

Programme Specification

MEng, BEng (Hons) Mechanical Engineering MEng, BEng (Hons) Mechanical Engineering with Industrial Placement Year 2019/20

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

Awarding Institution	University of Southampton
Teaching Institution	University of Southampton, University of Southampton, Malaysia (international students for Parts I and II only)
Mode of study	Full time
Duration	5 years (MEng with Industrial Placement Year), 4 years (MEng, BEng with Industrial Placement Year), (BEng with Industrial Placement), 3 years (BEng)
Accreditation details	<p>Institution of Mechanical Engineers</p> <p>BEng (Honours) fully meets the academic requirement for registration as an Incorporated Engineer and partly meets the academic requirement for registration as a Chartered Engineer.</p> <p>MEng fully meets the academic requirement for registration as a Chartered Engineer.</p>
Final award	<p>Bachelor of Engineering (with Honours) (BEng)</p> <p>Master of Engineering (with Honours) (MEng)</p>
Name of award	<p>Mechanical Engineering</p> <p>Mechanical Engineering / Acoustical Engineering</p> <p>Mechanical Engineering / Aerospace</p> <p>Mechanical Engineering / Automotive</p> <p>Mechanical Engineering / Biomedical Engineering</p> <p>Mechanical Engineering / Computational Engineering and Design</p> <p>Mechanical Engineering / Engineering Management</p> <p>Mechanical Engineering / Advanced Materials</p> <p>Mechanical Engineering / Mechatronics</p> <p>Mechanical Engineering / Naval Engineering</p> <p>Mechanical Engineering / Sustainable Energy Systems</p> <p>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</p>

Interim Exit awards	Certificate of Higher Education Diploma of Higher Education Bachelor of Science (Ordinary)
FHEQ level of final award	Level 7 (MEng), Level 6 (BEng)
UCAS code	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/ Advanced 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/ Advanced 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	QAA Subject Benchmark – Engineering 2015; Accreditation of Higher Education Programmes, Edition 3, Engineering Accreditation Board.

Director of Programmes	Professor Suleiman Sharkh
Date specification was written	February 2019 (Prof P. Reed)
Date programme was validated	April 2019
Date specification last updated	June 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 (UoSM), 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 syllabus 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 UoSM 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 become a professional engineer who meets 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 CEng (indicated with (b)) learning outcomes.

Knowledge and Understanding

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

	Science and mathematics Mechanical engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). On graduation you will have achieved:		
	BEng and MEng		MEng only
SM1(b)	A comprehensive knowledge and understanding of the scientific principles and methodology necessary to underpin their education in Mechanical Engineering, to enable appreciation of the scientific and engineering context, and to support your understanding of relevant historical, current and future developments and technologies	SM1(m)	A comprehensive knowledge and understanding of scientific principles and methodology necessary to underpin your education in Mechanical Engineering 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.
SM2(m)	Knowledge and understanding of 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 engineering problems		
		SM4(m)	Awareness of developing technologies related to Mechanical Engineering
		SM5(m)	A comprehensive knowledge and understanding of mathematical and computational models relevant to Mechanical Engineering and an appreciation of their limitations
		SM6(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 Mechanical Engineering projects

	Engineering analysis Engineering analysis involves the application of engineering concepts and tools to the solution of Mechanical Engineering problems. On graduation you will have achieved:		
	BEng and MEng		MEng only
EA1(b)	Understanding of engineering principles and the ability to apply them to analyse key engineering processes.	EA1(m)	Understanding of engineering principles and the ability to apply them to undertake critical analysis of key engineering processes
EA4(m)	Understanding of, and the ability to apply, an integrated or systems approach to solving complex engineering problems		

	Design Design at this level is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real and complex Mechanical Engineering problems. On graduation you will have the knowledge, understanding and skills to:		
	BEng and MEng		MEng only
D1(m)	Understand and evaluate business, customer and user needs in Mechanical Engineering design including considerations such as the wider engineering context, public perception and aesthetics		

