

Programme Specification

MEng, BEng (Hons) Mechanical Engineering 2020/21

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.

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| Awarding Institution | University of Southampton |
| Teaching Institution | University of Southampton, University of Southampton Malaysia |
| Mode of study | Campus (international students for Parts I and II only) |
| Duration | Full time 5 years (MEng with Industrial Placement Year), 4 years (MEng), (BEng with Industrial Placement), 3 years (BEng) |
| Accreditation details | Institution of Mechanical Engineers MEng fully meets the academic requirement for registration as a Chartered Engineer BEng (Honours) fully meets the academic requirement for registration as an Incorporated Engineer and partly meeting the academic requirement for registration as a Chartered Engineer. |
| Final award | Bachelor of Engineering (with Honours) (BEng) Bachelor of Engineering with Industrial Placement Year (with Honours) (BEng) Master of Engineering (with Honours) (MEng) |
| Name of award | Mechanical Engineering Mechanical Engineering / Acoustical Engineering Mechanical Engineering / Aerospace Mechanical Engineering / Automotive Mechanical Engineering / Biomedical Engineering Mechanical Engineering / Computational Engineering and Design Mechanical Engineering / Engineering Management Mechanical Engineering / Materials Mechanical Engineering / Mechatronics Mechanical Engineering / Naval Engineering Mechanical Engineering / Sustainable Energy Systems All of the MEng degrees above may also be taken with an Industrial Placement Year and will then have 'with Industrial Placement Year' appended to the degree title |
| Interim Exit awards | Certificate of Higher Education Diploma of Higher Education |

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| | Bachelor of Science (Ordinary) |
| FHEQ level of final award | Level 6 (BEng), Level 7 (MEng) |
| UCAS code | H300, BEng Mechanical Engineering H30P, BEng Mechanical Engineering with Industrial Placement Year (2018/19) |
| UCAS code | H301, MEng Mechanical Engineering 4R23 Mechanical Engineering/Acoustical Engineering HH34, MEng Mechanical Engineering/Aerospace H390, MEng Mechanical Engineering/Automotive 4R29, MEng Mechanical Engineering/Biomedical Engineering 5P01 MEng Mechanical Engineering/Computational Engineering and Design HN32, MEng Mechanical Engineering/Engineering Management HJ35, MEng Mechanical Engineering/ Materials HH37, MEng Mechanical Engineering/Mechatronics HH35, MEng Mechanical Engineering/Naval Engineering HH32, MEng Mechanical Engineering/Sustainable Energy Systems 30HH, MEng Mechanical Engineering with Industrial Placement Year H34H MEng Mechanical Engineering/Acoustical Engineering with Industrial Placement Year H3H4, MEng Mechanical Engineering/Aerospace with Industrial Placement Year H3H3, MEng Mechanical Engineering/Automotive with Industrial Placement Year H316, MEng Mechanical Engineering/Biomedical Engineering with Industrial Placement Year H3H6, Mechanical Engineering/Computational Engineering and Design with Industrial Placement Year HH31, MEng Mechanical Engineering/Engineering Management with Industrial Placement Year H3H1, MEng Mechanical Engineering/ Materials with Industrial Placement Year H3H2, MEng Mechanical Engineering/Mechatronics with Industrial Placement Year H3H5, MEng Mechanical Engineering/Naval Engineering with Industrial Placement Year H3J7, MEng Mechanical Engineering/Sustainable Energy Systems with Industrial Placement Year |
| QAA Subject Benchmark or other external reference | 2010 Engineering, Engineering Council, UK-SPEC |
| Programme Lead | Professor Philippa Reed |
| Date specification was written | March 2003 (N.G. Stephen) and June 2013 (M.J. Starink) Amended January 2016 to include Industrial Placement |

Year for MEng (A Barney/H Glasspool)
Amended February 2019 to rationalise theme options
(P.Reed)

Date programme was validated April 2019

Date specification last updated April 2019

Programme Overview

Brief outline of the programme

The aim of the range of Mechanical Engineering programmes is to help you develop the necessary academic background for a career that covers the design, construction, maintenance and operation of a wide range of systems, components and structures across many different application sectors. Mechanical engineering is a very broad based discipline and the wide range of themes on offer highlights this flexibility, and emphasises your ability to define the focus of your studies as you progress through the programme. The structure of the programmes allows you to choose a specialist theme yet at the same time provides a common framework that ensures all aspects of core Mechanical Engineering are covered. There is an increasing emphasis on theme specific subjects as progress is made through the programme. The themes on offer reflect the breadth of engineering specialisms and expertise on offer in Mechanical Engineering and allied engineering disciplines in the University.

The first two years consider the fundamentals of basic Mechanical Engineering. These two years are common for the BEng and MEng programmes. As you move through the programme the application of the knowledge and skills you have developed becomes a feature. Design is the connecting thread throughout the programme and ensures that you can apply your theoretical understanding to a wide range of real design problems. In addition, computational methods are used throughout to provide the tools necessary for the analysis of many different mechanical engineering problems. Specialist knowledge in theme specific areas is available through specialist optional module choices in the third and fourth year. The programmes are designed in accordance with the Engineering Council requirements as a pathway, to become a Chartered professional engineer. The MEng fully meets the educational requirements for Chartered Engineers status; the BEng is recognised as meeting the requirements in part and would need to be combined with suitable further learning.

Learning and teaching

The first year develops the fundamentals in basic mechanical engineering with the second year adding depth to this knowledge allowing the move towards theme specific applications. In the third year specialist discipline specific knowledge is added allowing you to achieve breadth across multiple subject areas and to develop an increasing element of independent learning. The final MEng year emphasises the commercial application of learning in highly specialised subjects and demonstrates the ability to work as part of a team on a large industrially focused project. Acquisition of core knowledge and understanding is through lectures, seminars, tutorials, laboratory classes, workshops, and independent study and research. You are encouraged from an early stage to supplement and consolidate your understanding and knowledge by independent study.

Assessment

Testing of the knowledge base and development of skills 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.

Please note: 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.

Special Features of the programme

The programme is delivered at the University of Southampton, Southampton, UK, with all Programme Boards, Exam Boards and School Programme meetings held at Southampton. All module activities are based at or close to the Highfield Campus, Southampton, except for the following. Parts I and II are also delivered at University of Southampton Malaysia Campus (USMC), South Johor, Malaysia. You can elect to study one or both parts at USMC. (For UK and EU nationals, Government funding/loans for fees may be restricted.) At the end of the second year, students can apply to spend a semester abroad. We have identified a number of partner institutions where the final years are taught in English. In most cases these study periods are cost-neutral in terms of fees payable, as they form part of exchange agreements. The agreements are based on a close analysis of the syllabi and educational standards of the partner institutions to ensure compatibility of the two courses. Each student receives personalised advice from a member of academic staff on selecting the appropriate set of modules at the foreign institution and their progress is monitored throughout the semester. The Study Abroad themes involve a semester study at a university in France, the USA, New Zealand or Sweden. International study opportunities may be dependent on visa requirements. The Study Abroad themes are not applicable to USMC students. Students also have the opportunity to go on an Industrial Placement Year between either the second and third year (BEng and MEng), or the third and fourth year (MEng). Students need to organise their own placement, although some assistance can be provided by the University. Students on the Industrial Placement Year will receive personalised advice on the placement from a member of academic staff and their progress will be monitored throughout the placement.

