

# Programme Specification

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## MEng (Hons), BEng (Hons) Ship Science 2018/19

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

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|---------------------------|--|
| Awarding Institution      | University of Southampton  |
| Teaching Institution      | University of Southampton  |
| Mode of study             | Full time  |
| Duration                  | 5 years (MEng with Industrial Placement Year), 4 years (MEng), 3 years (BEng)  |
| Accreditation details     | <p>The Royal Institution of Naval Architects<br/>The Institute of Marine Engineering, Science and Technology<br/>Institution of Mechanical Engineers</p> <p>MEng accredited for registration as a Chartered Engineer for graduates with a 2.2 and above<br/>BEng (Honours) accredited for registration as a Chartered Engineer subject to the completion of approved additional learning</p>   |
| Final award               | <p>Bachelor of Engineering (with Honours)<br/>Bachelor of Engineering with Industrial Placement Year (with Honours)<br/>Master of Engineering</p>  |
| Name of award             | <p>Ship Science<br/>Ship Science/Naval Architecture<br/>Ship Science/Yacht and Small Craft<br/>Ship Science/Semester Abroad<br/>Ship Science/Advanced Materials<br/>Ship Science/Engineering Management<br/>Ship Science/Naval Engineering<br/>Ship Science/Offshore Engineering</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       | <p>Certificate of Higher Education<br/>Diploma of Higher Education<br/>Bachelor of Science (Ordinary)</p>  |
| FHEQ level of final award | Level 7 (MEng), Level 6 (BEng)   |
| UCAS code                 | <p>J640, BEng Ship Science<br/>J60P, BEng Ship Science with Industrial Placement Year (2018/19)</p>  |

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|---|---|
| UCAS code   | J641, MEng Ship Science<br>J642, MEng Ship Science/Naval Architecture<br>J643, MEng Ship Science/Yacht and Small Craft<br>J644, MEng Ship Science/Advanced Materials<br>JN62, MEng Ship Science/Engineering Management<br>H500 MEng Ship Science/Naval Engineering<br>4S68 MEng Ship Science/Offshore Engineering<br><br>H52H, MEng Ship Science with Industrial Placement Year<br>HH55, MEng Ship Science/Naval Architecture with Industrial Placement Year<br>H5H2, MEng Ship Science/Yacht and Small Craft with Industrial Placement Year<br>H5J5, MEng Ship Science/Advanced Materials with Industrial Placement Year<br>H55J, MEng Ship Science/Engineering Management with Industrial Placement Year<br>HJ55 MEng Ship Science/Naval Engineering with Industrial Placement Year<br>H5H3 MEng Ship Science/Offshore Engineering with Industrial Placement Year |
| QAA Subject Benchmark or other external reference | Engineering, Engineering Council, UK-SPEC   |
| Programme Lead                                    | Mrs G A Keane   |
| Director of Programme                             | Dr S W Boyd   |
| Date specification was written                    | March 2003 (P. Temarel)<br>Amended January 2016 to include Industrial Placement Year for MEng (A Barney/H Glasspool)  |
| Date programme was validated                      | July 2014   |
| Date specification last updated                   | April 2018  |

## Programme Overview

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### Brief outline of the programme

The Ship Science programme provides a flexible structure that allows you to choose a specialist theme yet at the same time providing a common framework that ensures that all aspects of core Naval Architecture and Marine Engineering are covered. The programme is aimed to provide you with the necessary academic background for a career that covers the design, construction, maintenance and operation of marine vessels and structures. The first two years provide the fundamentals in basic engineering and Ship Science as well as the skills and understanding necessary for using information technology in an engineering context. There is an increasing emphasis on discipline specific subjects as progress is made through the programme. Wherever possible in Parts I and II attention will be drawn to the application of the common framework as it relates for instance to yachts, powercraft, deep ocean structures, naval vessels and so forth. Maritime design related work permeates the programme and ensures that you can apply your theoretical understanding to real design problems.

### Learning and teaching

Intellectual skills are developed through the teaching and learning activities. Analysis and problem

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

### Assessment

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

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

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

## Educational Aims of the Programme

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The aims of the programme are to:

(Blue only = both BEng & MEng; Green only = MEng only orange = Industrial Placement Year for BEng and MEng)

- Provide you, in Parts I and II, with a sound understanding of the fundamental principles, methods, analysis and synthesis in engineering design and applications appropriate to the discipline of Ship Science.
- 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 IV 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 so that you are able to become a professional engineer meeting many of the requirements of the Engineering Council (i.e. UK-SPEC), and to have a broad range of knowledge and skills (including I.T. and communication skills) capable of meeting the present and future demands of the mechanical engineering profession.
- Train you so that you are able to become a professional engineer meeting the requirements of the Engineering Council (i.e. UK-SPEC), and to have a broad range of knowledge and skills (including I.T. and communication skills) capable of meeting the present and future demands of the mechanical engineering profession.
- 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 individual projects and assignments which are supported by the research activities within the Faculty and stimulate individual innovation and self-assessment required in engineering design.  
Offer you a range of individual and group projects and assignments which are supported by the research activities within the Faculty and stimulate 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 and gain experience of working within an engineering based organisation

## Programme Learning Outcomes

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

### Knowledge and Understanding

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

(Blue only = both BEng & MEng; Green only = MEng only)

1. Mathematics and science that are relevant to Ship Science.
2. The fundamental concepts, principles and theories of Engineering and Ship Science.  
The fundamental concepts, principles and theories of Engineering and Ship Science and an appreciation of their limitations
3. The essential facts, concepts and principles relevant to Ship Science  
Detailed knowledge of the essential facts, concepts and principles relevant to Ship Science and your chosen area of specialisation.
4. The principles of engineering design and construction and their application to conceptual and detailed design.
5. Information and communication technology relevant to the practice of Ship Science.
6. Management and business practices that are relevant to engineering and Ship Science.  
Advanced management and business practices that are relevant to engineering and Ship Science
7. Health and safety issues, risk assessment and regulatory frameworks.
8. The social and professional responsibilities of Ship Scientists.
9. Environmental issues and the importance of Ship Science to the quality of the environment
10. The role of the engineer in society and the constraints within which their engineering judgment will be exercised.
11. Material relevant to your specialist theme at an advanced level

### Teaching and Learning Methods

- Acquisition of 1 is through a combination of lectures, tutorials (small group teaching), example classes, laboratory experiments, coursework and project work.
- Acquisition of 2 - 5 is through a combination of lectures, tutorials, laboratory experiments, coursework and individual and group projects.
- Acquisition of 6 and 7 is through a combination of formal and special lectures, laboratory work, coursework and projects throughout the programme.
- Acquisition of 6 is further enhanced when you opt for the Engineering Management theme.
- Acquisition of 8 & 11 (MEng only) is through formal and special lectures, coursework, and projects throughout the programme. 11 (MEng only) is particularly enhanced in the final year of study.
- Acquisition of 9, 10 & 11 (MEng only) is built into all the modules and where appropriate will be discussed in lectures and included in coursework and examinations.
- Throughout the course you are encouraged to use additional recommended reading material for private study to consolidate the formal learning process, and to broaden and deepen your understanding. You are encouraged to become student members of the professional institutions, to use their libraries and resources, and attend meetings.