	Economic, legal, social, ethical and environmental context Engineering activity can have impacts on the environment, on commerce, on society and on individuals. On graduation you will have the skills to manage your activities and to be aware of the various legal and ethical constraints under which you are expected to operate, including:		
	BEng and MEng		MEng only
EL1(b)	Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct	EL1(m)	Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise
EL2(b)	Knowledge and understanding of the commercial, economic and social context of engineering processes	EL2(m)	
EL3(b)	Knowledge and understanding of management techniques, including project management, that may be used to achieve engineering objectives	EL3(m)	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

EL4(m)	Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate		
EL5(b)	Awareness of relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues.	EL5(m)	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
EL6(b)	Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, and of risk assessment and risk management techniques	EL6(m)	Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk
		EL7(m)	Understanding of the key drivers for business success, including innovation, calculated commercial risks and customer satisfaction

	Engineering practice This is the practical application of engineering skills, combining theory and experience, and use of other relevant knowledge and skills. On graduation you will have achieved:		
	BEng and MEng		MEng only
P1(m)	Understanding of contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology, etc)		
P2(b)	Knowledge of characteristics of particular materials relevant to Mechanical Engineering	P2(m)	Knowledge of characteristics of particular equipment, processes or products relevant to Mechanical Engineering, with extensive knowledge and understanding of a wide range of engineering materials and components
P4(m)	Understanding of the use of technical literature and other information sources		
P5(m)	Knowledge of relevant legal and contractual issues		
P6(m)	Understanding of appropriate codes of practice and industry standards		
P7(m)	Awareness of quality issues and their application to continuous improvement		
		P9(m)	A thorough understanding of current Mechanical Engineering practice and its limitations, and some appreciation of likely new developments
P11(b)	Understanding of and ability to work within different roles within an engineering team	P11(m)	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

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.

Skills

	Science and mathematics Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). On graduation you will have achieved:		
	BEng and MEng		MEng only
SM3(b)	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of your own engineering discipline	SM3(m)	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of your own engineering discipline and the ability to evaluate them critically and to apply them effectively

	Engineering analysis Engineering analysis involves the application of engineering concepts and tools to the solution of Mechanical Engineering problems. On graduation you will have achieved:		
	BEng and MEng		MEng only
EA2(m)	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques		
EA3(b)	Ability to apply quantitative and computational methods, in order to solve engineering problems and implement appropriate action	EA3(m)	Ability to apply quantitative and computational methods, using alternative approaches and understanding their limitations, in order to solve engineering problems and implement appropriate action
		EA5(m)	Ability to use fundamental knowledge to investigate new and emerging technologies
		EA6(m)	Ability to extract and evaluate pertinent data and to apply engineering analysis techniques in the solution of unfamiliar problems

	Design Design at this level is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real and complex problems. On graduation you will have the knowledge, understanding and skills to:		
	BEng and MEng		MEng only
D2(m)	Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards		
D3(b)	Work with information that may be incomplete or uncertain, quantify the effect of this on the design	D3(m)	Work with information that may be incomplete or uncertain, quantify the effect of this on the design and,

			where appropriate, use theory or experimental research to mitigate deficiencies
D4(m)	Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal		
D5(m)	Plan and manage the design process, including cost drivers, and evaluate outcomes		
D6(m)	Communicate their work to technical and non-technical audiences		
		D7(m)	Demonstrate wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations
		D8(m)	Demonstrate the ability to generate an innovative design for products, systems, components or processes to fulfil new needs

	Engineering practice This is the practical application of engineering skills, combining theory and experience, and use of other relevant knowledge and skills. On graduation you will have achieved:		
	BEng and MEng		MEng only
P3(m)	Ability to apply relevant practical and laboratory skills		
P8(m)	Ability to work with technical uncertainty		
P10(m)			Ability to apply engineering techniques taking account of a range of commercial and industrial constraints

	Additional general skills On graduation you will have developed transferable skills, additional to those set out in the other learning outcomes, that will be of value in a wide range of situations, including the ability to:		
	BEng and MEng		MEng only
G1(m)	Apply your skills in problem solving, communication, working with others, information retrieval, and the effective use of general IT facilities		
G2(m)	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD		
G3(b)	plan and carry out a personal programme of work, adjusting where appropriate	G3(m)	Monitor and adjust a personal programme of work on an on-going basis
G4(m)	Exercise initiative and personal responsibility, which may be as a team member or leader.		