Educational Aims of the Programme

As defined by the Institution of Mechanical Engineers (IMechE), Mechanical Engineering is concerned with "the innovative application of engineering and management sciences that underpin existing and emerging technologies to the complete life cycle of all mechanical devices, machines and systems." A Mechanical Engineer needs to be skilled in the application of a knowledge based on mathematics, science, design, materials and manufacturing, integrated with business and management to develop sustainable and environmentally compatible technological solutions that provide the infrastructure, goods and services needed by society.

The aims of the BEng and MEng Mechanical Engineering (Mech Eng) programmes are to: (Blue = both BEng & MEng Mech Eng; black = BEng only; *green italics* = MEng only, orange = Industrial Placement Year for BEng and MEng)

- Develop in Parts I and II, a sound understanding of the fundamental principles, methods, analyses and syntheses in engineering design and applications appropriate to the discipline of Mechanical Engineering.
- Provide you, in Part III with opportunities to study specialist modules integrated within the structured learning environment, reflecting the internationally renowned research expertise within the Faculty
- *Provide you, in Part III and IV (MEng) with a range of specialist modules integrated within the structured learning environment, reflecting the internationally renowned research expertise within the Faculty, in order to broaden and deepen your educational experience.*

- Train you to enable you to become professional engineers that meet many of the educational requirements of the Engineering Council (i.e. UK-SPEC), and to demonstrate a broad range of knowledge and skills (including IT and communication skills) capable of meeting the present and future demands of industry and commerce.
- Offer you a degree structure that is relevant to industry and responsive to changes in technology and the needs of the community.
- Provide you with a supportive and intellectually stimulating environment that encourages an attitude of independent learning and enquiry, and fosters an ethos of lifetime learning and professional development.
- Offer you an individual project and group assignments which are supported by the research activities within the Faculty and stimulate the individual innovation and self-assessment required in engineering design.
- *Offer you an individual and a group design project which are supported by the research activities within the Faculty and stimulate the individual innovation, self-assessment and teamwork skills required in engineering design.*
- Offer you an opportunity to apply the knowledge you have developed during your studies in Parts I and II (or Parts I, II and III for the MEng IPY) and gain experience of working within an engineering based organisation

Programme Learning Outcomes

The programme provides opportunities for you to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme learning outcomes have been developed with reference to the Subject Benchmark Statement for engineering (<https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-engineering-15.pdf>) which is aligned with the Engineering Council publication Accreditation of Higher Education Programmes (AHEP): UK Standard for Professional Engineering Competence (third edition) ([https://www.engc.org.uk/engcdocuments/internet/Website/Accreditation%20of%20Higher%20Education%20Programmes%20third%20edition%20\(1\).pdf](https://www.engc.org.uk/engcdocuments/internet/Website/Accreditation%20of%20Higher%20Education%20Programmes%20third%20edition%20(1).pdf))

Codes in the right hand column below indicate the related Engineering Accreditation Board learning outcome (AHEP 3), with a mixture of Full CEng (indicated with (m)) and Partial BEng (indicated with (b)) learning outcomes.

Knowledge and Understanding

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

Blue = both BEng and MEng; black – BEng only; Green = MEng only, orange = Industrial Placement Year for BEng and MEng)

- comprehensive knowledge and understanding of scientific principles and methodology necessary to underpin your education in mechanical engineering SM1b
to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies
- and an understanding and know-how of the scientific principles of related disciplines, to enable appreciation of the scientific and engineering context, and to support your understanding of relevant historical, current and future developments and technologies. SM1m
- knowledge and understanding of the mathematical and statistical methods necessary to underpin your education in mechanical engineering and to enable you to apply a range of mathematical and statistical methods, tools and notations proficiently and critically in the analysis and solution of mechanical problems SM2b
- awareness of developing technologies related to mechanical engineering SM2m
- comprehensive knowledge and understanding of mathematical and computational models relevant to mechanical engineering, and an appreciation of their limitations SM4(m)
- understanding of concepts from a range of areas including some outside engineering, and the ability to evaluate them critically and to apply them effectively in engineering projects. SM5(m)
- understanding of engineering principles and the ability to apply them to analyse key engineering processes SM6m
- to undertake critical analysis of key engineering processes EA1b
- understanding of, and the ability to apply, an integrated or systems approach to solving complex engineering problems EA1m
- understanding of and ability to evaluate business, customer and user needs in mechanical engineering design including considerations such as the wider engineering context, public perception and aesthetics EA4m
- understanding of the need for a high level of professional and ethical conduct in engineering including a knowledge of professional codes of conduct and how ethical dilemmas can arise D1
- knowledge and understanding of the commercial, economic and social context of engineering processes EL1
- knowledge and understanding of management techniques, including project and change management that may be used to achieve engineering objectives, their limitations and how they may be applied appropriately EL1m
- understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques EL2
- understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques EL3
- understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques EL3m
- understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques EL4

where appropriate

- awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues, and an awareness that these may differ internationally EL5
EL5m
- knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk EL6
EL6m
- understanding of the key drivers for business success, including innovation, calculated commercial risks and customer satisfaction. EL7m
- understanding of the various contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology, etc) P1
- knowledge of characteristics of particular materials, equipment, processes, or products relevant to mechanical engineering, with extensive knowledge and understanding of a wide range of engineering materials and components; P2
P2m
- understanding of the use of technical literature and other information sources P4m
- knowledge of relevant legal and contractual issues P5
- understanding of appropriate codes of practice and industry standards P6
- awareness of quality issues and their application to continuous improvement P7
- a thorough understanding of current mechanical engineering practice and its limitations, and some appreciation of likely new developments P9m
- understanding of, and the ability to work in, different roles within an engineering team P11
- understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader. P11m
- In addition, if you take the Industrial Placement Year you will be able to demonstrate an understanding of current and developing technical practice within the engineering industry and the business practice of your host organisation.

Teaching and Learning Methods

Acquisition of core knowledge and understanding is through lectures, seminars, tutorials, field and laboratory classes, computer classes, workshops, and independent study and research. You are encouraged from an early stage to supplement and consolidate your understanding and knowledge by independent study.

Assessment Methods

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.

Subject Specific Intellectual and Research Skills

Having successfully completed this programme you will be able to:

- apply and integrate knowledge and understanding of other engineering disciplines to support study of mechanical engineering, evaluate them critically and apply them effectively SM3b
SM3m
- identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques EA2
- apply quantitative and computational methods, in order to solve engineering problems and to implement appropriate action EA3b
using alternative approaches and understanding their limitations, in order to solve engineering problems and to implement appropriate action EA3m
- use fundamental knowledge to investigate new and emerging technologies EA5m
- extract and evaluate pertinent data and to apply engineering analysis techniques in the solution of unfamiliar problems. EA6m
- In addition, if you take the Industrial Placement Year you will be able to analyse, evaluate and interpret information from projects and, apply your theoretical knowledge in unfamiliar situations to solve problems, exercise professional judgement in a working context and evaluate and review your performance in the context of an engineering workplace.

