

Programme Specification

Title of programme:

MSc in Maritime Engineering Science 2020/21

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

Awarding Institution	University of Southampton
Teaching Institution	University of Southampton
Mode of study	Full Time
Duration in years	1 year
Accreditation details	The Royal Institution of Naval Architects - PENDING The Institute of Marine Engineering, Science and Technology - PENDING Institution of Mechanical Engineers - PENDING
Final award	Master of Science
Name of award	Maritime Engineering Science Maritime Engineering Science/Advanced Computational Engineering Maritime Engineering Science/Marine Engineering and Autonomy Maritime Engineering Science/Naval Architecture Maritime Engineering Science/Ocean Energy and Offshore Engineering Maritime Engineering Science/Yacht and High Performance Craft
Interim Exit awards	Postgraduate Certificate Postgraduate Diploma
FHEQ level of final award	Level 7
UCAS code	Not Applicable
QAA Subject Benchmark or other external reference	Engineering. Quality Assurance Agency's Framework for higher education qualifications Engineering Council, UK-SPEC
Programme Director	Dr Stephen Boyd
Programme Lead	Dr Gabriel Weymouth
Date specification was written	April 2002
Date Programme was validated	April 2019
Date specification last updated	Feb 2019

Programme Overview

Brief outline of the programme

This programme covers the core subjects and in-depth knowledge of Maritime Engineering Science for both design and analysis of marine craft and structures within the marine environment. The programme is designed for graduates, or similarly qualified, with an engineering, scientific or mathematical background, who desire to pursue a career in maritime sector. The programme will prepare students well for careers in a variety of professions in maritime sector, as well as those that are perhaps thinking of pursuing a PhD in this field. The Pathways within Maritime Engineering Sciences are: Advanced Computational Engineering, Marine Engineering and Autonomy, Naval Architecture, Ocean Energy and Offshore Engineering and Yacht and High Performance Craft

In the two semesters, you will undertake a number of modules that are compulsory depending on the pathway chosen. You will also have the chance to broaden your maritime engineering education by selecting option modules. The summer months will focus on project work. You will have the opportunity to tap into our Southampton Marine and Maritime Institute research network and undertake a final research project using our world-class maritime engineering facilities. The project could involve both experimental and numerical study and the completion of a dissertation.

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

Special Features of the programme

The programme is designed for students with different backgrounds who desire specialisation in Maritime Engineering Science. In order to provide students with the initial fundamental knowledge of Ship Science necessary in their studies, there is a compulsory introductory module called Fundamentals of Ship Science. This module covers subject relevant material in Ship Design and Economics, Hydrostatics and stability, Fluid Mechanics, Ship Resistance and Propulsion, Seakeeping, Ship Structures, Marine Engineering and lectures of this module are delivered in teaching weeks 0 of the academic year. The module features a concept design, through which you can demonstrate your understanding in these fundamental subjects.

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 projects, assignments 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.

Assessment

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

The assessment on the programme is undertaken through a variety of methods, enabling students to experience different ways to demonstrate their learning and understanding.

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.

Research Project

Candidates wishing to obtain an MSc carry out a research project finishing with a dissertation. Research projects may concern any of the areas covered by the programme. The research project is intended to bring together the full range of skills in the programme and to provide you with an opportunity to build on all of the learning outcomes described above, while demonstrating in-depth knowledge and understanding of one or more of the areas covered by the programme. It involves information gathering and handling, critical analysis and evaluation, and presentation skills. The key requirement, however, is that the project must contain your own ideas and proposals: it should not simply be a technical design carried out to existing standards, but a problem with an element of novelty requiring the application of new information and concepts.

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 that is described in the University's Quality handbook.

Educational Aims of the Programme

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 provide you with a thorough professional knowledge of Maritime Engineering Science, be that for design or fundamental analysis. It has been configured for graduates, or similarly qualified individuals, with an engineering, scientific or mathematical background, who desire specialisation in Maritime Engineering Science.

There are five specialist pathways within the MSc programme:

- Advanced Computational Engineering
- Marine Engineering and Autonomy
- Naval Architecture
- Ocean Energy and Offshore Engineering
- Yacht and High Performance Craft

Each pathway covers a broad context together with an in-depth specialisation. These pathways aim to provide students with a wide range of specialist areas within the broad field of maritime engineering science. This programme also consistently develops new pathways to ensure that the programme meets the perceived future requirements of the international maritime industry.

