UNIVERSITY OF Southampton

Programme Specification

MSc in Advanced Mechanical Engineering Science 2019/20

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

Awarding Institution	University of Southampton
Teaching Institution	University of Southampton
Mode of study	Full time
Duration in years	1 year
Accreditation details	Institution of Mechanical Engineers (IMechE)
Final award	Master of Science
Name of award	Computational Engineering and Design/Advanced Mechanical Engineering Science Engineering Materials/Advanced Mechanical Engineering Science Mechatronics /Advanced Mechanical Engineering Science Propulsion and Engine Systems Engineering/Advanced Mechanical Engineering Science
Interim Exit awards	Post Graduate Certificate Post Graduate Diploma
FHEQ level of final award	Level 7
UCAS code	N/A
QAA Subject Benchmark or other external reference	QAA Subject Benchmark for Engineering studied at Master's Level IMechE Accreditation Criteria
Programme Lead	Professor John Atkinson
Date specification was written	September 2014
Date Programme was validated	April 2019
Date specification last updated	April 2019

Programme Overview

Brief outline of the programme

The programme provides an academically challenging exposure to modern issues in Advanced Mechanical Engineering Science (AMES). It is suitable for engineering, mathematics or physical sciences graduates who wish to specialise in advanced mechanical engineering science or to support continued professional development. It offers a sound understanding of the relevant fundamental science, methods, analysis and engineering applications.

Your contact hours will vary depending on your module/option choices. Full information about contact hours is provided in individual module profiles

Learning and teaching

The different subject matter of the modules lends itself to different teaching and learning techniques but these include lectures, tutorials, individual and group planning exercises and practical exercises. You are encouraged throughout to contribute your own professional experiences and thoughts to the learning of the whole class through a free exchange of ideas. One-to-one tutorials are arranged to compensate for individual learning differences, when required.

Many modules include assessed coursework assignments which require you to carry out a substantial study of selected topics, either as individuals or in groups, leading to considerable depth of understanding and specialist knowledge. Assessment is designed to show that you can rationally use taught material and have a fundamental understanding of the subject matter. Feedback on progress is given to students on all submitted work.

Assessment

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

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

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.

Educational Aims of the Programme

The Mechanical Engineering Programme within the Faculty of Engineering and Physical Sciences hosts a spectrum of exciting and challenging programmes at undergraduate and postgraduate levels. Within this particular programme of study, we aim to develop and enhance your knowledge of, and enthusiasm for Advanced Mechanical Engineering Science which can be taken in a number of themes (currently, Mechatronics, Engineering Materials, Computational Engineering Design, and Propulsion and Engine Systems Engineering).

This programme aims to provide science and engineering graduates from diverse backgrounds with an academically challenging exposure to current Advanced Mechanical Engineering Science.

The aims of the programme are to:

- Enable you to acquire advanced knowledge and practical skills needed for a professional career in your chosen specialist theme and to provide you with specialist knowledge and skills relevant to that theme
- Provide you with a sound understanding of the fundamental principles, operation requirements, design criteria and engineering applications in advanced mechanical engineering science
- Enhance your transferable skills, including critical analysis, problem solving, project management, decision making, leadership, and communication by oral, visual and/or written means
- Equip you with specialist knowledge, scientific and technical expertise and research skills for further research in Advanced Mechanical Engineering Science.

Programme Learning Outcomes

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

Codes in the right hand column below indicate the related Engineering Accreditation Board learning outcome.

Knowledge and Understanding

Having successfully completed this programme you will be able to demonstrate

• comprehensive understanding of the relevant scientific principles of advanced mechanical engineering science relevant to your chosen theme	SM1M
• critical awareness of current problems and/or new insights most of which is at, or informed by, the forefront of mechanical engineering science chosen theme	SM4M
• understanding of concepts relevant to your theme of advanced mechanical engineering science, some from outside engineering, and the ability to evaluate them critically and to apply them effectively, including in engineering projects	SM6M
• awareness of the need for a high level of professional and ethical conduct in engineering	EL1M
• awareness that engineers need to take account of the commercial and social contexts in which they operate	EL2M
• knowledge and understanding of management and business practices, their limitations, and how these may be applied in the context of advanced mechanical engineering science	EL3M
• awareness that engineering activities should promote sustainable development and ability to apply quantitative techniques where appropriate	EL4M
• awareness of relevant regulatory requirements governing engineering activities in the context of your theme of advanced mechanical engineering science	EL5M
• awareness of and ability to make general evaluations of risk issues in the context of your theme of advanced mechanical engineering science, including health & safety, environmental and commercial risk	EL6M