Teaching and Learning Methods

Intellectual and research 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. Individual feedback is provided on all work submitted.

Assessment methods

Analysis and problem solving skills are assessed through unseen written examinations and problem based exercises. Research skills are assessed through laboratory reports, coursework exercises, project reports and oral presentations. Summative assessment is through unseen examinations, extended essays, written reports and oral presentations, and completion of a research project.

Transferable and Generic Skills

Having successfully completed this programme you will be able to:

- apply your skills in problem solving, communication, working with others, information retrieval, and the effective use of general IT facilities G1
- plan self-learning and improve your performance, as the foundation for lifelong learning/CPD G2
- plan and carry out a personal programme of work, adjusting where appropriate G3b
- monitor and adjust a personal programme of work on an on-going basis G3m

- exercise initiative and personal responsibility, as a team member or leader. G4
- In addition, if you take the Industrial Placement Year you will be able to identify areas for personal and career development and how these can be addressed, understand the different roles within a team and have the ability to exercise leadership and demonstrate effective understanding of time and project management skills.

Teaching and Learning Methods

The development of transferable skills is embedded in all years of the programme starting with induction activities in week 1 of Part I through to an extensive design project in Part IV

Assessment methods

Transferrable skills are formatively assessed through written reports and oral presentations, practical and laboratory reports

Subject Specific Practical Skills

Having successfully completed this programme you will be able to:

- apply relevant practical and laboratory skills P3
- work with technical uncertainty P8m
- apply engineering techniques taking account of a range of commercial and industrial constraints P10m
- In addition, if you take the Industrial Placement Year you will be able to apply your knowledge and skills taking account of commercial and industrial constraints, understand the importance of health and safety in an engineering workplace and evidence continuous professional development by the use of a personal learning log.

Teaching and Learning Methods

Experimental, research and design skills are developed through coursework exercises, laboratory, and design and research projects.

Assessment methods

Experimental, skills are assessed through laboratory work, reports, coursework exercises, project reports and oral presentations.

Disciplinary Specific Learning Outcomes

Having successfully completed this programme you will be able to:

- investigate and define mechanical engineering design problems, identify any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards D2
- work with information that may be incomplete or uncertain, quantify the effect of this on mechanical engineering designs and, where appropriate, use theory or experimental research to mitigate deficiencies D3
D3m
- apply advanced problem-solving skills, technical knowledge and D4

understanding to establish rigorous and creative mechanical engineering design solutions that are fit for purpose for all aspects of a problem including production, operation, maintenance and disposal

- plan and manage the mechanical engineering design process, including cost drivers, and evaluate outcomes D5
- communicate your design work to technical and non-technical audiences. D6
- demonstrate wide knowledge and comprehensive understanding of mechanical engineering design processes and methodologies and the ability to apply and adapt them in unfamiliar situations D7m
- demonstrate the ability to generate an innovative design for mechanical engineering products, systems, components or processes to fulfil new needs. D8m

Teaching and Learning Methods

Design skills are developed throughout the programme by a range of design activities involving both individual and group project work, and problem based learning

Assessment methods

Design skills are assessed through coursework exercises, project deliverable including reports and artefacts and through oral presentations.

Programme Structure

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>.

Where optional modules have been specified, the following is an indicative list of available optional modules, which are subject to change each academic year. Please note in some instances modules have limited spaces available.

The teaching is structured on a semester pattern. You study modules comprising 60 ECTS (120 CATS) in each of Parts I (level 4), II (level 5) III (level 6), and 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 (BEng) with Industrial Placement Year 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)

In addition 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.
- Bachelor of Science (Ordinary Degree) following successful completion of at least 150 ECTS (300 CATS), including 30 ECTS (60 CATS) at level 6.

Each module is a self-contained part of the programme of study and carries a credit rating. Your contact hours will vary depending on your module/option choices. Full information about contact hours is provided in individual module profiles

Part I is assessed through an integrated set of assessments under the regulations at <https://www.southampton.ac.uk/calendar/sectionvi/feps.page> and in Appendix 3 of this document. In Parts II and III, progression through the programme and classification of degrees are regulated by the standard university progression and classification rules which may be found in section IV of the University Calendar (<https://www.southampton.ac.uk/calendar/sectioniv/index.page>).

The duration of all the programmes, (with the exception of the Industrial Placement Year programmes) may be extended by one year through enrolment on the Engineering Foundation Year.

The MEng / BEng Mechanical Engineering Programme Structure is outlined in Appendix 1.

All students on the MEng programme are registered on themes. Parts I and II are common for all themes and all MEng students are invited to consider changing or selecting themes at the conclusion of Part II. The theme details for Part III and IV module selection are outlined in Appendix 2.

Typical course content

Parts I and II of the Mechanical Engineering BEng and MEng programmes are common and compulsory. These two years are designed to transition you from school, embed fundamental engineering knowledge and skills and to broaden that knowledge into the Mechanical Engineering discipline. Each module usually consists of formal lectures and tutorial or laboratory sessions. The tutorials and laboratory sessions are to allow a deeper exploration of the subject through small group working.

In Part III for the MEng programme you make a choice as to the theme of Mechanical Engineering you wish to pursue. The choice of theme dictates some compulsory modules and the possibility of some optional modules depending on the theme chosen. At this stage of the programme more independent learning is expected. You will undertake an individual project in an area of your choice. Part IV further broadens Mechanical Engineering specific knowledge through optional modules to provide you with the knowledge and skills necessary for the workplace. Your learning becomes more industrially focused and you will undertake a Group Design Project in an area of your choice.

As part of the programme, you can choose to spend a semester abroad at one of our partner institutions. The modules taken abroad are aligned with those being taken by students not abroad. All semester abroad opportunities are at institutions where the final years are taught in English. In addition between the 2nd and 3rd year (BEng and MEng) or between the 3rd and 4th year (MEng) you can choose to have an industrial placement year. You must organise this placement but support and guidance will be provided. In both the semester abroad and industrial placement year a dedicated member of staff will maintain contact with you. The programme follows university guidelines for inclusivity and flexibility and provides an array of teaching and learning approaches that will enable any student who meets the entry requirements to access the curriculum and demonstrate achievement of all the intended learning outcomes.