### Assessment methods

Testing of the knowledge base and understanding is through a combination of unseen written examinations (1-4, 9-11) and assessed coursework in the form of problem solving exercises (1-6),

laboratory reports (2-4), design exercises (4, 6-11), essays (6-10) and individual and group projects (2-10 and 2-11).

## **Subject Specific Intellectual and Research Skills**

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Having successfully completed this programme you will be able to:

(Blue only = both BEng & MEng; Green only = MEng only)

1. Plan, conduct and report on an individual research programme.
2. Analyse and solve engineering problems, using appropriate mathematical and software methods as necessary.  
Analyse and solve complex engineering problems, using appropriate mathematical and software methods as necessary, demonstrating the ability to define the limitations of your chosen methods
3. Be creative in the solution of problems and in design development.  
Be creative in the solution of problems, in design development showing significant originality
4. Design engineering elements and systems to meet a need, evaluate outcomes and make improvements.  
Design engineering elements and integrated systems to meet a need, evaluate outcomes critically and comprehensively & make improvements.
5. Integrate and evaluate information and data from a variety of sources.  
Integrate and evaluate complex information and data from a wide variety of sources.
6. Take a structured approach to solving problems and designing systems, applying professional judgement to balance risks, cost, benefits, safety, reliability, aesthetics and environmental impact.  
Take a holistic approach to solving problems and designing systems, applying professional judgement to balance risks, cost, benefits, safety, reliability, aesthetics and environmental impact.

## **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, in particular skill 6, 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.

## **Transferable and Generic Skills**

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Having successfully completed this programme you will be able to:

(Blue only = both BEng & MEng; Green only = MEng only)

1. Communicate effectively – in writing, verbally and through drawings
2. Apply mathematical skills – algebra, geometry, modelling and analysis  
Apply a wide range of mathematical skills – algebra, geometry, advanced modelling and analysis.
3. Learn independently in familiar and unfamiliar situations with open-mindedness and self-reflection  
Learn independently in familiar and unfamiliar situations with open-mindedness and in a spirit of critical enquiry.
4. Work constructively as a member of a team.  
Work constructively as a member of a team able to take a variety of roles.
5. Manage time and resources..
6. Use Information and Communications Technology.
7. Use the library, internet and other sources effectively.  
Use the library, internet and other sources effectively and critically
8. Manage tasks and solve problems, transfer techniques and solutions from one area to another, apply judgement.  
Manage tasks and solve novel problems, transfer techniques and solutions from one area to another, apply critical analysis and judgement.
9. Learn effectively for the purpose of continuing professional development and in a wider context throughout their career
10. Communicate in a foreign language when you select a language option  
Communicate in a foreign language when you select a language option or study abroad.

### **Teaching and Learning Methods**

- Transferable skills are developed through the teaching and learning activities.
- Skill 1 is acquired and developed throughout the programme with technical reports (e.g. assignments, laboratory and project reports) and presentations.
- Skill 2 is taught formally in Parts I and II and developed throughout the course.
- Skill 3 is developed through coursework assignments and project work.
- Skill 4 is developed through group laboratory experiments and group project work.
- Skill 5 is developed through the setting and strict enforcement of coursework deadlines.
- Skill 6 is developed through computing modules, laboratory experiments, project work, presentations, other coursework activities and individual learning.
- Skill 7 is enhanced through the information retrieval exercise in Part I and developed through essays, individual projects and group projects.
- Skill 8 is developed in the technical subject areas of the course.
- Skill 10 is cultivated when you opt for a language option or studying abroad for one semester, normally in Part III.
- Although not explicitly taught, skills 3 and 9, as well as all other skills are nurtured and developed throughout the programme, which is structured and delivered in such a way as to promote them.

### **Assessment methods**

- Skill 1 is assessed through coursework and laboratory technical reports and project presentations.
- Skill 2 is assessed through unseen written examinations and coursework.
- Skills 3 and 4 are assessed in coursework, individual projects and group projects.
- Skill 5 is assessed by applying penalties for failure to meet deadlines.
- Skill 6 is assessed formally in relevant Part I and Part II modules and further assessed throughout the course where ICT is used.
- Skills 7 and 8 are assessed through unseen written examinations, coursework exercises and assignments, design work and individual and group project work.
- Skill 9 is essential for success on the course and future professional development but it is not formally assessed.
- Skill 10 is assessed through coursework and written examinations as part of the specialist language modules.

## Subject Specific Practical Skills

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Having successfully completed this programme you will be able to:

(Blue only = both BEng & MEng; Green only = MEng only)

1. Carry out safely a series of planned experiments
2. Use laboratory equipment to generate data
3. Analyse experimental results and assess their validity.  
Analyse complex experimental results and assess their validity and applicability.
4. Prepare technical drawings including the use of CAD and freehand sketching.
5. Prepare technical reports individually and by contributing as part of a group
6. Give technical presentations using a variety of media.  
Use computer packages and write computer programs  
Use computer packages and write computer programs showing awareness of the limitations of such numerical methods engineering applications.
7. Make effective use of scientific literature from various sources

## Teaching and Learning Methods

- Practical skills are developed through the teaching and learning programme.
- Experimental skills are developed through laboratory experiments and project work, if relevant.
- Workshop skills are developed through the workshop practice in Part I.
- Skill 4 is taught in the Design and Computing module in Part I and further developed through design coursework exercises, particularly in Ship Design and Economics or Ship System design and Computing in Part II.
- Skills 5 and 6 are acquired through guidelines set out in relevant coursebooks and reports and project presentations throughout the course.
- Skill 7 is taught in relevant modules in Parts I and II and further developed through coursework exercises and project work.
- Skill 8 is acquired through essays at Part I, an information retrieval exercise in Part II and in preparation for project work.

## Assessment Methods

- Practical skills are assessed through laboratory experiment reports, coursework exercises, project reports and presentations.

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## Programme Structure

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### Typical course content

The University uses the European Credit Transfer Scheme (ECTS) to indicate the approximate amount of time a typical student can expect to spend in order to complete successfully a given module or programme. where 1 ECTS indicates around 20 nominal hours of study. Previously, Credit Accumulation and Transfer Scheme (CATS) points were used for this purpose where 1 CATS credit was

10 nominal hours of study. The University credit accumulation and transfer scheme is detailed at <http://www.calendar.soton.ac.uk/sectionIV/cats.html>.

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

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

In addition there are the following exit points:

- Certificate of Higher education, following successful completion of Part I.
- Diploma of Higher education, following successful completion of Part II.
- Bachelor of Science 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.

The duration of all the programmes may be extended by one year through enrolment on the Engineering Foundation Year.

The Programme Structure is outlined in Appendix 2.