- advanced level knowledge and understanding of a wide range of engineering materials and components P2M
- a thorough understanding of current advanced mechanical engineering science, practice and its limitations, and some appreciation of likely new developments relevant to your theme P9M
- 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

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 demonstrate:
- ability both to apply appropriate engineering analysis methods for solving complex problems in engineering and to assess their limitations EA3M
- ability to use fundamental knowledge to investigate new and emerging technologies EA5M
- ability to collect and analyse research data and to use appropriate engineering analysis tools in tackling unfamiliar problems, such as those with uncertain or incomplete data or specifications, by the appropriate innovation, use or adaptation of engineering analytical methods. EA6M

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. 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, information retrieval, working with others, and the effective use of general IT facilities G1M
- plan self-learning and improve your performance, as the foundation for lifelong learning/CPD G2M
- 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. G4M

Teaching and Learning Methods
The development of transferable skills is embedded in the learning and teaching activities throughout the course: the specific modules, coursework and presentations, individual research project, group projects and laboratory sessions.

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 engineering techniques taking account of a range of commercial and industrial constraints. P10M

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 (optional)
Having successfully completed this programme you will be able to:

- demonstrate knowledge, understanding and skills to 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 D3M
- demonstrate knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations D7M
- demonstrate ability to generate an innovative design for products, systems, components or processes to fulfil new needs. D8M

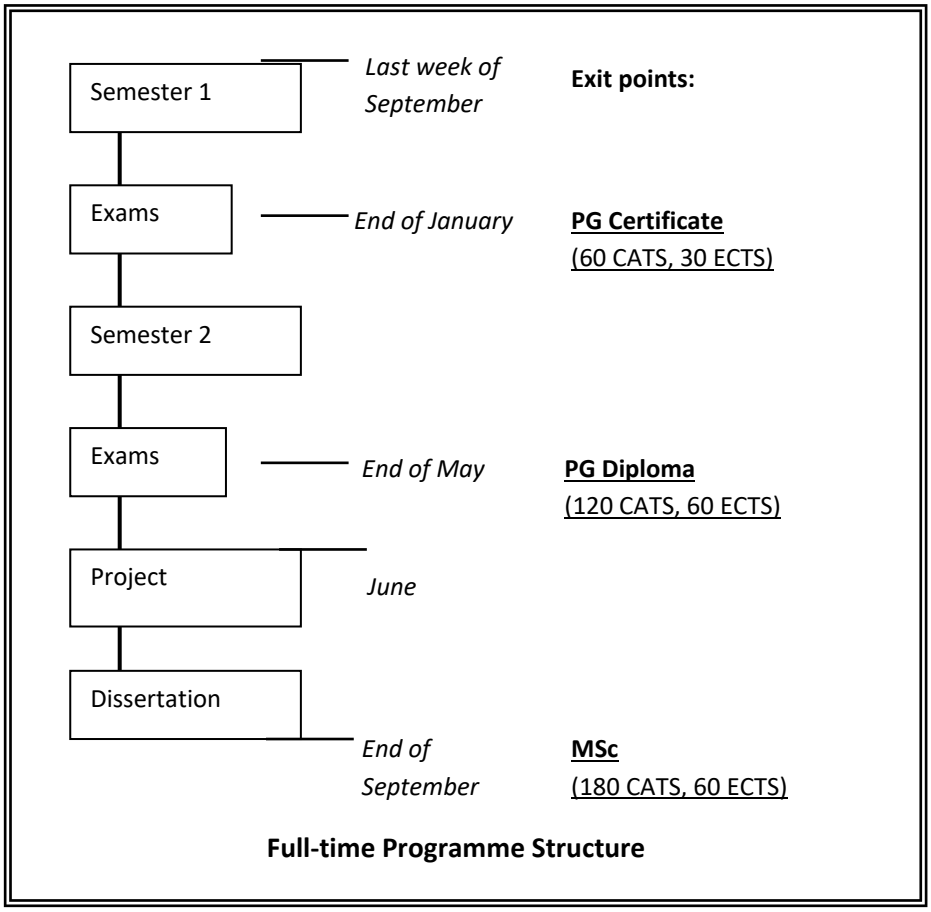
Teaching and Learning Methods
Design skills are developed throughout the programme by a range of design activities involving both individual and group project work, and problem based learning.

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

Programme Structure
The full-time MSc programme lasts for 12 months. The first 8 months are spent mainly on the taught component, with lectures divided into two 12-week periods (Semesters 1 and 2), with exams at the end of each semester. The final four months are spent full-time on a research project, for which a considerable amount of preparation is undertaken in Semester 2. A strict timetable of milestones for the starting in

Semester 2 ensures maximum time is devoted to the project as the manufacture, integration and testing of physical artefacts is involved.