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 <https://www.southampton.ac.uk/calendar/sectioniv/index.page>

Additional regulations applying to the assessment of Part I of your programme, the Industrial Placement Year and our other MEng regulations may be found here: <https://www.southampton.ac.uk/calendar/sectionvi/feps.page>

Intermediate exit points (where available)

| Qualification | Minimum overall credit in ECTS credits | Minimum ECTS Credits required at level of award |
|--------------------------------|--|---|
| Bachelor of Science (Ordinary) | 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

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| Level 4 (Part I) | You will have a sound knowledge of the basic concepts in Mechanical Engineering, and will have learned how to take different approaches to solving problems. You 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) | You will have developed a sound understanding of the principles involved in a range of core Mechanical Engineering subjects, and will have learned to apply those principles more widely. Through this, you will have learned to evaluate the appropriateness of different approaches to solving problems. You will have the qualities necessary for employment in situations requiring the exercise of personal responsibility and decision-making. |
| Level 6 BEng | You will have developed an understanding of a complex body of knowledge relevant to Mechanical 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 MEng | Much of the study undertaken at Masters level reflects research at the forefront of Mechanical 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 Hartley Library.
- Enabling Services offering support services and resources via a triage model to access crisis management, mental health support and counselling.
- assessment and support (including specialist IT support) facilities if you have a disability, long term health problem or Specific Learning Difficulty (e.g. dyslexia)
- 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
- Other support that includes health services (GPs), chaplaincy (for all faiths) and 'out of hours' support for students in Halls (18.00-08.00) 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:

- Student handbook for the programme
- Introductory sessions for all years of the programme.
- Library information retrieval seminar.
- Workshop training.
- Small group tutorials in Part I of the programme.
- Student Design Studios.
- Engineering Development and Manufacturing Centre (EDMC) equipped with a range of workshop equipment, CAD / computer-aided manufacturing (CAM).
- Engineering and general software available on all computers.
- Extensive well equipped Engineering laboratories.
- Personal tutors to assist you with personal problems and to advise on academic issues (contact maintained during periods of studying abroad).
- 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.
- IMechE Young Members panel, organised by students on the programme.
- School Student Office for the administration of your programme.

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

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

- Discipline, Part and project boards, convening regularly during each academic year, which consider the outcomes of each module's delivery and evaluation.
- Moderation of examination papers, coursework and projects, both internally and externally.
- 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 School Industrial Advisory Board
- Response to results from the National Student Survey
- Revalidation by the University at least every five years.

Note that quality assurance of part of the programme taken abroad, where applicable, 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

Mechanical Engineering graduates are in strong demand in a wide range of application sectors which results in good starting salaries and excellent career progression opportunities. In the UK our graduates work across many different organisations and in many application areas, including for example the aerospace, automotive, power generation, biomedical and finance sectors. In addition to engineering careers, many of our graduates go into other graduate employment destinations such as finance and consultancy, where the numeracy and excellent communication skills developed on the programme are also highly valued. Our high entry standards and rigorous course results in a graduating class with excellent analytical skills as well as significant project management and leadership skills. Throughout their time at Southampton, students are supported by the University's Careers service, the Mechanical Engineering Employability coordinator and their academic tutor in preparing for their future career. Students are

strongly encouraged and practically supported in gaining valuable paid internships with leading engineering employers in the summer vacations as well as the ability to take the industrial placement year typically in between years 2 and 3 (for B.Eng) or year 3 and 4 (for M.Eng) of their undergraduate course. CV writing, interview and technical assessment centre workshops all help students demonstrate their skills in pursuing employment prospects.

External Examiners(s) for the programme

Name: Dr Rachel Tomlinson

Institution: University of Sheffield

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 they take 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/undergraduate/courses/mechanical_engineering_list.page.

Revision History

October 2004 (M. Hill). October 2005 (M. Hill). September 2006 (S.M. Sharkh)
September 2007 (S.M. Sharkh)
April 2008 (S.M. Sharkh)
February 2012 (A Barney) July 2012 (B. Leigh)
June 2013 (M.J. Starink) (AY2014-15 specifications, incl a complete rewrite of programme content)
23 Nov 2013 (M.J. Starink)_CQA
18 Feb & 7 May 2014 (M.J. Starink)_CQA_150714
Update to Programme Overview (CMA Changes) – 14 September 2015
Addition of Industrial Placement Year and annual textual changes - August 2016
Addition of information for summative assessment of part I – CQA July 2017
Updated to reflect 201819 version and removal of Admissions Criteria – CQA March 2018
Update to Appendix – CQA June 2018
Updated Faculty name to Faculty of Engineering and Physical Sciences July 2018
Updated February 2019 to new programme specification format, to rationalise theme choices and propose new Part 3 and 4 optional and compulsory modules (P.A.S. Reed)
Updated April 2019 to reflect programme validation outcomes (P.A.S. Reed)

Appendix 1

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.

MEng and BEng Part I

The first year provides a background in engineering science, emphasising mechanical engineering aspects. The induction programme in the first week provides the opportunity to get to know fellow students and gain hands-on experience.

All modules below are at level 4 and all required assessments are core, i.e. must be taken and passed at the required pass mark. They total 60 ECTS (120 CATS). No optional 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 | Credit Points (ECTS/CATS) | Level |
|--|---------------------------|-------|
| MATH1054 Mathematics for Engineering and the Environment | 7.5/15 | 4 |
| FEEG1001 Design and Computing | 15/30 | 4 |
| FEEG1002 Mechanics, Structures and Materials | 15/30 | 4 |
| FEEG1003 Thermofluids | 7.5/15 | 4 |
| FEEG1004 Electrical and Electronic Systems | 7.5/15 | 4 |
| SESM1016 Mechanical Systems Analysis | 7.5/15 | 4 |

MEng and BEng Part II

The second year covers the main mechanical engineering subjects with modules tailored to the mechanical engineering discipline. It includes a total of 60 ECTS (120 CATS) across two semesters. No optional modules will be undertaken in Part II. Feedback on progress is provided throughout the year in many ways including via laboratory work, example sheets, tests and coursework.

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

| Module Code | Module Name | Semester | Credit Points (ECTS/CATS) | Level |
|-------------|---|-----------|---------------------------|-------|
| FEEG2001 | Systems Design and Computing | Full year | 7.5/15 | 5 |
| FEEG2002 | Mechanics, Machines and Vibration | 2 | 7.5/15 | 5 |
| FEEG2003 | Fluid Mechanics | 2 | 7.5/15 | 5 |
| FEEG2004 | Electronics, Drives and Control | 1 | 7.5/15 | 5 |
| FEEG2005 | Materials and Structures | 2 | 7.5/15 | 5 |
| FEEG2006 | Engineering Management and Law | Full year | 7.5/15 | 5 |
| MATH2048 | Mathematics for Engineering and the Environment | 1 | 7.5/15 | 5 |
| SESM2017 | Thermodynamics | 1 | 7.5/15 | 5 |

At the end of Part II students progressing to Part III MEng will select themes, each with a distinct programme in Parts III and IV (see subsequent section). Students progressing to

Part III BEng will not select themes but can access the same Part III optional modules offered to the MEng (Mech Eng) cohort.

Industrial Placement Year MEng and BEng

Students selecting the Industrial Placement Year theme will take the core placement module FEEG3009 between Parts II and III (or may choose to take it between Parts III and IV if they are on an MEng programme). They may not start their placement until Part II has been passed. Should the placement not be passed students can transfer back to the substantive programme.

| Module Code | Module Name | Semester | Credit Points (ECTS/CATS) | Level |
|-------------|------------------------------------|-----------|---------------------------|-------|
| FEEG3009 | Industrial Placement Module (core) | Full year | N/A | 6 |

Part III BEng

Part III Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Part III contains the following compulsory modules.

| Module Code | Module Name | Credit Points (ECTS/CATS) | Semester | Level |
|-------------|------------------------------------|---------------------------|-----------|-------|
| FEEG3003 | Individual Project | 15/30 | Full year | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | 1 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | 2 | 6 |

The individual project is a core module, i.e. no compensation is possible when the pass mark is not achieved.