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.
- 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.

- 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

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

Assessment methods

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

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

In order to allow students to settle in to a University learning style, Part I is not structured in semesters and the majority of assessment occurs towards the end of the academic year. The teaching in Parts II to IV is generally structured as two semesters with an assessment session at the end of each. You study modules comprising 60 ECTS (120 CATS) in each of Parts I (level 4), II (level 5) and 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.
- Ordinary Degree of BSc Engineering (Ordinary), 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, 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 can choose to be registered on a theme. 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.

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.

Additional Costs

Students are responsible for meeting the cost of essential textbooks, and of producing such essays, assignments, laboratory reports and dissertations as are required to fulfil the academic requirements for each programme of study. Costs that students registered for this programme typically also have to pay for are included in Appendix 4.

Progression Requirements

The programme follows the University's regulations for Progression, Determination and Classification of Results: Undergraduate and Integrated Masters Programmes as set out in the University Calendar <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 Higher Education	at least 60	45

Programme outcomes for different exit points

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
- [Careers and Employability Services](#), 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 Academic 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.
- 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 student evaluation questionnaires for each module of the programme
- acting as a student representative on various committees, e.g. Staff: Student Liaison Committees, Faculty Programmes Committee OR providing comments to your student representative to feed back on your behalf.
- serving as a student representative on Scrutiny Groups for programme validation
- taking part in programme validation meetings by joining a panel of students to meet with the Scrutiny Group

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

- regular module and programme reports which are monitored by the Faculty
- programme validation, normally every five years.
- external examiners, who produce an annual report
- professional body accreditation/inspection
- the national Research Excellence Framework (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, and School boards, convening at the end of each academic year, which consider the outcomes of each module's evaluation.
- moderation of examination papers, coursework and projects, both internally and externally.
- 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 2018/19 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)

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 SESM6XXD	FEA in Solid Mechanics	7.5/15	III or IV*	1	6/7*
SESG3024 SESM6XXC	Manufacturing and Materials	7.5/15	III or IV*	1	6/7*
SESM3029 SESM6XXB	Engineering Design with Management	7.5/15	III or IV*	2	6/7*
SESM3032 SESM6XXA	Heat Transfer and Applications	7.5/15	III or IV*	2	6/7*
FEEG6013	Group Design Project	22.5/45	IV	Full year	7
SESM6XXX	Materials, Manufacturing and Supply Chains	7.5/15	IV	2	7

*Part IV option only available to semester abroad or semester in industry 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
Advanced Materials	Mechatronics
Naval Engineering	Study Abroad (including ESTACA, Linköping) (not applicable to USMC students)
Sustainable Energy Systems	Semester in Industry

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>.

Advanced 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 (Linköping, 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>.

Semester in Industry

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
SESM3XXX	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
SESM3XXX	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
SESM3XXX	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
SESG3019	Teaching and Communications University Ambassador Scheme	7.5/15	O	1	6

total: 15/30

MEng Mechanical Engineering with 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
SESM3XXX	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
SESM6XXX	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
ISVR6XXX	Analytical and Numerical methods for acoustics	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
FEEG6004	Aeroacoustics	7.5/15	O	2	7
FEEG6011	Architectural and Building Acoustics	7.5/15	O	2	7
ISVR6146	Vibration Engineering Practice	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 with 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
SESA3033	Wing Aerodynamics	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 1)

Module Code	Module Name	Credit Points (ECTS/CATS)	Choice Type	Semester	Level
SESA3029	Aerothermodynamics	7.5/15	O	1	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
SESM3XXX	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
SESM6XXX	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 with Automotive

