year	7.5(15)
FEEG2002	Mechanics Machines and Vibration	2	7.5(15)
FEEG2003	Fluid Mechanics	2	7.5(15)
FEEG2004	Electronics Drives and Control	1	7.5(15)
FEEG2006	Engineering Management and Law	Full Year	7.5(15)
ISVR2041	Audio and Signal Processing	1	7.5(15)
ISVR2042	Acoustics II	2	7.5(15)
MATH2048	Mathematics for Engineering and the Environment	1	7.5(15)

Students on the BEng or MEng Acoustical Engineering with Industrial Placement Year programme will undertake their placement between Parts II and III. They may not start their placement until Part

It has been passed. Should the placement not be passed students can transfer to the BEng or MEng Acoustical Engineering programme as applicable.

Part III MEng/BEng 60 ECTS (120 CATS)

COMPULSORY MODULES:

Module Code	Module Name	Semester	ECTS Credit Points (CATS in brackets)	Level
FEEG3003	Individual Project (core)	1&2	15(30)	6
ISVR3059	Acoustical Engineering Design	1	7.5(15)	6
ISVR3061	Human Responses to Sound and Vibration	2	7.5(15)	6
ISVR3064	Noise Control Engineering	1	7.5(15)	6

Optional subjects are to be selected from the following lists. Guidance will be given on the choice of options, which will depend on the timetable constraints, students' interests, aptitude, chosen individual project and career aspirations. Where appropriate other engineering or maths modules may be substituted for optional modules with the agreement of the Programme Lead.

All Part III Options are each worth 7.5 ECTS (15 CATS) points. Some are at levels 6 or 7 and no more than 15 ECTS (30 CATS) credits at levels 5 or 7 can be taken in Part III. Furthermore no more than 7.5 ECTS (15 CATS) credits may be taken in modules with codes other than ISVR, FEEG or SESM. Please note, you may only select one language module per year.

Semester I Options: Choose 1 from:

Module Code	Module Name	Level
FEEG3001	Finite Element Analysis in Solid Mechanics	6
FEEG3004	Human Factors in Engineering	6
ISVR6130	Signal Processing	7
ISVR3070	Ocean Acoustics & Biomedical Ultrasound	6
LANGxxxx	Language	6
ISVR6137	Electroacoustics	7
SESM3030	Control and Instrumentation	6
SESM3031	Automobile Systems	6

Semester II Options: Choose 2 from:

Module Code	Module Name	Level
FEEG3002	Vehicle Powertrain, Noise and Vibration	6
FEEG6011	Architectural and Building Acoustics	7
ISVR3063	Musical Instrument Acoustics	6
ISVR3071	Advanced Audio Signal Processing	6
ISVR3072	Mathematical Methods of Acoustics	6
ISVR6138	Biomedical Applications of Signal and Image Processing	7
ISVR6139	Active Control of Sound and Vibration	7
ISVR6142	Numerical Methods for Acoustics	7
LANGxxxx	Language	6

Options from other Faculties (TBD):

Semester 1	Semester 2
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Part IV

MEng 75 ECTS (150 CATS)

No more than 15 ECTS (30 CATS) points at level 6 to be included in the year total of 75 ECTS (150 CATS) points, all other modules and project are at level 7. No modules taken in Part III can be chosen again in Part IV.

Module Code	Module Name	Semester	ECTS Credit Points (CATS in brackets)	Level
FEEG6013	Group Design Project (core)	1&2	22.5(45)	7
	One of the following:			
MANG6310	Project Management - Processes	1	7.5(15)	7
MANG6311	Project Management - People	1	7.5(15)	7

Students will be asked to express their order of preference for MANG6310 and MANG6311 and will be allocated accordingly subject to delivery constraints. Students may not take more than one of these modules.

Please note, you may only select one language module per year.

Semester I Options (all 7.5 ECTS): Choose 2 or 3 from:

Module Code	Module Name	Level
FEEG3001	Finite Element Analysis in Solid Mechanics	6
FEEG3004	Human Factors in Engineering	6
ISVR3070	Ocean Acoustics & Biomedical Ultrasound	6
ISVR6130	Signal Processing	7
ISVR6137	Electroacoustics	7
SESM3030	Control and Instrumentation	6
LANGxxxx	Language	7
SESM3031	Automobile Systems	6

Semester II Options (all 7.5 ECTS): Choose 4 or 3 from:

Module Code	Module Name	Level
FEEG3002	Vehicle Powertrain, Noise and Vibration	6
FEEG6004	Aeroacoustics	7
FEEG6011	Architectural and Building Acoustics	7
ISVR3063	Musical Instrument Acoustics	6
ISVR3071	Advanced Audio Signal Processing	6
ISVR3072	Mathematical Methods of Acoustics	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
LANGxxxx	Language	7