Part III and IV MEng

Part III and IV contain compulsory and a broad range of optional modules. For all MEng students (all themes) the following modules are compulsory:

| Module Code | Module Name | Credit Points (ECTS/CATS) | Part | Semester | Level |
|----------------------|--|---------------------------|------------|-----------|-------|
| FEEG3003 | Individual Project | 15/30 | III | Full year | 6 |
| FEEG3001 SESM6047 | FEA in Solid Mechanics | 7.5/15 | III or IV* | 1 | 6/7* |
| SESG3024 SESM6044 | Manufacturing and Materials | 7.5/15 | III or IV* | 1 | 6/7* |
| SESM3029 SESM6045 | Engineering Design with Management | 7.5/15 | III or IV* | 2 | 6/7* |
| SESM3032 SESM6046 | Heat Transfer and Applications | 7.5/15 | III or IV* | 2 | 6/7* |
| FEEG6013 | Group Design Project | 22.5/45 | IV | Full year | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | IV | 2 | 7 |

*Part IV option only available to semester abroad students as required

The individual project, project in industry and the group design project are core modules, i.e. no compensation is possible when the pass mark is not achieved. In addition, the theme that you have chosen will contain compulsory and optional modules. You will select optional modules as necessary to reach a total of:

Part III: total 60 ECTS (120 CATS) credit points.

Part IV: total 60 ECTS (120 CATS) credit points.

Part III/IV Specialist MEng Themes

| | |
|--------------------------------------|--|
| Acoustical Engineering | Aerospace |
| Automotive | Biomedical Engineering |
| Computational Engineering and Design | Engineering Management |
| Materials | Mechatronics |
| Naval Engineering | Study Abroad (including ESTACA, Linköping) (not applicable to USMC students) |
| Sustainable Energy Systems | |

Acoustical Engineering Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.

Part IV Total 60 ECTS (120 CATS) credit points, including options.

To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from

<http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Aerospace Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.

Part IV Total 60 ECTS (120 CATS) credit points, including options.

To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from

<http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Automotive Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.

Part IV Total 60 ECTS (120 CATS) credit points, including options.

To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Biomedical Engineering Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Computational Engineering and Design Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Engineering Management Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Materials Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

MEng in Mechanical Engineering

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Mechatronics Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Naval Engineering Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from <http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Study Abroad (ESTACA, France)

Part III Total 60 ECTS (120 CATS) credit points, including options.

Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from
<http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Study Abroad (Linkoping, Sweden)

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from
<http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Study Abroad (University of Canterbury, New Zealand)

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from
<http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Study Abroad (Pennsylvania State, USA)

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from
<http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Sustainable Energy Systems Theme

Part III Total 60 ECTS (120 CATS) credit points, including options.
Part IV Total 60 ECTS (120 CATS) credit points, including options.
To find links to broad generic descriptions of the programmes and modules follow links to your programme starting from
<http://www.southampton.ac.uk/engineering/undergraduate/index.page>.

Appendix 2 Programme Content of Parts III and IV

The below contains the full programme for all MEng themes and the BEng programme including all optional (O) and compulsory (C) modules.

To view the programme content information in a more user friendly format students and staff are referred to the 'online programme catalogue' which allows viewing of full content for each theme for each year and contains hyperlinks to online module specifications.

BEng Mechanical Engineering

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|------------------------------------|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 45/90

Part III Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| SESM3035 | Automotive Power Train and Chassis Systems | 7.5/15 | O | 1 | 6 |
| FEEG3004 | Human Factors in Engineering | 7.5/15 | O | 1 | 6 |
| MANG3049 | Accounting and finance for engineers | 7.5/15 | O | 2 | 6 |
| SESM6042 | Materials in Transport | 7.5/15 | O | 1 | 6 |
| SESM3028 | Biomaterials | 7.5/15 | O | 2 | 6 |
| SESM3030 | Control and Instrumentation | 7.5/15 | O | 1 | 6 |
| ISVR6136 | Fundamentals of Acoustics | 7.5/15 | O | 1 | 6 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 6 |
| SESM3037 | Sustainable Energy and Power Generation | 7.5/15 | O | 2 | 6 |
| MATH3082 | Optimisation | 7.5/15 | O | 2 | 6 |
| ELEC3201 | Robotic systems | 7.5/15 | O | 1 | 6 |
| LAWS3130 | Industrial Law | 7.5/15 | O | 1 | 6 |
| SESG6XXX | Teaching and Communications University Ambassador Scheme | 7.5/15 | O | 1 | 7 |

total: 15/30

MEng Mechanical Engineering/Acoustical Engineering

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|------------------------------------|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| ISVR3064 | Noise Control Engineering | 7.5/15 | C | 1 | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| ISVR6136 | Fundamentals of Acoustics | 7.5/15 | C | 1 | 7 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |

total: 52.5/105

Part III Optional Modules: 1 choice (Sem 2)

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| ISVR3063 | Musical Instrument Acoustics | 7.5/15 | O | 2 | 6 |
| ISVR3061 | Human Responses to Sound and Vibration | 7.5/15 | O | 2 | 6 |
| MATH3082 | Optimisation | 7.5/15 | O | 2 | 6 |
| MANG3049 | Accounting and finance for engineers | 7.5/15 | O | 2 | 6 |
| SESA3033 | Wing Aerodynamics | 7.5/15 | O | 2 | 6 |
| SESM3037 | Sustainable Energy and Power Generation | 7.5/15 | O | 2 | 6 |

total: 7.5/15

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| ISVR6130 | Signal Processing | 7.5/15 | C | 1 | 7 |
| ISVR6146 | Vibration Engineering Practice | 7.5/15 | O | 2 | 7 |

total: 52.5/105

Part IV Optional Modules: 1 choice

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--------------------------------------|---------------------------|-------------|----------|-------|
| FEEG6004 | Aeroacoustics | 7.5/15 | O | 2 | 7 |
| FEEG6011 | Architectural and Building Acoustics | 7.5/15 | O | 2 | 7 |
| ISVR6142 | Numerical Methods for Acoustics | 7.5/15 | O | 2 | 7 |
| ISVR6137 | Electroacoustics | 7.5/15 | O | 1 | 7 |
| FEEG6002 | Advanced Computational Methods | 7.5/15 | O | 1 | 7 |
| SESA6075 | Aircraft Propulsion | 7.5/15 | O | 1 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 7 |

total: 7.5/15

MEng Mechanical Engineering/Aerospace

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|------------------------------------|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |
| SESA3029 | Aerothermodynamics | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |

total: 52.5/105

Part III Optional Modules: 1 choice (Sem 1)

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|------------------------------|---------------------------|-------------|----------|-------|
| SESA3033 | Wing Aerodynamics | 7.5/15 | O | 2 | 6 |
| FEEG3004 | Human Factors in Engineering | 7.5/15 | O | 1 | 6 |
| MATH3081 | Operational Research | 7.5/15 | O | 1 | 6 |
| ELEC3201 | Robotic systems | 7.5/15 | O | 1 | 6 |
| SESM3030 | Control and Instrumentation | 7.5/15 | O | 1 | 6 |
| ISVR6136 | Fundamentals of Acoustics | 7.5/15 | O | 1 | 6 |
| SESG6042 | Materials in Transport | 7.5/15 | O | 1 | 6 |

total: 7.5/15

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6005 | Applications of Computational Fluid Dynamics | 7.5/15 | C | 1 | 7 |
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESA6075 | Aircraft Propulsion | 7.5/15 | C | 1 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices (*dependent on taking Part 3 option SESA3029)