Part III Core/Compulsory Modules

Module Code	Module Name	Credit Points (ECTS/CATS)	Choice Type	Semester	Level
SES3MXXX	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
SESM3XXX	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
SESM6XXX	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
FEEG6XXX	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 with 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
SESM6XXX	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 with 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
SESM3XXX	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
SESM6XXX	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	Failure of materials and components	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 with 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
FEEG3004	Human Factors in Engineering	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
SESM6XXX	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 with Advanced 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
SESM3XXX	Materials in Transport	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
SESM6XXX	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
SESM3XXX	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
SESM3XXX	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
SESM3XXX	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
SESG3019	Teaching and Communications University Ambassador Scheme	7.5/15	O	1	6

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
SESM6XXX	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

total: 30/60

MEng Mechanical Engineering with 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
SESM3XXX	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
SESM6XXX	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 with 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
SESM6XXX	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 with Semester in Industry (not applicable to USMC students)

Part III Core/Compulsory Modules

Module Code	Module Name	Credit Points (ECTS/CATS)	Choice Type	Semester	Level
SESG3024	Manufacturing and Materials (distance learning)	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
SESM3034	Semester in Industry Project with Reflective Engineer	22.5/45	Core	1	6

total: 45/90

Part III Optional Modules: 2 choices

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
SESM3XXX	Automotive Mechatronics	7.5/15	O	2	6
MATH3082	Optimisation	7.5/15	O	2	6
SESM3XXX	Sustainable Energy & Power Generation	7.5/15	O	2	6

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
SESM6XXX	Materials, Manufacturing and Supply Chains	7.5/15	C	2	7
FEEG6XXX	FEA in Solid Mechanics	7.5/15	C	1	7

total: 37.5/75

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 with 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
SESM6XXX	Materials, Manufacturing and Supply Chains	7.5/15	C	2	7
SESM6XXC	Manufacturing and Materials	7.5/15	C	1	7
FEEG6XXD	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 with 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
SESM6XXA	Heat Transfer and Applications	7.5/15	C	2	7
SESM6XXX	Materials, Manufacturing and Supply Chains	7.5/15	C	2	7
SESM6XXB	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 with 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
SESM3XXX	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
SESM6XXX	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

In order to pass Part I and progress to Part II you will need to pass all of the following summative assessments:

- A **technical essay**
- A **lab report** based on one of the lab classes you take as part of your modules.
- A **Summative Design Assessment** that you will undertake as part of your Design module.
- A **Mathematics Exam** on the material you study in MATH1054.
- A **Discipline-Specific Assessment** of the content of your discipline-specific module. This will be set towards the end of semester 2 and may take the form of an exam or a piece of coursework.
- A **Multiple Choice Exam** to test your knowledge of engineering fundamentals from FEEG1002 Mechanics Structures & Materials (Statics 1, Statics 2 and Materials), and FEEG1003 Thermofluids.
- A **Long Answer Exam** to test your ability to solve problems using the concepts from FEEG1002 (Statics 1, Dynamics), FEEG1003 and FEEG1004

The regulations relating to failure in these assessments may be found in [Section VI of the University Calendar](#)

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		<p>Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source.</p> <p>Some modules suggest reading texts as optional background reading. The library may hold copies of such texts, or alternatively you may wish to purchase your own copies. Although not essential reading, you may benefit from the additional reading materials for the module.</p>
Equipment and Materials 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-		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.

Main Item	Sub-section	PROGRAMME SPECIFIC COSTS
copying Costs		<p>Students are expected to cover the costs associated with the printing of 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.</p> <p>A list of the University printing costs can be found here: https://www.southampton.ac.uk/isolutions/students/printing-for-students.page</p>
Optional Visits (e.g. museums, galleries)		<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>
Travel and Subsistence		<p>For additional costs related to travel and subsistence for the Industrial Placement Year, please refer to the module profile for FEEG 3009</p>