## **Special Features of the programme**

At the end of the second year, the students can apply to be enrolled on the 'Semester Abroad' theme which allows them to spend the second semester of their third year at one of our carefully selected partner institutions (e.g. Webb Institute). In most cases these study periods are cost-neutral from the students' point of view, as they form part of exchange agreements. The agreements are based on a close analysis of the syllabi and educational standards of the partner institutions to ensure compatibility of the two courses. Each student receives personalised advice from a member of academic staff on selecting the appropriate set of modules at the foreign institution and their progress is monitored throughout the semester.

## **Programme details**

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 3.



## Progression Requirements

The programme follows the University's regulations for [Progression, Determination and Classification of Results: Undergraduate and Integrated Masters Programmes](http://www.calendar.soton.ac.uk/sectionIV/sectIV-index.html) as set out in the University Calendar <http://www.calendar.soton.ac.uk/sectionIV/sectIV-index.html>

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

## Intermediate exit points

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

| Qualification                  | Minimum overall credit in ECTS credits | Minimum ECTS Credits required at level of award |
|--------------------------------|--|---|
| Bachelor of Science (Ordinary) | at least 150                           | 30  |
| Diploma of Higher Education    | at least 120                           | 45  |
| Certificate of HE              | at least 60                            | 45  |

## Programme outcomes for different exit points

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|-----------------------|--|
| Level 4<br>(Part I)   | You will have a sound knowledge of the basic concepts in Ship Science, 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<br>(Part II)  | You will have developed a sound understanding of the principles involved in a range of core Ship Science 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<br>(Part III) | You will have developed an understanding of a complex body of knowledge relevant to Ship Science, 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<br>(Part IV)  | Much of the study undertaken at Masters level reflects research at the forefront of Ship Science. 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.                               |

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## Support for student learning

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

The University provides:

- library resources, including e-books, on-line journals and databases, which are comprehensive and up-to-date; together with assistance from Library staff to enable you to make the best use of these resources
- high speed access to online electronic learning resources on the Internet from dedicated PC Workstations onsite and from your own devices; laptops, smartphones and tablet PCs via the Eduroam wireless network. There is a wide range of application software available from the Student Public Workstations.
- computer accounts which will connect you to a number of learning technologies for example, the Blackboard virtual learning environment (which facilitates online learning and access to specific learning resources)
- standard ICT tools such as Email, secure filestore and calendars.
- access to key information through the MySouthampton Student Mobile Portal which delivers timetables, Module information, Locations, Tutor details, Library account, bus timetables etc. while you are on the move.
- IT support through a comprehensive website, telephone and online ticketed support and a dedicated helpdesk in the Student Services Centre
- Enabling Services offering assessment and support (including specialist IT support) facilities if you have a disability, dyslexia, mental health issue or specific learning difficulties
- the Student Services Centre (SSC) to assist you with a range of general enquiries including financial matters, accommodation, exams, graduation, student visas, ID cards
- Career Destinations, advising on job search, applications, interviews, paid work, volunteering and internship opportunities and getting the most out of your extra-curricular activities alongside your degree programme when writing your CV
- a range of personal support services : mentoring, counselling, residence support service, chaplaincy, health service
- a Centre for Language Study, providing assistance in the development of English language and study skills for non-native speakers.

The Students' Union provides

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

Associated with your programme you will be able to access:

- Coursebooks for each year of the programme.
- Introductory sessions for all years of the programme.
- Library information retrieval seminar.
- Workshop training.
- Small group tutorials in Part I and Part II of the programmes.
- Student Resources Room (includes small library containing magazines, books, reports etc).
- Student Design Centre equipped with 45 computers.
- Engineering and Ship Science specific software available on all computers.
- Extensive, well equipped Engineering and Ship Science laboratories (e.g. Towing Tank); access to towing tank at Southampton Solent University for relevant project work.
- Advice from engineers in the Wolfson Unit for Marine Technology and Industrial Aerodynamics (WUMTIA) on specialised subject areas (e.g. yacht design and experimentation; software).
- Personal tutors to assist you with personal problems and to advise on academic issues (contact maintained during periods of studying abroad).

- Access to academic staff through an open door policy as well as timetabled tutor meetings and email.
- Research seminars and invited lectures.
- Maritime Society, organised by students on the programme.
- Faculty Student Office for the administration of your programme

## Methods for evaluating the quality of teaching and learning

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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

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

- Subject oriented Teaching Panels, convening at the end of each academic year, which consider the outcomes of each module's evaluation.
- Moderation of examination papers, coursework and projects, both internally and externally.
- Annual examiners' meetings and examiners' boards.
- Annual programme and module reviews considering your feedback from all sources, feedback from teaching panels, external examiners and other bodies and student performance.
- Periodic meetings of the Faculty Industrial Advisory Board
- Response to results from the National Student Survey
- Periodic Programme Review by the University.

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.

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### **University Commitment**

The University will at all times seek to operate admissions regulations that are fair and are in accordance with the law of the United Kingdom, and the University's Charter, Statutes, Ordinances and Regulations.

This includes specific compliance with legislation relating to discrimination (e.g. Equality Act 2010) and the University's Equal Opportunities Policy Statement. This includes a commitment that the University will:

- actively assist groups that experience disadvantage in education and employment to benefit from belonging to the University
- actively seek to widen participation to enable students that do not traditionally participate in Higher Education to do so;
- ensure that admission procedures select students fairly and appropriately according to their academic ability and that the procedure is monitored and regularly reviewed.

### **Entry Requirements**

A typical offer for entry to our BEng and MEng degrees may be found on the University website at [http://www.southampton.ac.uk/engineering/undergraduate/courses/maritime\\_engineering\\_list.page?](http://www.southampton.ac.uk/engineering/undergraduate/courses/maritime_engineering_list.page?)

### ***Equality and diversity***

In accordance with the University's Equality and Diversity Policy, all reasonable effort will be made to ensure that no prospective or existing student is treated less favourably on the grounds of age, race, colour, nationality, ethnic origin, creed, disability, HIV status, sexual orientation, gender, marital or parental/carer status, political belief or social or economic class, or any other type of discrimination.

Disabled applicants will be treated according to the same procedures as any other applicant with the added involvement of Enabling Services to assess their needs. The programme may require adaptation for students with disabilities (e.g. hearing impairment, visual impairment, mobility difficulties, dyslexia), particularly the practical laboratory sessions, and we will attempt to accommodate students wherever possible.

## **Career Opportunities**

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Worldwide the maritime sector is buoyant with many and varied career opportunities in engineering and project management related roles. Ship Science and Maritime Engineering Science graduates are in strong demand which results in high starting salaries and excellent career progression opportunities. Typically these are much higher than other mechanical engineering disciplines. Such strong performance is reflected in our consistently high employment statistics.