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| FEEG6002 | Advanced Computational Methods | 7.5/15 | O | 1 | 7 |
| FEEG6009 | Design Search and Optimisation | 7.5/15 | O | 2 | 7 |
| FEEG6006 | Systems Reliability | 7.5/15 | O | 1 | 7 |
| SESA6064 | Aircraft Structures | 7.5/15 | O | 2 | 7 |
| SESA6074 | Hypersonic and High Temperature Gas Dynamics* | 7.5/15 | O | 2 | 7 |
| SESG6039 | Composite Engineering Design and Mechanics | 7.5/15 | O | 1 | 7 |
| SESG6040 | Failure of Materials and Components | 7.5/15 | O | 2 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 7 |

total: 15/30

MEng Mechanical Engineering/Automotive

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| SES3M3035 | Automotive Power Train and Chassis Systems | 7.5/15 | C | 1 | 6 |
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| FEEG3001 | Finite Element Analysis in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESM3036 | Automotive Mechatronics | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6034 | Advanced Electrical Systems | 7.5/15 | C | 1 | 7 |
| SESM6037 | Automotive Propulsion | 7.5/15 | C | 2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| SESM6032 | Sustainable Energy Systems, Resources and Usage | 7.5/15 | O | 1 | 7 |
| FEEG6005 | Applications of Computational Fluid Dynamics | 7.5/15 | O | 1 | 7 |
| SESM6033 | Tribological Engineering with Engine Tribology | 7.5/15 | O | 1 | 7 |
| SESG6042 | Composites engineering design and mechanics | 7.5/15 | O | 1 | 7 |
| ISVR6146 | Vibration Engineering Practice | 7.5/15 | O | 2 | 7 |
| SESM6043 | Applications of Renewable Energy, Storage and Nuclear Energy | 7.5/15 | O | 2 | 7 |
| FEEG6007 | Principles of Photovoltaics, fuel cells and batteries | 7.5/15 | O | 1 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 7 |

total: 15/30

MEng Mechanical Engineering/Biomedical Engineering

Part III Core/Compulsory modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |
| FEEG3001 | Finite Element Analysis in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESM3028 | Biomaterials | 7.5/15 | C | 2 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESM3033 | Orthopaedic Biomechanics | 7.5/15 | C | 1 | 6 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6036 | Biomedical Implants and Devices | 7.5/15 | C | 1 | 7 |
| SESM6038 | Computational Methods in Biomedical Engineering Design | 7.5/15 | C | 2 | 7 |
| ISVR6144 | Introduction to Biomedical Technology | 7.5/15 | C | 1 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |

total: 52.5/105

Part IV Optional Modules: 1 choice

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| ISVR6138 | Biomedical Apps. Signal and Image Processing | 7.5/15 | O | 2 | 7 |
| ELEC6227 | Medical Electrical and Electronic Technology | 7.5/15 | O | 2 | 7 |
| MEDI6219 | Translational Medicine | 7.5/15 | O | 2 | 7 |
| MEDI6226 | Human Biology and Systems Physiology | 7.5/15 | O | 1 | 7 |
| NATS6008 | Biomedical Spectroscopy and Imaging | 7.5/15 | O | 2 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 7 |

total: 7.5/15

MEng Mechanical Engineering/Computational Engineering and Design

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG3001 | Finite Element Analysis in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| MATH3083 | Advanced partial differential equations | 7.5/15 | C | 1 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with management | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 52.5/105

Part III Optional Modules: 1 choice (preferably Sem 2)

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|------------------------------------|---------------------------|-------------|----------|-------|
| SESM3028 | Biomaterials | 7.5/15 | O | 2 | 6 |
| SESA3033 | Wing Aerodynamics | 7.5/15 | O | 2 | 6 |
| MANG3049 | Accounting & finance for engineers | 7.5/15 | O | 2 | 6 |
| SESM3036 | Automotive Mechatronics | 7.5/15 | O | 2 | 6 |
| MATH3082 | Optimisation | 7.5/15 | O | 2 | 6 |
| SESM3030 | Control and Instrumentation | 7.5/15 | O | 1 | 6 |

total: 7.5/15

Part IV Core/Compulsory Module

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6002 | Adv Computational Methods | 7.5/15 | C | 1 | 7 |
| FEEG6009 | Design Search and Optimisation | 7.5/15 | C | 2 | 7 |
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6005 | Applications of Computational Fluid Dynamics | 7.5/15 | O | 1 | 7 |
| FEEG6010 | Advanced Finite Element Analysis | 7.5/15 | O | 2 | 7 |
| ISVR6138 | Biomedical applications of signal and image processing | 7.5/15 | O | 2 | 7 |
| SESG6036 | Advanced Control Design* | 7.5/15 | O | 1 | 7 |
| SESG6039 | Composites engineering design and mechanics | 7.5/15 | O | 1 | 7 |
| SESM6032 | Sustainable Energy Systems, Resources and Usage | 7.5/15 | O | 1 | 7 |
| SESM6040 | Thermofluid Engineering for Low Carbon Energy | 7.5/15 | O | 2 | 7 |
| SESM6038 | Computational Methods in Biomedical Engineering Design | 7.5/15 | O | 2 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1 | 7 |

total: 15/30

(*dependent on taking Part 3 option SESM3030)

MEng Mechanical Engineering/Engineering Management

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|------------------------------------|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| MANG3049 | Accounting & Finance for Engineers | 7.5/15 | C | 2 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |
| LAWS3130 | Industrial Law | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |
| MANG6045 | Consultancy Skills | 3.75/7.5 | C | 1 | 7 |
| MANG6130 | Strategic Management | 3.75/7.5 | C | 1 | 7 |
| MANG6143 | Project Risk Management | 7.5/15 | C | 2 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6009 | Design Search and Optimisation | 7.5/15 | O | 2 | 7 |
| SESG6034 | Surface Engineering | 7.5/15 | O | 1 | 7 |
| FEEG6005 | Application of CFD | 7.5/15 | O | 1 | 7 |
| SESG6039 | Composite Engineering Design and Mechanics | 7.5/15 | O | 1 | 7 |
| SESG6040 | Failure of Materials and Components | 7.5/15 | O | 2 | 7 |
| SESG6044 | Microstructural and Surface Characterisation | 7.5/15 | O | 1+2 | 7 |
| SESM6034 | Advanced Electrical systems | 7.5/15 | O | 1 | 7 |
| SESM6037 | Automotive Propulsion | 7.5/15 | O | 2 | 7 |
| LANGXXXX | Language | 7.5/15 | O | 1/2 | 7 |