The MSc programme aims to:

- **Provide** you with an advanced knowledge and a sound understanding of the fundamental principles, methods, analysis, synthesis and engineering applications appropriate to Maritime Engineering Science.
- **Encourage** you with the capability to formulate, analyse and make decisions based on engineering and scientific judgements and to solve engineering problems in a logical and well-argued manner, taking account of technical, social, environmental and economic constraints.
- **Expose** you to an intellectually stimulating environment that encourages an attitude of independent self-learning and enquiry and fosters an ethos of lifetime learning and continuing professional development.
- **Develop** a range of transferable skills, including the ability to communicate engineering concepts and solutions precisely by oral, visual or written means.
- **Present** specialist knowledge, technical expertise and research skills that will equip you for a professional career in your chosen specialist pathway in the Maritime Engineering Science sector.
- **Offer** you a range of courses and research projects, integrated within a structured taught programme, that is relevant to industry and the research base, and which remains responsive to changes in technology and the needs of society.

The MSc programme provides opportunities for you to achieve and demonstrate the learning outcomes described below. The Postgraduate (PG) Diploma and PG Certificate programmes do not include the research training element.

Programme Learning Outcomes

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

([https://www.engc.org.uk/engcdocuments/internet/Website/Accreditation%20of%20Higher%20Education%20Programmes%20third%20edition%20\(1\).pdf](https://www.engc.org.uk/engcdocuments/internet/Website/Accreditation%20of%20Higher%20Education%20Programmes%20third%20edition%20(1).pdf))

Knowledge and Understanding

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

	Science and mathematics Engineering is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant professional engineering institution(s). On graduation you will have achieved:
SM7	A comprehensive understanding of the relevant scientific principles of the specialisation
SM8	A critical awareness of current problems and/or new insights most of which is at, or informed by, the forefront of the specialisation
SM9	Understanding of concepts relevant to the discipline, some from outside engineering, and the ability to evaluate them critically and to apply them effectively, including in engineering projects

	Design Design at this level is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real and complex problems. On graduation you will have the knowledge, understanding and skills to:
D9	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
D10	Knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations

	Economic, legal, social, ethical and environmental context Engineering activity can have impacts on the environment, on commerce, on society and on individuals. On graduation you will have the skills to manage your activities and to be aware of the various legal and ethical constraints under which you are expected to operate, including:
EL8	Awareness of the need for a high level of professional and ethical conduct in engineering
EL9	Awareness that engineers need to take account of the commercial and social contexts in which they operate
EL10	Knowledge and understanding of management and business practices, their limitations, and how these may be applied in the context of the particular specialisation
EL11	Awareness that engineering activities should promote sustainable development and ability to apply quantitative techniques where appropriate
EL12	Awareness of relevant regulatory requirements governing engineering activities in the context of the particular specialisation
EL13	Awareness of and ability to make general evaluations of risk issues in the context of the particular specialisation, including health & safety, environmental and commercial risk

	Engineering practice This is the practical application of engineering skills, combining theory and experience, and use of other relevant knowledge and skills. On graduation you will have achieved:
P9	A thorough understanding of current practice and its limitations, and some appreciation of likely new developments
P11	Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader
P12	Advanced level knowledge and understanding of a wide range of engineering materials and components

Teaching and Learning Methods

Acquisition of core knowledge and understanding is through lectures, seminars, tutorials, field and laboratory classes, computer classes, workshops, and independent study and research. You

are encouraged from an early stage to supplement and consolidate your understanding and knowledge by independent study.

Assessment methods

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

Skills

Having successfully completed this programme you will be able to:

	Engineering analysis Engineering analysis involves the application of engineering concepts and tools to the solution of engineering problems. On graduation you will have achieved:
EA5	Ability to use fundamental knowledge to investigate new and emerging technologies
EA6M	Ability both to apply appropriate engineering analysis methods for solving complex problems in engineering and to assess their limitations
EA7	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

	Design Design at this level is the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and can be used to integrate all engineering understanding, knowledge and skills to the solution of real and complex problems. On graduation you will have the knowledge, understanding and skills to:
D11	Ability to generate an innovative design for products, systems, components or processes to fulfil new needs

	Engineering practice This is the practical application of engineering skills, combining theory and experience, and use of other relevant knowledge and skills. On graduation you will have achieved:
P10	Ability to apply engineering techniques taking account of a range of commercial and industrial constraints

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

Teaching and Learning Methods

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

Assessment methods

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

Programme Structure

The programme involves 180 credit points (CP) distributed between taught and research components. The taught component consists of modules worth 120 credit points (60 ECTS/120 CATS credits), of which at least 90 are at level 7. You will take a number of compulsory modules and select the remaining from a given list. The list is specific to your chosen specialisation within Maritime Engineering Science. Details of the compulsory and optional modules for each specialisation within Maritime Engineering Science are shown in Appendix 1. Any of these modules can form part of a Postgraduate Certificate. A Postgraduate Diploma or an MSc requires all 120 credit points. In addition to the taught modules, the MSc also requires completion of a research project worth 60 credit points (30 ECTS /60 CATS credits).