In the UK our graduates work across many different organisations. The Solent region around Southampton is the main UK hub for the maritime sector with organisations such as Lloyd's Register, Carnival, BMT Nigel Gee, Maritime and Coastguard agency and many others based nearby. Organisations such as BAE Systems, QinetiQ and Babcock support primarily the defence sector and employ a good number of our graduates. The offshore and marine renewable developments are offering excellent prospects both to work in the UK (locally, London or Aberdeen) or worldwide in places such as Singapore, Houston or Perth, WA. For many years we have excelled in the development of high calibre individuals to work in the yacht and high performance craft sector. Southampton graduates work throughout the ocean racing, America's cup and luxury yacht world. This expertise has also supported other sports with our graduates working with UKSport on projects such as the skeleton 'Arthur' which Amy Williams rode to Gold in the Vancouver Olympic games.

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 Ship Science

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 vacation as well as the ability to take a year in industry opportunity typically in between year 3 and 4 of their undergraduate course. CV writing, interview and technical assessment centre workshops all help students best sell their skills.

## External Examiners(s) for the programme

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**Name** Dr Maurizio Collu

**Institution.**

Cranfield University

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

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**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 at <http://www.southampton.ac.uk/studentservices/academic-life/faculty-handbooks.page>

## Revision History

December 2004 (S. Turnock)

October 2005 (S. Turnock)

September 2006 (J.M. Barton)

September 2007 (J.M. Barton)

April 2008 (J.M. Barton)

February 2012 (A Barney)

July 2012 (B Leigh)

June 2013 (D Hudson)

November 2013(M Tan)\_CQA\_261113

CQA\_130614

1 July 2014 M Tan\_CQA\_150714

February 2015 – M Tan

Update to Programme Overview (CMA Changes) – September 2015

Update to Modules (CQA) December 2015

Addition of Industrial Placement Year and annual textual changes – CQA- August 2016

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

Updated to reflect 2018/19, removal of criteria for admission – CQA April 2018

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

## Appendix 1

### Part 1 Modules Part 1 Modules

| Module   | Title                          |
|----------|--------------------------------|
| FEEG1001 | Design and Computing           |
| FEEG1002 | Mech, Structures & Materials   |
| FEEG1003 | ThermoFluids                   |
| FEEG1004 | Elec and Electronic Syst       |
| SESS1015 | Basic Naval Architecture (tbc) |
| MATH1054 | Math for E and E               |
|          |                                |
|          |                                |

## **Part I Summative Assessment Schedule**

The table below shows the summative assessment structure:

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

## **Appendix 2**

# **MEng (Hons), BEng (Hons) Ship Science**

## **Programme Structure**

The information within this Appendix is liable minor changes from year to year. It is accurate at the time of the most recent update.

### **MEng and BEng Part 1**

The first year provides a background in engineering science, emphasising ship science aspects. We have an award winning induction programme during which teams of new students work together to design and build projects. This exciting introduction provides the opportunity for the new students to get to know fellow students and gain hands-on experience.

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

For Information on summative assessment of Part 1 please see Appendix 1

| Module Code | Module Title                                    | Semester | ECTS (CATS) |
|-------------|---|----------|-------------|
| FEEG1001    | Design and Computing                            | Full     | 15(30)      |
| FEEG1002    | Mechanics, Structures and Materials             | Full     | 15(30)      |
| FEEG1003    | Thermofluids                                    | Full     | 7.5(15)     |
| FEEG1004    | Electrical and Electronic Systems               | Full     | 7.5(15)     |
| MATH1054    | Mathematics for Engineering and the Environment | Full     | 7.5(15)     |
| SESS1015    | Basic Naval Architecture                        | Full     | 7.5(15)     |

## MEng and BEng Part II

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

| Module Code | Module Title                                  | Semester | ECTS (CATS) |
|-------------|---|----------|-------------|
| FEEG2005    | Materials and Structures                      | 2        | 7.5(15)     |
| FEEG2006    | Engineering Management and Law                | Full     | 7.5(15)     |
| MATH2048    | Mathematics for Engineering & the Environment | 1        | 7.5(15)     |
| SESS2015    | Hydrodynamics and Seakeeping                  | Full     | 7.5(15)     |
| SESS2016    | Ship Structural Design and Production         | 2        | 7.5(15)     |
| SESS2017    | Ship Design and Economics                     | 2        | 7.5(15)     |
| SESS2018    | Ship Powering and Control Surfaces            | 1        | 7.5(15)     |
| SESS2019    | Systems Design and Computing for Ships        | 1        | 7.5(15)     |

At the end of Part II students progressing to Part 3 MEng will select themes with distinct programme in Parts 3 and 4 (see subsequent sections). Students progressing to Part 3 BEng will not select themes.

Students selecting the Industrial Placement Year theme will take the placement module FEEG3009 between Parts II and III. 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.

## MEng Parts III and IV Specialist Themes

|                       |                        |
|-----------------------|------------------------|
| Advanced Materials    | Engineering Management |
| Naval Architecture    | Naval Engineering      |
| Offshore Engineering  | Semester Abroad        |
| Yacht and Small Craft |                        |

## BEng Ship Science

Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules (C)

| Module Code | Module Title                 | ECTS (CATS) | Choice Type | Sem |
|-------------|------------------------------|-------------|-------------|-----|
| FEEG3003    | Individual project (core)    | 15(30)      | C           | 1/2 |
| SESS3022    | Ship Manoeuvring and Control | 7.5(15)     | C           | 2   |
| SESS3023    | Marine Hydrodynamics         | 7.5(15)     | C           | 2   |
| SESS3024    | Marine Craft Concept Design  | 7.5(15)     | C           | 1   |
| SESS3025    | Marine Engineering           | 7.5(15)     | C           | 1   |
| SESS3026    | Marine Structures            | 7.5(15)     | C           | 2   |

Option modules (O)

choose one (7.5 ECTS (15 CATS)) from the following:

| Module Code | Module Title                         | ECTS (CATS) | Choice | Sem |
|-------------|--------------------------------------|-------------|--------|-----|
| SESG3024    | Manufacturing and Materials          | 7.5(15)     | O      | 1   |
| SESS3027    | Yacht and High Performance Craft     | 7.5(15)     | O      | 1   |
| MATH3xxx    | Maths option                         | 7.5(15)     | O      |     |
| MANG3049    | Accounting and Finance for Engineers | 7.5(15)     | O      | 2   |



## MEng Ship Science (Inter-Disciplinary)

This interdisciplinary theme is designed to provide broader coverage of fundamental engineering subjects within the context of ship science. So in the final two years there are broader project-based and engineering management-related subjects as well as a language option.