total: 15/30

MEng Mechanical Engineering/Materials

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--------------------------------------|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESM3028 | Biomaterials | 7.5/15 | C | 2 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESG6042 | Materials for Transport Applications | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |
| SESG6039 | Composites Engineering Design and Mechanics | 7.5/15 | C | 1 | 7 |
| SESG6040 | Failure of Materials and Components | 7.5/15 | C | 2 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| FEEG6007 | Principles of Photovoltaics, fuel cells and batteries | 7.5/15 | O | 1 | 7 |
| FEEG6009 | Design Search and Optimisation | 7.5/15 | O | 2 | 7 |
| FEEG6010 | Advanced Finite Element Analysis | 7.5/15 | O | 2 | 7 |
| SESG6034 | Surface Engineering | 7.5/15 | O | 1 | 7 |
| FEEG6005 | Application of CFD | 7.5/15 | O | 1 | 7 |
| SESG6044 | Microstructural and Surface Characterisation | 7.5/15 | O | 1/2 | 7 |
| SESM6032 | Sustainable Energy Systems, Resources and Usage | 7.5/15 | O | 1 | 7 |
| SESM6040 | Thermofluid Engineering for Low Carbon Energy | 7.5/15 | O | 1 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 7 |

total: 15/30

MEng Mechanical Engineering

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|----------------------------------|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design w/ Management | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 45/90

Part III Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| SESM3035 | Automotive Power Train & Chassis Systems | 7.5/15 | O | 1 | 6 |
| FEEG3004 | Human Factors in Engineering | 7.5/15 | O | 1 | 6 |
| MANG3049 | Accounting & finance for engineers | 7.5/15 | O | 2 | 6 |
| SESG6042 | Materials for Transport Applications | 7.5/15 | O | 1 | 6 |
| SESM3028 | Biomaterials | 7.5/15 | O | 2 | 6 |
| SESM3030 | Control and Instrumentation | 7.5/15 | O | 1 | 6 |
| ISVR6136 | Fundamentals of Acoustics | 7.5/15 | O | 1 | 6 |
| SESM3037 | Sustainable Energy & Power Gen. | 7.5/15 | O | 2 | 6 |
| MATH3082 | Optimisation | 7.5/15 | O | 2 | 6 |
| ELEC3201 | Robotic systems | 7.5/15 | O | 1 | 6 |
| LAWS3130 | Industrial Law | 7.5/15 | O | 1 | 6 |
| SESG6XXX | Teaching and Communications University Ambassador Scheme | 7.5/15 | O | 1 | 7 |

total: 15/30

Part IV Core/Compulsory modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing & Supply Chains | 7.5/15 | C | 1 | 7 |

total: 30/60

Part IV Optional Modules: 4 choices (*dependent on taking Part 3 option SESM3030)

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| SESM6032 | Sustainable Energy Systems, Resources & Usage | 7.5/15 | O | 1 | 7 |
| SESG6035 | Advanced Sensors & Condition Monitoring | 7.5/15 | O | 1 | 7 |
| SESG6039 | Composite Engng Design & Mechanics | 7.5/15 | O | 1 | 7 |
| SESG6040 | Failure of Materials & Components | 7.5/15 | O | 2 | 7 |
| SESM6034 | Advanced Electrical Systems | 7.5/15 | O | 1 | 7 |
| SESM6037 | Automotive Propulsion | 7.5/15 | O | 2 | 7 |
| SESA6075 | Aircraft Propulsion | 7.5/15 | O | 1 | 7 |
| FEEG6005 | Application of CFD | 7.5/15 | O | 1 | 7 |
| MANG6143 | Project Risk Management | 7.5/15 | O | 2 | 7 |
| FEEG6009 | Design Search and Optimisation | 7.5/15 | O | 2 | 7 |
| FEEG6010 | Advanced FEA | 7.5/15 | O | 2 | 7 |
| SESG6036 | Advanced Control Design* | 7.5/15 | O | 2 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 6 |

| | | | | | |
|----------|---|--------|---|---|---|
| SESG6XXX | Teaching and Communications University Ambassador Scheme | 7.5/15 | 0 | 1 | 7 |
| SESG6048 | Cryogenics and Superconductivity | 7.5/15 | 0 | | 7 |

total: 30/60

MEng Mechanical Engineering/Mechatronics

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| FEEG3001 | Finite Element Analysis in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESM3030 | Control and Instrumentation | 7.5/15 | C | 1 | 6 |
| SESG3024 | Materials and Manufacturing | 7.5/15 | C | 1 | 6 |
| SESM3036 | Automotive Mechatronics | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |
| SESG6035 | Advanced Sensors and Condition Monitoring | 7.5/15 | C | 1 | 7 |
| SESM6034 | Advanced Electrical systems | 7.5/15 | C | 1 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6010 | Advanced FEA | 7.5/15 | O | 2 | 7 |
| ISVR6130 | Signal Processing | 7.5/15 | O | 1 | 7 |
| ISVR6138 | Biomedical Apps. Sig. Image Proc. | 7.5/15 | O | 2 | 7 |
| SESM6037 | Automotive Propulsion | 7.5/15 | O | 2 | 7 |
| SESM6036 | Biomedical implants and devices | 7.5/15 | O | 1 | 7 |
| FEEG6002 | Advanced Computational Methods | 7.5/15 | O | 1 | 7 |
| FEEG6007 | Principles of Photovoltaics, fuel cells and batteries | 7.5/15 | O | 1 | 7 |
| SESG6036 | Advanced Control Design | 7.5/15 | O | 2 | 7 |
| FEEG6XXX | Applications of Renewable Energy, Storage and Nuclear Energy | 7.5/15 | O | 2 | 7 |
| LANGxxxx | Language | 7.5/15 | O | 1/2 | 7 |

total: 15/30

MEng Mechanical Engineering/Naval Engineering

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |
| SESS6074 | Maritime Safety: Risk, Environment and Law | 7.5/15 | C | 2 | 7 |
| FEEG3001 | Finite Element Analysis in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESS6065 | Fundamentals of Ship Science | 7.5/15 | C | 1 | 7 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |
| SESG6035 | Advanced Sensors and Condition Monitoring | 7.5/15 | C | 1 | 7 |
| SESS3025 | Marine Engineering | 7.5/15 | C | 1 | 6 |
| SESM6034 | Advanced Electrical Systems | 7.5/15 | C | 1 | 7 |

total: 52.5/105

Part IV Optional Modules: 1 choice (Sem 2)

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|-----------------------------------|---------------------------|-------------|----------|-------|
| FEEG6010 | Advanced FEA | 7.5/15 | O | 2 | 7 |
| FEEG6009 | Design Search and Optimisation | 7.5/15 | O | 2 | 7 |
| SESG6040 | Failure of Materials & Components | 7.5/15 | O | 2 | 7 |
| LANGXXXX | Language | 7.5/15 | O | 2 | 7 |
| MANG6143 | Project Risk Management | 7.5/15 | O | 2 | 7 |
| SESM6037 | Automotive Propulsion | 7.5/15 | O | 2 | 7 |

total: 7.5/15

MEng Mechanical Engineering/Study Abroad: Abroad in Semester 1 (not applicable to USMC students)