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



Full-time Programme Structure

The taught component of each Theme consists of four compulsory modules (five for the MSc Engineering Materials) plus option modules chosen to total 60 ECTS/120 CATS, at least 45 ECTS/90 CATS of which must be at level 7 (level M). The research project and dissertation are equivalent to 30 ECTS/60 CATS at level 7 (level M).

You will select all your option taught modules at the start of the programme and to achieve a balance in study commitments throughout the year it is recommended you take either four or five modules in semester 1.

The most up to date description of the content is in the on-line programme catalogue: https://studentrecords.soton.ac.uk.

The 'online programme catalogue' allows viewing of full content for each theme for each year and contains hyperlinks to online module specifications. 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/what_we_do/mechanical_engineering.page?#education

The programme structure tables below reflects the taught modules offered in 2019-20, and is subject to minor alteration from year to year. 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.

MSc Computational Engineering and Design

Core Modules

FEEG6012	MSc Research Project	30/60	7	1&2

Compulsory modules: 30 ECTS (60 CATS)		ECTS/CATS	Level	Sem.
FEEG6002	Advanced Computational Methods I	7.5/15	7	1
FEEG6009	Design Search and Optimisation	7.5/15	7	2
MATH6141	Numerical Methods	7.5/15	7	1
SESM6039	Introduction to Advanced Mechanical Engineering Sciences	7.5/15	7	1
Option modules: choose 30 ECTS (60 CATS) (maximum 30 CATS at level 6)				
FEEG3001	Finite Element Analysis in Solid Mechanics	7.5/15	6	1
FEEG6005	Applications of CFD	7.5/15	7	1
FEEG6010	Advanced Finite Element Analysis	7.5/15	7	2
MANG6318	Advanced Management	7.5/15	7	2
MATH3083	Advanced Partial Differential Equations	7.5/15	6	1
SESA3026	Aircraft Structural Design	7.5/15	6	2
SESA6077	Aeroelasticity	7.5/15	7	1
SESM3029	Engineering Design with Management	7.5/15	6	2
SESM6038	Computational Methods in Biomedical Engineering Design	7.5/15	7	2

MSc Engineering Materials

Core Modules

FEEG6012	MSc Research Project	30/60	7	1&2

Compulsory modules: 37.5 ECTS (75 CATS)		ECTS/CATS	Level	Sem.
SESG6034	Surface Engineering	7.5/15	7	1
SESG6040	Failure of Materials and Components	7.5/15	7	2
SESG6042	Microstructural Engineering for Transport Applications	7.5/15	7	1
SESG6044	Microstructural and Surface Characterisation	7.5/15	7	1&2
SESM6039	Introduction to Advanced Mechanical Engineering Sciences	7.5/15	7	1
Option modules: choose 22.5 ECTS (45 CATS) (maximum 15 ECTS (30 CATS) from level 6 modules)				
FEEG3001	Finite Element Analysis in Solid Mechanics	7.5/15	6	1
FEEG6007	Fuel Cells, batteries and photovoltaic systems I	7.5/15	7	1
FEEG6008	Fuel Cells, batteries and photovoltaic systems II	7.5/15	7	2
MANG6318	Advanced Management	7.5/15	7	2
SESA3026	Aircraft Structural Design	7.5/15	6	2
SESA6075	Aircraft Propulsion	7.5/15	7	1
SESG3024	Manufacturing and Materials	7.5/15	6	1
SESG6039	Composites Engineering Design and Mechanics	7.5/15	7	1
SESG6045	Experimental Mechanics	7.5/15	7	2
SESM3028	Biomaterials	7.5/15	6	2

SESM6034	Advanced Electrical Systems	7.5/15	7	1
SESM6035	Bio, Nano and Modelling Aspects of Tribology	7.5/15	7	2

MSc Mechatronics

Core Modules

FEEG6012	MSc Research Project	30/60	7	1&2

Compulsory modules: 37.5 ECTS (75 CATS)		ECTS/CATS	Level	Sem.
SESG6036	Advanced Control Design	7.5/15	7	2
SESM3030	Control and Instrumentation	7.5/15	6	1
SESM6034	Advanced Electrical Systems	7.5/15	7	1
SESM6039	Introduction to Advanced Mechanical Engineering Sciences	7.5/15	7	1
Option modules: choose 22.5 ECTS (60 CATS) (maximum 7.5 ECTS (15 CATS) at level 6)				
ELEC3201	Robotic Systems	7.5/15	6	1
FEEG3001	Finite Element Analysis in Solid Mechanics	7.5/15	6	1
FEEG6002	Advanced Computational Methods I	7.5/15	7	1
FEEG6007	Fuel Cells and Photovoltaic Systems I	7.5/15	7	1
FEEG6008	Fuel Cells and Photovoltaic Systems II	7.5/15	7	2
MANG6318	Advanced Management	7.5/15	7	2
MATH6141	Numerical Methods	7.5/15	7	1
SESM3029	Engineering Design with Management	7.5/15	6	2
SESM6037	Automotive Propulsion	7.5/15	7	2
CENV6016	Transport Economics	7.5/15	7	2
SESG6035	Advanced Sensors and Condition Monitoring	7.5/15	7	1
SESM6035	Bio, Nano and Modelling Aspects of Tribology	7.5/15	7	2