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules (C)

| Module Code | Module Title                 | ECTS (CATS) | Choice Type | Sem |
|-------------|------------------------------|-------------|-------------|-----|
| FEEG3003    | Individual project (core)    | 15(30)      | C           | 1/2 |
| SESS3022    | Ship Manoeuvring and Control | 7.5(15)     | C           | 2   |
| SESS3023    | Marine Hydrodynamics         | 7.5(15)     | C           | 2   |
| SESS3024    | Marine Craft Concept Design  | 7.5(15)     | C           | 1   |
|             |                              |             |             |     |
| SESS3025    | Marine Engineering           | 7.5(15)     | C           | 1   |
| SESS3026    | Marine Structures            | 7.5(15)     | C           | 2   |

Option modules (O) - choose one (7.5 ECTS (15 CATS)) from the following:

| Module Code | Module Title                         | Credit Points | Choice | Sem |
|-------------|--------------------------------------|---------------|--------|-----|
| Module Code | Module Title                         | ECTS (CATS)   | Choice | Sem |
| SESG3024    | Manufacturing and Materials          | 7.5(15)       | O      | 1   |
| SESS3027    | Yacht and High Performance Craft     | 7.5(15)       | O      | 1   |
| MATH3xxx    | Maths option                         | 7.5(15)       | O      |     |
| MANG3049    | Accounting and Finance for Engineers | 7.5(15)       | O      | 2   |

### Part IV Modules at levels 7 (min 60 ECTS (120 CATS)) and 6 (max 15ECTS (30 CATS)) totalling 75 ECTS (150 CATS)

Compulsory modules (C)

| Module Code | Module Title                                | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6009    | Design Search and Optimisation              | 7.5(15)     | C           | 2   |
| FEEG6013    | Group Design Project (core)                 | 22.5(45)    | C           | 1/2 |
| MANG6143    | Project Risk Management                     | 7.5(15)     | C           | 2   |
| SESS6069    | Marine Law and Management                   | 7.5(15)     | C           | 1/2 |
| SESS6068    | Marine Safety and Environmental Engineering | 7.5(15)     | C           | 2   |
|             |   |             |             |     |
|             |   |             |             |     |

Option modules (O)

### Level 6 Inter-Disciplinary Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG3001    | Finite Element Analysis in Solid Mechanics | 7.5(15)     | O           | 1   |
| FEEG3004    | Human Factors in Engineering               | 7.5(15)     | O           | 1   |
| LANGxxxx    | Language option                            | 7.5(15)     | O           |     |
| MATH3xxx    | Maths option                               | 7.5(15)     | O           |     |

**Level 7 Inter-Disciplinary Options**

| Module Code | Module Title                              | ECTS<br>(CATS) | Choice<br>Type | Sem |
|-------------|---|----------------|----------------|-----|
| FEEG6005    | Applications of CFD                       | 7.5(15)        | O              | 1   |
| SESG6040    | Failure of Materials and Components       | 7.5(15)        | O              | 2   |
| SESS6070    | Offshore Engineering and Analysis         | 7.5(15)        | O              | 1   |
|             |   |                |                |     |
|             |   |                |                |     |
| SESS6067    | Renewable Energy from Environmental Flows | 7.5(15)        | O              | 2   |

## Advanced Materials Theme

This theme enables the students to specialise in core naval architecture subject areas in addition to the in-depth study of engineering materials.

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

#### Compulsory modules (C)

| Module Code | Module Title                 | ECTS (CATS) | Choice Type | Sem |
|-------------|------------------------------|-------------|-------------|-----|
| FEEG3003    | Individual Project (core)    | 15(30)      | C           | 1/2 |
| SESG3024    | Manufacturing and Materials  | 7.5(15)     | C           | 1   |
| SESS3022    | Ship Manoeuvring and Control | 7.5(15)     | C           | 2   |
| SESS3023    | Marine Hydrodynamics         | 7.5(15)     | C           | 2   |
| SESS3024    | Marine Craft Concept Design  | 7.5(15)     | C           | 1   |
|             |                              |             |             |     |
| SESS3025    | Marine Engineering           | 7.5(15)     | C           | 1   |
| SESS3026    | Marine Structures            | 7.5(15)     | C           | 2   |
|             |                              |             |             |     |
|             |                              |             |             |     |

### Part IV Modules at levels 7 (min 60 ECTS (120 CATS)) and 6 (max 15 ECTS (30 CATS)) totalling 75 ECTS (150 CATS)

#### Compulsory modules (C)

| Module Code | Module Title   | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG6013    | Group Design Project (core)                            | 22.5(45)    | C           | 1/2 |
| SESG6040    | Failure of Materials and Components                    | 7.5(15)     | C           | 2   |
| SESG6042    | Microstructural Engineering for Transport Applications | 7.5(15)     | C           | 1   |
| SESS6068    | Marine Safety and Environmental Engineering            | 7.5(15)     | C           | 2   |
| SESS6069    | Marine Law and Management                              | 7.5(15)     | C           | 1/2 |
|             |  |             |             |     |
| SESS6071    | Marine Structures in Fluids                            | 7.5(15)     | C           | 2   |
|             |  |             |             |     |
|             |  |             |             |     |

#### Option modules (O)

#### Level 6 Advanced Materials Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG3001    | Finite Element Analysis in Solid Mechanics | 7.5(15)     | O           | 1   |
| MATH3xxx    | Maths option                               | 7.5(15)     | O           |     |
| SESS3027    | Yacht and High Performance Craft           | 7.5(15)     | O           | 1   |

#### Level 7 Advanced Materials Options

| Module Code | Module Title                                | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| SESG6034    | Surface Engineering                         | 7.5(15)     | O           | 1   |
| SESG6039    | Composite Engineering Design and Mechanics  | 7.5(15)     | O           | 1   |
| SESG6044    | Microstructure and Surface Characterisation | 7.5(15)     | O           | 1/2 |
| SESS6070    | Offshore Engineering and Analysis           | 7.5(15)     | O           | 1   |
|             |   |             |             |     |

## Engineering Management Theme

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This theme is designed to enable professional engineers to progress quickly into key management positions in the marine industry. Students develop the technical skills to understand, design and manufacture new products and the expertise to manage the process, people and finances.

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules (C)

| Module Code | Module Title                         | ECTS (CATS) | Choice Type | Sem |
|-------------|--------------------------------------|-------------|-------------|-----|
| FEEG3003    | Individual Project (core)            | 15(30)      | C           | 1/2 |
| MANG3048    | Management Science for Engineers     | 7.5(15)     | C           | 1   |
| MANG3049    | Accounting and Finance for Engineers | 7.5(15)     | C           | 2   |
| SESS3023    | Marine Hydrodynamics                 | 7.5(15)     | C           | 2   |
| SESS3024    | Marine Craft Concept Design          | 7.5(15)     | C           | 1   |
| SESS3025    | Marine Engineering                   | 7.5(15)     | C           | 1   |
| SESS3026    | Marine Structures                    | 7.5(15)     | C           | 2   |

### Part IV Modules at levels 7 (min 60 ECTS (120CATS)) and 6 (max 15ECTS (30CATS)) totalling 75 ECTS (150 CATS)

Compulsory modules (C)

| Module Code | Module Title                                | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6013    | Group Design project (core)                 | 22.5(45)    | C           | 1/2 |
| MANG6143    | Project Risk Management                     | 7.5(15)     | C           | 2   |
| MANG6247    | Information Systems Management and Strategy | 7.5(15)     | C           | 1   |
| SESS6069    | Marine Law and Management                   | 7.5(15)     | C           | 1/2 |
| SESS6068    | Marine Safety and Environmental Engineering | 7.5(15)     | C           | 2   |