Part III Core/Compulsory Module

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|------------------------------------|---------------------------|-------------|----------|-------|
| FEEG3005 | Study Abroad modules | 30/60 | C | 1 | 6 |
| FEEG3003 | Individual Project | 15/30 | Core | 2 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |
| SESM6044 | Manufacturing and Materials | 7.5/15 | C | 1 | 7 |
| SESM6047 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| ISVR6138 | Biomedical Apps. Sig. Image Proc. | 7.5/15 | O | 2 | 7 |
| SESM6032 | Sustainable Energy Systems, Resources and Usage | 7.5/15 | O | 1 | 7 |
| SESG6035 | Advanced Sensors and Condition Monitoring | 7.5/15 | O | 1 | 7 |
| SESG6039 | Composite Engineering Design and Mechanics | 7.5/15 | O | 1 | 7 |
| SESM6034 | Advanced Electrical systems | 7.5/15 | O | 1 | 7 |
| SESM6037 | Automotive Propulsion | 7.5/15 | O | 2 | 7 |
| FEEG6005 | Application of CFD | 7.5/15 | O | 1 | 7 |
| MANG6143 | Project Risk Management | 7.5/15 | O | 2 | 7 |
| FEEG6009 | Design Search and Optimisation | 7.5/15 | O | 2 | 7 |
| FEEG6010 | Advanced FEA | 7.5/15 | O | 2 | 7 |

total: 15/30

MEng Mechanical Engineering/Study Abroad: Abroad in Semester 2 (not applicable to USMC students)

Part III Core/Compulsory

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|-----------------------------|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual project | 15/30 | Core | 1 | 6 |
| FEEG3006 | Study abroad modules | 30/60 | Core | 2 | 6 |
| FEEG3001 | FEA in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESG3024 | Manufacturing and Materials | 7.5/15 | C | 1 | 6 |

total: 60/120

Part IV Core/Compulsory Modules *enhanced assessment to reflect Level 7 LOs

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| SESM6046 | Heat Transfer and Applications | 7.5/15 | C | 2 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |
| SESM6045 | Engineering Design with Management | 7.5/15 | C | 2 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| SESM6040 | Thermofluid engng for low C energy | 7.5/15 | O | 1 | 7 |
| SESM6032 | Sustainable Energy Systems, Resources and Usage | 7.5/15 | O | 1 | 7 |
| SESG6035 | Advanced Sensors and Condition Monitoring | 7.5/15 | O | 1 | 7 |
| SESG6039 | Composite Engineering Design and Mechanics | 7.5/15 | O | 1 | 7 |
| SESM6034 | Advanced Electrical systems | 7.5/15 | O | 1 | 7 |
| SESM6036 | Biomed implants & devices | 7.5/15 | O | 1 | 7 |
| FEEG6005 | Application of CFD | 7.5/15 | O | 1 | 7 |
| FEEG6002 | Adv Comp Methods 1 | 7.5/15 | O | 1 | 7 |
| FEEG6007 | Principles of Photovoltaics, fuel cells and batteries | 7.5/15 | O | 1 | 7 |
| SESG6034 | Surface engineering | 7.5/15 | O | 1 | 7 |

total: 15/30

MEng Mechanical Engineering/Sustainable Energy Systems

Part III Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|--|---------------------------|-------------|----------|-------|
| FEEG3003 | Individual Project | 15/30 | Core | 1+2 | 6 |
| SESM3037 | Sustainable Energy and Power Generation | 7.5/15 | C | 2 | 6 |
| SESG3024 | Materials and Manufacturing | 7.5/15 | C | 1 | 6 |
| FEEG3001 | Finite Element Analysis in Solid Mechanics | 7.5/15 | C | 1 | 6 |
| SESM3029 | Engineering Design with Management | 7.5/15 | C | 2 | 6 |
| SESM3030 | Control and Instrumentation | 7.5/15 | C | 1 | 6 |
| SESM3032 | Heat Transfer and Applications | 7.5/15 | C | 2 | 6 |

total: 60/120

Part IV Core/Compulsory Modules

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| FEEG6013 | Group Design Project | 22.5/45 | Core | 1+2 | 7 |
| FEEG6007 | Principles of Photovoltaics, fuel cells and batteries | 7.5/15 | C | 1 | 7 |
| SESM6032 | Sustainable Energy Systems, Resources and Usage | 7.5/15 | C | 1 | 7 |
| SESM6049 | Materials, Manufacturing and Supply Chains | 7.5/15 | C | 2 | 7 |

total: 45/90

Part IV Optional Modules: 2 choices

| Module Code | Module Name | Credit Points (ECTS/CATS) | Choice Type | Semester | Level |
|-------------|---|---------------------------|-------------|----------|-------|
| CENV6141 | Bioenergy | 7.5/15 | O | 2 | 7 |
| FEEG6008 | Advances in Photovoltaics, fuel cells and Batteries | 7.5/15 | O | 2 | 7 |
| SESG6039 | Composites Engineering design and mechanics | 7.5/15 | O | 1 | 7 |
| SESM6034 | Advanced Electrical Systems | 7.5/15 | O | 1 | 7 |
| FEEG6005 | Applications of CFD | 7.5/15 | O | 1 | 7 |
| SESM6037 | Automotive Propulsion | 7.5/15 | O | 2 | 7 |
| SESM6040 | Thermofluid Engineering for Low-Carbon Energy | 7.5/15 | O | 1 | 7 |
| SESS6067 | Renewable Energy from Environmental Flows: Wind, Waves and Tide | 7.5/15 | O | 2 | 7 |

total: 15/30

Appendix 3

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 4:

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 | | Students 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 specifies permissible models from time to time and these may be purchased from any source. |
| Stationery | | You will be expected to provide your own day-to-day stationery items, e.g. pens, pencils, notebooks, etc). The third year module FEEG3003 Individual Project requires you to print an AI portrait poster on paper. The typical cost for this is in the range £5 to £20. |
| 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 Equipment | Design equipment and materials: | We provide a wide range of resources to support project based modules and activities and these will allow you to complete your assessed exercises to the highest standard. However, you may wish to customise your project by purchasing additional resource e.g. alternative manufacturing materials, electronic components, etc. You may also incur additional costs for printing e.g. large format drawings. |
| Clothing | Field trip clothing: | A number of essential items will be provided to you e.g. safety hat and Hi-Vis vest. You will need to wear suitable clothing when attending field trips, e.g. waterproofs, walking boots. You can purchase these from any source. |
| Printing and Photo-copying 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. Students are expected to cover the costs associated with the printing of |

| Main Item | Sub-section | PROGRAMME SPECIFIC COSTS |
|---|-------------|---|
| | | <p>drawings and graphic presentations. These are typically expected to be of the order of £20 - 50 per student. The third year module FEEG3003 Individual Project requires you to print an AI portrait poster on paper at a typical cost of £20. A list of the University printing costs can be found here: https://www.southampton.ac.uk/isolutions/students/printing-for-students.page</p> |
| <p>Optional Visits (e.g. museums, galleries)</p> | | <p>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. For costs related to study abroad please see the relevant module profile.</p> |
| <p>Travel and Subsistence</p> | | <p>For additional costs related to travel and subsistence for the Industrial Placement Year, please refer to the module profile for FEEG 3009</p> |