MSc Propulsion and Engine Systems Engineering

Core Modules

FEEG6012	MSc Research Project	30/60	7	1&2

Compulsory modules: 30 ECTS (60 CATS)		ECTS/CATS	Level	Sem.
SESA6075	Aircraft Propulsion	7.5/15	7	1
SESM6034	Advanced Electrical Systems	7.5/15	7	2
SESM6037	Automotive Propulsion	7.5/15	7	2
SESM6039	Introduction to Advanced Mechanical Engineering Sciences	7.5/15	7	1
Option modules: choose 30 ECTS (60 CATS) (max 15 ECTS (30 CATS) at level 6)				
CENV6016	Transport Economics	7.5/15	7	2
FEEG6005	Applications of CFD	7.5/15	7	1
FEEG6007	Fuel Cells and Photovoltaic Systems I	7.5/15	7	1
ISVR6136	Fundamentals of Acoustics	7.5/15	7	1
MANG6318	Advanced Management	7.5/15	7	2
SESA6071	Spacecraft Propulsion	7.5/15	7	1
SESG6035	Advanced Sensors and Condition Monitoring	7.5/15	7	1
SESG6040	Failure of Materials and Components	7.5/15	7	2
SESG6042	Microstructural Engineering Transport Applications	7.5/15	7	1
SESG6044	Microstructure and Surface Characterisation	7.5/15	7	1&2
SESM3029	Engineering Design with Management	7.5/15	6	2
SESM6033	Tribological Engineering and Engine Tribology	7.5/15	7	1

SESM6040	Thermo-fluid Engineering for Low-Carbon Energy	7.5/15	7	1

Note: It is possible that module prerequisites may be omitted at the discretion of the module lecturer depending on previous experience.

Typical course content

The programme involves 90 ECTS/180 CATS credit points distributed between taught and research components. The taught component consists of modules worth 60 ECTS/120 CATS, of which at least 45 ECTS/90 CATS are at level 7. You will take the compulsory modules and select the remaining from a given list. The list is specific to your chosen specialisation within the themes as shown above. Any of these taught modules can form part of a Postgraduate Certificate. In addition to the taught modules, the MSc also requires completion of a research project worth 30 ECTS/60 CATS. To achieve a Postgraduate Diploma 60 ECTS/120 CATS need to be completed and passed.

Progression Requirements

The programme follows the University's regulations for Progression, Determination and Classification of Results : Undergraduate and Integrated Masters Programmes and Progression, Determination and Classification of Results: Standalone Masters Programmes as set out in the University Calendar.

Intermediate exit points (where available)

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

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

Support for 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:

- Induction programme for orientation, introduction of the programme and staff, and dissemination of materials.
- Student Coursebook, including guidance on selection of study programmes.
- Administrative and academic material on the Faculty, Programme and individual module web sites and/or Blackboard.
- A personal tutor to assist with organisational and personal matters. This role is taken over by the project supervisor when the research project starts.
- Careers advice and dissemination of available job advertisements.
- Personal e-mail account and e-mail access to staff via University system.
- School clusters of computers with relevant specialist software.
- Formal progress monitoring during research project.
- Support for international students.

Methods for evaluating the quality of teaching and learning

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

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

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

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

Each of the modules that make up the programme will be taught at the University of Southampton. The academic coordinator of the module is responsible for ensuring appropriate content of modules and quality of delivery.

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

Career Opportunities

AMES 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. CV writing, interview and technical assessment centre workshops all help students demonstrate their skills in pursuing employment prospects.

External Examiner(s) for the programme

Name Professor Stephen Eichhorn
Institution. University of Bristol

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

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

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

Appendix 1:

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 stationary items, e.g. pens, pencils, notebooks, etc). · The third year module FEEG3003 Individual Project requires you to print an Al 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	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	Fieldcourse clothing:	You will need to wear suitable clothing when attending fieldcourses, e.g. waterproofs, walking boots. You can purchase these from any source.
Printing and Photocopying Costs		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 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 Al 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.
Optional Visits		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