Option modules (O)

#### Level 6 Engineering Management Options

| Module Code | Module Title                 | ECTS (CATS) | Choice Type | Sem |
|-------------|------------------------------|-------------|-------------|-----|
| MATH3xxx    | Maths option                 | 7.5(15)     | O           |     |
| SESG3024    | Manufacturing and Materials  | 7.5(15)     | O           | 1   |
| SESS3022    | Ship Manoeuvring and Control | 7.5(15)     | O           | 2   |

#### Level 7 Engineering Management Options

| Module Code | Module Title                            | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6009    | Design Search and Optimisation          | 7.5(15)     | O           | 2   |
| MANG6130    | Strategic Management                    | 3.75(7.5)   | O           | 1   |
| MANG6045    | Consultancy Skills                      | 3.75(7.5)   | O           | 1   |
| SESG6040    | Failure of Materials and Components     | 7.5(15)     | O           | 2   |
| SESS6063    | Advanced Ship Resistance and Propulsion | 7.5(15)     | O           | 1   |
| SESS6070    | Offshore Engineering and Analysis       | 7.5(15)     | O           | 1   |
| SESS6071    | Marine Structures in Fluids             | 7.5(15)     | O           | 2   |

## Naval Architecture Theme

This theme provides a detailed insight into core naval architecture subject areas, such as resistance and propulsion, maritime structures, manoeuvring, hydrodynamics and materials.

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules (C)

| Module Code | Module Title                 | ECTS (CATS) | Choice | Sem |
|-------------|------------------------------|-------------|--------|-----|
| FEEG3003    | Individual Project (core)    | 15(30)      | C      | 1/2 |
| SESS3022    | Ship Manoeuvring and Control | 7.5(15)     | C      | 2   |
| SESS3023    | Marine Hydrodynamics         | 7.5(15)     | C      | 2   |
| SESS3024    | Marine Craft Concept Design  | 7.5(15)     | C      | 1   |
| SESS3025    | Marine Engineering           | 7.5(15)     | C      | 1   |
| SESS3026    | Marine Structures            | 7.5(15)     | C      | 2   |

Option modules (O)

choose one (7.5 ECTS (15 CATS)) from the following:

| Module Code | Module Title                     | ECTS (CATS) | Choice Type | Sem |
|-------------|----------------------------------|-------------|-------------|-----|
| MATH3xxx    | Maths                            | 7.5(15)     | O           |     |
| SESG3024    | Manufacturing and Materials      | 7.5(15)     | O           | 1   |
| SESS3027    | Yacht and High Performance Craft | 7.5(15)     | O           | 1   |

### Part IV Modules at levels 7 (min 60 ECTS (120CATS)) and 6 (max 15ECTS (30CATS)) totalling 75 ECTS (150 CATS)

Compulsory modules (C)

| Module Code | Module Title                                | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6013    | Group Design Project (core)                 | 22.5(45)    | C           | 1/2 |
| SESS6063    | Advances in Ship Resistance and Propulsion  | 7.5(15)     | C           | 1   |
| SESS6068    | Marine Safety and Environmental Engineering | 7.5(15)     | C           | 2   |
| SESS6069    | Marine Law and Management                   | 7.5(15)     | C           | 1/2 |
| SESS6071    | Marine Structures in Fluids                 | 7.5(15)     | C           | 2   |

Option modules (O)

#### Level 6 Naval Architecture Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG3001    | Finite Element Analysis in Solid Mechanics | 7.5(15)     | O           | 1   |
| MATH3xxx    | Maths option                               | 7.5(15)     | O           |     |
| SESS3027    | Yacht and High Performance Craft           | 7.5(15)     | O           | 1   |

#### Level 7 Naval Architecture Options

| Module Code | Module Title                              | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6005    | Applications of CFD                       | 7.5(15)     | O           | 1   |
| FEEG6009    | Design Search and Optimisation            | 7.5(15)     | O           | 2   |
| SESG6040    | Failure of Materials and Components       | 7.5(15)     | O           | 2   |
| SESS6067    | Renewable Energy from Environmental Flows | 7.5(15)     | O           | 2   |
| SESS6070    | Offshore Engineering and Analysis         | 7.5(15)     | O           | 1   |
|             |   |             |             |     |

## Naval Engineering Theme

This theme focuses on the analysis and specification of marine engineering systems used on board ships and other marine structures. It offers excellent preparation for a career as a seagoing engineering officer or the wider defence industry.

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules

| Module Code | Module Title                 | ECTS (CATS) | Choice | Sem |
|-------------|------------------------------|-------------|--------|-----|
| FEEG3003    | Individual Project (core)    | 15(30)      | C      | 1/2 |
| SESS3022    | Ship Manoeuvring and Control | 7.5(15)     | C      | 2   |
| SESS3023    | Marine Hydrodynamics         | 7.5(15)     | C      | 2   |
| SESS3024    | Marine Craft Concept Design  | 7.5(15)     | C      | 1   |
| SESS3025    | Marine Engineering           | 7.5(15)     | C      | 1   |
| SESS3026    | Marine Structures            | 7.5(15)     | C      | 2   |

Optional modules (O)

choose one (7.5 ECTS (15 CATS)) from the following:

| Module Code | Module Title                     | ECTS (CATS) | Choice Type | Sem |
|-------------|----------------------------------|-------------|-------------|-----|
| SESG3024    | Manufacturing and Materials      | 7.5(15)     | O           | 1   |
| SESS3027    | Yacht and High Performance Craft | 7.5(15)     | O           | 1   |

### Part IV Modules at levels 7 (min 60 ECTS (120CATS)) and 6 (max 15ECTS (30CATS)) totalling 75 ECTS (150 CATS)

Compulsory modules (C)

| Module Code | Module Title                                 | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG6013    | Group Design project (core)                  | 22.5(45)    | C           | 1/2 |
| SESG6035    | Advanced Sensors and Conditioning Monitoring | 7.5(15)     | C           | 1   |
| SESM6034    | Advanced Electrical Systems                  | 7.5(15)     | C           | 2   |
| SESS6068    | Marine Safety and Environmental Engineering  | 7.5(15)     | C           | 2   |
| SESS6069    | Marine Law and Management                    | 7.5(15)     | C           | 1/2 |

Option modules (O)

#### Level 6 Naval Engineering Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG3001    | Finite Element Analysis in Solid Mechanics | 7.5(15)     | O           | 1   |
| MATH3xxx    | Maths                                      | 7.5(15)     | O           |     |
| SESM3030    | Control and Instrumentation                | 7.5(15)     | O           | 1   |

#### Level 7 Naval Engineering Options

| Module Code | Module Title   | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG6007    | Fuel Cells, batteries and photovoltaic systems I       | 7.5(15)     | O           | 1   |
| SESG6036    | Advanced Control Design                                | 7.5(15)     | O           | 2   |
| SESG6042    | Microstructural Engineering for Transport Applications | 7.5(15)     | O           | 1   |
| SESM6033    | Tribological Engineering with Engine Tribology         | 7.5(15)     | O           | 1   |
| SESS6063    | Advances in Ship Resistance and Propulsion             | 7.5(15)     | O           | 1   |
| SESS6070    | Offshore Engineering and Analysis                      | 7.5(15)     | O           | 1   |
| SESS6072    | Maritime Robotics                                      | 7.5(15)     | O           | 2   |

## Yacht and Small Craft Theme

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This theme provides an opportunity to specialise in the analysis, design and performance of yachts, small craft and other high-performance vessels.