Part 1 Modules Assessment

Module	Title	CATS	Teamwork	Report	Essay	Exam	Other	LO info	Repeat internal only
FEEG1001	Design and Computing	30	✓	✓			100%		✓
FEEG1002	Mech, Structures & Materials	30				100%			
FEEG1003	ThermoFluids	15				100%			
FEEG1004	Elec and Electronic Syst	15				100%			
ISVR1032	Acoustics I (tbc)	15							
MATH1054	Math for E and E	15				100%			
				✓				G1, G2, G3b	✓
					✓			G1, G2, G3b	

Part I Summative Assessment Schedule

The table below shows the summative assessment structure:

Schedule A			
	Approximate Timing	Pass Mark	Repeat Assessment mode
Multiple Choice Exam: Engineering Fundamentals	Semester 2 exam period. 2 hours	60%	Internal & External
Long Answer Exam: Engineering Problem Solving	Semester 2 exam period. 2 hours	40%	Internal & External
Discipline Specific Assessment	Semester 2 exam period	40%	Internal & External
Mathematics Exam	Semester 2 exam period. 2 hours	40%	Internal & External
Schedule B			
	Timing	Pass Mark	Repeat Assessment mode
Assessment in Design	End of Semester 2	40%	Internal only
Laboratory Report	End of Semester 2	40%	Internal only
Technical Essay	End of Semester 2	40%	Internal & External

Appendix 3:

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		<p>Students will require a scientific calculator. This will need to be purchased by the student.(FEEG2003)</p> <p>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.</p>
Stationery		<p>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.</p>
Textbooks		<p>It will be useful, but not necessary, to purchase the core text book. F. White, 1999. Introduction to Fluid Mechanics. 7th edition, McGraw-Hill. These currently (8 May 2013) retail for £43.99 from www.amazon.co.uk. This will need to be purchased by the student although there are a limited number of these in the Hartley library. (FEEG2003)</p> <p>It will be useful to purchase Callister, cost circa £60, but a large number are available in the library. (FEEG1002)</p>

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
		<p>Students may wish to purchase, at their own cost, one or both of the recommended course texts, but this is optional. There are multiple copies of the texts available via the ISVR and Hartley library.(ISVR1032)</p> <p>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.</p> <p>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.</p>
Equipment and Materials	Design equipment and materials:	<p>Standard construction/modelling materials will be provided where appropriate, unless otherwise specified in a module profile.</p> <p>For customisation of designs/models calling for material other than standard construction/ modelling materials, students will bear the costs of such alternatives.</p>
	Field Equipment and Materials:	<p>A number of essential items will be provided to you e.g.: field notebook(s); compass-clinometer; geological hammer; steel tape measure; map case; pocket lens (x 10); safety helmet; safety goggles; bottle of dilute hydrochloric acid. If items provided are lost replacements can be purchased from:</p> <p>However, you will need provide yourselves with a ruler; a pair of compasses; set squares; protractor; pencils (including coloured); eraser; calculator, penknife. These can be purchased from any source.</p>
	Laboratory Equipment and Materials:	<p>Students are expected to purchase a laboratory note book in which to record laboratory observations which form part of the assessment. These can be purchased for £1.20 (thin softback) or £4.75 (thick hardback), depending on student choice. (FEEG2004)</p>

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
		<p>A range of standard construction materials are provided to support the design projects within this module, however, students may wish to customise their designs and choose alternative materials at their own cost.</p> <p>Students are required to source and purchase their own batteries for the Odometry Exercise in week 6 and should be prepared to spend up to £50 per group of their own money. Receipts should be retained as expenditure may be subject to auditing. (FEEG2001)</p> <p>Students should be prepared to spend up to £100 per group of their own money in relation to the purchase of components for the Semester 2 Group Design Project. Receipts should be retained as expenditure may be subject to auditing (FEEG2001)</p>
	Recording Equipment:	
IT	Computer Discs	
	Software Licenses	
	Hardware	
Clothing	Lab Coats	
	Protective Clothing: Hard hat; safety boots; hi-viz vest/jackets;	
	Fieldcourse clothing:	You will need to wear suitable clothing when attending fieldcourses, e.g. waterproofs, walking boots. You can purchase these from any source.
Printing and Photocopying Costs		<p>Students are responsible for the printing of their poster for the Poster Presentation Day. This may range from £5-£20. (FEEG3003)</p> <p>Students are expected to cover the costs associated with the printing and binding of reports and the printing of drawings and graphic presentations. These are typically expected to be of the order of £100 per group, also depending on the quality of printing and binding chosen Note that funds from the project's budget cannot be used for this purpose. (FEEG6013 MEng Only)</p>

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
		<p>Students are expected to purchase a laboratory note book in which to record laboratory observations which form part of the assessment. These can be purchased for £1.20 (thin softback) or £4.75 (thick hardback), depending on student choice. (FEEG6013 MEng Only)</p> <p>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.</p> <p>The costs associated with the printing and binding of reports are to be covered by each student group. (FEEG 2006)</p> <p>In addition to the experimental, computational and workshop resources available, reasonable expenses for travel and materials of up to £100 may be reclaimed through the Faculty Student Office.(FEEG3003)</p>
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.
Travel and Subsistence	Accommodation and Travel	FEEG3009 Industrial Placement year. You will need to find your own accommodation near to your place of work

*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