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules (C)

| Module Code | Module Title                     | ECTS (CATS) | Choice Type | Sem |
|-------------|----------------------------------|-------------|-------------|-----|
| FEEG3003    | Individual Project (core)        | 15(30)      | C           | 1/2 |
| SESS3022    | Ship Manoeuvring and Control     | 7.5(15)     | C           | 2   |
| SESS3023    | Marine Hydrodynamics             | 7.5(15)     | C           | 2   |
| SESS3024    | Marine Craft Concept Design      | 7.5(15)     | C           | 1   |
| SESS3025    | Marine Engineering               | 7.5(15)     | C           | 1   |
| SESS3026    | Marine Structures                | 7.5(15)     | C           | 2   |
| SESS3027    | Yacht and High Performance Craft | 7.5(15)     | C           | 1   |

### Part IV Modules at levels 7 (min 60 ECTS (120CATS)) and 6 (max 15ECTS (30CATS)) totalling 75 ECTS (150 CATS)

Compulsory modules (C)

| Module Code | Module Title                                | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6013    | Group Design Project (core)                 | 22.5(45)    | C           | 1/2 |
| SESS6063    | Advanced Ship Resistance and Propulsion     | 7.5(15)     | C           | 1   |
| SESS6066    | Sailing Yacht and Powercraft Design         | 7.5(15)     | C           | 2   |
| SESS6068    | Marine Safety and Environmental Engineering | 7.5(15)     | C           | 2   |
| SESS6069    | Marine Law and Management                   | 7.5(15)     | C           | 1/2 |

Option modules (O)

#### Level 6 Yacht and Small Craft Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG3001    | Finite Element Analysis in Solid Mechanics | 7.5(15)     | O           | 1   |
| MATH3xxx    | Maths option                               | 7.5(15)     | O           |     |
| SESG3024    | Manufacturing and Materials                | 7.5(15)     | O           | 1   |

#### Level 7 Yacht and Small Craft Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG6005    | Applications of CFD                        | 7.5(15)     | O           | 1   |
| SESG6039    | Composite Engineering Design and Mechanics | 7.5(15)     | O           | 1   |
| SESG6040    | Failure of Materials and Components        | 7.5(15)     | O           | 2   |
| SESS6071    | Marine Structures in Fluids                | 7.5(15)     | O           | 2   |

## Semester Abroad Theme

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This theme is similar to the Naval Architecture theme but it provides the opportunity for the students to study abroad in the whole of the second semester of their third year at one of our carefully selected partner institutions (e.g. Webb Institute in the USA).

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules (C)

| Module Code | Module Title                  | ECTS (CATS) | Choice | Sem |
|-------------|-------------------------------|-------------|--------|-----|
| FEEG3003    | Individual Project (core)     | 15(30)      | C      | 1   |
| FEEG3006    | Semester Abroad: Semester Two | 30(60)      | C      | 2   |
| SESS3024    | Marine Craft Concept Design   | 7.5(15)     | C      | 1   |
| SESS3025    | Marine Engineering            | 7.5(15)     | C      | 1   |
|             |                               |             |        |     |

### Part IV Modules at levels 7

(min 60 ECTS (120CATS)) and 6 (max 15ECTS (30CATS)) totalling 75 ECTS (150 CATS)

Compulsory modules (C)

| Module Code | Module Title                                | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6013    | Group Design Project (core)                 | 22.5(45)    | C           | 1/2 |
| SESS6063    | Advanced Ship Resistance and Propulsion     | 7.5(15)     | C           | 1   |
| SESS6068    | Marine Safety and Environmental Engineering | 7.5(15)     | C           | 2   |
| SESS6069    | Marine Law and Management                   | 7.5(15)     | C           | 1/2 |
| SESS6071    | Marine Structures in Fluids                 | 7.5(15)     | C           | 2   |

Option modules (O)

### Level 6 Semester Abroad Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG3001    | Finite Element Analysis in Solid Mechanics | 7.5(15)     | O           | 1   |
| MATH3xxx    | Maths option                               | 7.5(15)     | O           |     |
| SESS3022    | Ship Manoeuvring and Control               | 7.5(15)     | O           | 2   |
| SESS3023    | Marine Hydrodynamics                       | 7.5(15)     | O           | 2   |
| SESS3026    | Marine Structures                          | 7.5(15)     | O           | 2   |
| SESS3027    | Yacht and High Performance Craft           | 7.5(15)     | O           | 1   |

### Level 7 Semester Abroad Options

| Module Code | Module Title                              | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6005    | Applications of CFD                       | 7.5(15)     | O           | 1   |
| FEEG6009    | Design Search and Optimisation            | 7.5(15)     | O           | 2   |
| SESS6040    | Failure of Materials and Components       | 7.5(15)     | O           | 2   |
| SESS6067    | Renewable Energy from Environmental Flows | 7.5(15)     | O           | 2   |
| SESS6070    | Offshore Engineering and Analysis         | 7.5(15)     | O           | 1   |



## Offshore Engineering Theme

This theme allows students to design and undertake the structural and hydrodynamic analyses for offshore engineering of fixed and floating structures. In particular their studies incorporate feasibility analysis of designs and probabilistic theory of the operating climate.

### Part III Modules at level 6 totalling 60 ECTS (120 CATS)

Compulsory modules (C)

| Module Code | Module Title                 | ECTS (CATS) | Choice | Sem |
|-------------|------------------------------|-------------|--------|-----|
| FEEG3003    | Individual Project (core)    | 15(30)      | C      | 1/2 |
| SESS3022    | Ship Manoeuvring and Control | 7.5(15)     | C      | 2   |
| SESS3023    | Marine Hydrodynamics         | 7.5(15)     | C      | 2   |
| SESS3024    | Marine Craft Concept Design  | 7.5(15)     | C      | 1   |
| SESS3025    | Marine Engineering           | 7.5(15)     | C      | 1   |
| SESS3026    | Marine Structures            | 7.5(15)     | C      | 2   |

Option modules (O)

choose one (7.5 ECTS (15 CATS)) from the following:

| Module Code | Module Title                | ECTS (CATS) | Choice Type | Sem |
|-------------|-----------------------------|-------------|-------------|-----|
| SESG3024    | Manufacturing and Materials | 7.5(15)     | O           | 1   |
| MATH3xxx    | Maths                       | 7.5(15)     | O           |     |

### Part IV Modules at levels 7 (min 60 ECTS (120CATS)) and 6 (max 15ECTS (30CATS)) totalling 75 ECTS (150 CATS)

Compulsory modules (C)

| Module Code | Module Title                                | ECTS (CATS) | Choice Type | Sem |
|-------------|---|-------------|-------------|-----|
| FEEG6013    | Group Design Project (core)                 | 22.5(45)    | C           | 1/2 |
| SESS6068    | Marine Safety and Environmental Engineering | 7.5(15)     | C           | 2   |
| SESS6069    | Marine Law and Management                   | 7.5(15)     | C           | 1/2 |
| SESS6070    | Offshore Engineering and Analysis           | 7.5(15)     | C           | 1   |
| SESS6071    | Marine Structures in Fluids                 | 7.5(15)     | C           | 2   |
| SESS6072    | Maritime Robotics                           | 7.5(15)     | C           | 2   |

Option modules (O)

#### Level 6 Offshore Engineering Options

| Module Code | Module Title                               | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG3001    | Finite Element Analysis in Solid Mechanics | 7.5(15)     | O           | 1   |
| MATH3xxx    | Maths option                               | 7.5(15)     | O           |     |

#### Level 7 Offshore Engineering Options

| Module Code | Module Title                                   | ECTS (CATS) | Choice Type | Sem |
|-------------|--|-------------|-------------|-----|
| FEEG6005    | Applications of CFD                            | 7.5(15)     | O           | 1   |
| FEEG6009    | Design Search and Optimisation                 | 7.5(15)     | O           | 2   |
| SESG6040    | Failure of Materials and Components            | 7.5(15)     | O           | 2   |
| SESM6040    | Thermofluids Engineering for Low Carbon Energy | 7.5(15)     | O           | 1   |
| SESS6063    | Advanced Ship Resistance and Propulsion        | 7.5(15)     | O           | 1   |
| SESS6067    | Renewable Energy from Environmental Flows      | 7.5(15)     | O           | 2   |

### Math option modules

| Module Code | Module Title               | ECTS (CATS) | Choice Type | Sem |
|-------------|----------------------------|-------------|-------------|-----|
| MATH3081    | Operational Research       | 7.5(15)     | O           | 1   |
| MATH3082    | Optimisation               | 7.5(15)     | O           | 2   |
| MATH3083    | Adv Partial Diff Equations | 7.5(15)     | O           | 1   |
| MATH3084    | Integral Transform Methods | 7.5(15)     | O           | 2   |

### Language option modules

**The Centre for Language Study offers the following language modules; these are offered at seven stages of proficiency, summarized below:**

|           |                       |           |                                 |
|-----------|-----------------------|-----------|---------------------------------|
| Stage 1 = | complete beginner     | Stage 5 = | A level plus one year of study  |
| Stage 2 = | post GCSE             | Stage 6 = | A level plus two years of study |
| Stage 3 = | post AS/A level       | Stage 7 = | virtually native speaker        |
| Stage 4 = | good A Level standard |           |                                 |

| Module Code | ECTS (CATS) | Choice Type | Semester   |
|-------------|-------------|-------------|------------|
| LANGXXXX    |             | O           | 1 and/or 2 |



## Appendix 3:

### Additional Costs

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

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

| Main Item                   | Sub-section | PROGRAMME SPECIFIC COSTS  |
|-----------------------------|-------------|---|
|                             |             |   |
| <b>Approved Calculators</b> |             | Candidates may use calculators in the examination room only as specified by the University and as permitted by the rubric of individual examination papers. The University approved models are Casio FX-570 and Casio FX-85GT Plus. These may be purchased from any source and no longer need to carry the University logo.   |
| <b>Stationery</b>           |             | You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc). Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile.   |
| <b>Textbooks</b>            |             | <p>It will be useful to purchase Callister, cost circa £60, but a large number are available in the library. (FEEG1002)</p> <p>Where a module specifies core texts these should generally be available on the reserve list in the library. However due to demand, students may prefer to buy their own copies. These can be purchased from any source.</p> <p>Some modules suggest reading texts as <b>optional</b> background reading. The library may hold copies of such texts, or alternatively you may wish to</p> |

| Main Item                       | Sub-section   | PROGRAMME SPECIFIC COSTS  |
|---------------------------------|---|---|
|                                 |   |   |
|                                 |   | 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:                                   | <p>Standard construction/modelling materials will be provided where appropriate, unless otherwise specified in a module profile.</p> <p>For customisation of designs/models calling for material other than standard construction/ modelling materials, students will bear the costs of such alternatives.</p>  |
|                                 | Field Equipment and Materials:                                    | <p>A number of essential items will be provided to you e.g.: field notebook(s); compass-clinometer; geological hammer; steel tape measure; map case; pocket lens (x 10); safety helmet; safety goggles; bottle of dilute hydrochloric acid. If items provided are lost replacements can be purchased from:</p> <p>However, you will need provide yourselves with a ruler; a pair of compasses; set squares; protractor; pencils (including coloured); eraser; calculator, penknife. These can be purchased from any source.</p> |
| Clothing                        | Lab Coats   |   |
|                                 | Protective Clothing: Hard hat; safety boots; hi-viz vest/jackets; |   |
|                                 | Fieldcourse clothing:   | You will need to wear suitable clothing when attending fieldcourses, e.g. waterproofs, walking boots. You can purchase these from any source.   |
| Printing and Photocopying Costs |   | <p>The costs associated with the printing and binding of reports are to be covered by each student group (FEEG2006).</p> <p>Students are responsible for the printing of their poster for the Poster Presentation Day, This may range from£5-£20.</p> <p>Students are expected to cover the costs associated with the printing and binding of reports and the printing of drawings and graphic presentations.</p>   |

| Main Item  | Sub-section | PROGRAMME SPECIFIC COSTS   |
|--|-------------|--|
|  |             |  |
|  |             | <p>These are typically expected to be of the order of £100 per group, also depending on the quality of printing and binding chosen. Note that funds from the project's budget cannot be used for this purpose. (FEEG6013 MEng Only)</p> <p>Students are expected to purchase a laboratory note book in which to record laboratory observations which form part of the assessment. These can be purchased for £1.20 (thin softback) or £4.75 (thick hardback), depending on student choice. (FEEG6013 MEng Only)</p> <p>In some cases, coursework and/or projects may be submitted electronically. Where it is not possible to submit electronically students will be liable for printing costs, which are detailed in the individual Module Profile and can be found in Appendix 2.</p> <p>The costs associated with the printing and binding of reports are to be covered by each student group.</p> <p>In addition to the experimental, computational and workshop resources available, reasonable expenses for travel and materials of up to £100 may be reclaimed through the Faculty Student Office.(FEEG3003 BEng)</p> |
| <b>Optional Visits (e.g. museums, galleries)</b> |             | 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.  |
| <b>Travel and Subsistence</b>                    |             | FEEG3009 Industrial Placement year. You will need to find your own accommodation near to your place of work. You are responsible for travel and subsistence costs.   |