Full-Time MSc

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 some preparation is done in Semester 2. It is important that you commence project work before the Semester 2 exams to allow yourself maximum time, especially where practical work is involved.

The MSc award depends on passing the examinations and on successful completion of a dissertation on the project. The diagram above shows the overall structure and alternative exit points. Further details are available at <http://www.calendar.soton.ac.uk/sectionIV/progression-regs-standalonemasters.html>

Typical course content

The content of your programme will depend on your choice of pathway. Each pathway has a set of compulsory modules including the MSc Research Project which is core. You will be given the opportunity to choose a number of optional modules which are appropriate for your pathway.

The fundamentals of Ship Science module is designed specifically to introduce a basis level of knowledge and understanding to allow students from wide variety of engineering backgrounds to complete the MSc programmes.

The Programme Structure is outlined in Appendix 1.

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.

[This text may be amended only in cases where AQSC approval of exemption from University harmonised regulations has been granted

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
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Postgraduate	at least 60(120)	45(90)
Postgraduate	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 email account and email access to staff via University system.
- Relevant specialist software on University clusters of computers.
- 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

Career Opportunities

The maritime sector provides many and varied career opportunities in engineering and project management related roles. Maritime Engineering Science graduates are in strong demand with good starting salaries and excellent career progression opportunities.

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, etc.

External Examiner(s) for the programme

Name Dr Alan Murphy

Institution. Newcastle University

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

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

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

Appendix 1: Programme Structure

The programme structure is defined by the specialist pathway that is taken. The Structure of each of the pathways is described below.

Maritime Engineering Sciences Pathways:

- Advanced Computational Engineering
- Marine Engineering and Autonomy
- Naval Architecture
- Ocean Energy and Offshore Engineering
- Yacht and High Performance Craft

MSc Maritime Engineering Science with Advanced Computational Engineering

This pathway concentrates on the theoretical and computational aspects of fluid behaviour and its interaction with structure, core to the fundamentals of engineering in the maritime environment.

The MSc Research Project (FEEG6012) is a core module. Compulsory modules are marked “C” and account for 67.5 ECTS (135 CATS) an additional 22.5 ECTS (45 CATS) must be selected from the optional modules marked “O”, with a maximum of 7.5ECTS (15 CATS) at level 6.

Module Title	Code	Semester	ECTS(CATS)	Type	Level
MSc Research Project (Core)	FEEG6012	2+	30(60)	C	7
Fundamentals of Ship Science	SESS6065	1	7.5(15)	C	7
Maritime Safety and Law	SESS60xx	Full	7.5(15)	C	7
Advanced Sensors and Conditioning Monitoring	SESG6035	1	7.5(15)	C	7
Advances in Ship Resistance and Propulsion	SESS6063	1	7.5(15)	C	7
Marine Hydrodynamics	SESS3023	2	7.5(15)	C	6
Finite Element Analysis in Solid Mechanics	FEEG3001	1	7.5(15)	O	6
Advanced Computational Methods I	FEEG6002	1	7.5(15)	O	7
Design Search and Optimisation	FEEG6009	2	7.5(15)	O	7
Turbulence: Physics and Modelling	SESA6061	1	7.5(15)	O	7
Flow Control	SESA6067	1	7.5(15)	O	7
Aeroelasticity	SESA6077	1	7.5(15)	O	7
Ship Manoeuvring and Control	SESS3022	2	7.5(15)	O	6
Marine Structures	SESS3026	2	7.5(15)	O	6
Offshore Engineering and Analysis	SESS6070	1	7.5(15)	O	7
Marine Structures in Fluids	SESS6071	2	7.5(15)	O	7

MSc Maritime Engineering Science with Marine Engineering and Autonomy

This pathway enables students to understand component and systems engineering on board ships and fixed and offshore platforms that facilitate their functional capability. Electrical theory, control, sensing, thermodynamics, engine and machine tribology are all key elements.

The MSc Research Project (FEEG6012) is a core module. Compulsory modules are marked "C" and account for 75 ECTS (150 CATS) an additional 15 ECTS (30 CATS) must be selected from the optional modules marked "O", with a maximum of 7.5ECTS (15 CATS) at level 6.

Module Title	Code	Semester	ECTS(CATS)	Type	Level
MSc Research Project (Core)	FEEG6012	2+	30(60)	C	7
Fundamentals of Ship Science	SESS6065	1	7.5(15)	C	7
Maritime Safety and Law	SESS60xx	Full	7.5(15)	C	7
Advanced Sensors and Conditioning Monitoring	SESG6035	1	7.5(15)	C	7
Advanced Control Design	SESG6036	2	7.5(15)	C	7
Advanced Electrical Systems	SESM6034	2	7.5(15)	C	7
Marine Engineering	SESS3025	1	7.5(15)	C	6
Fuel Cells, batteries and Photovoltaic Systems I	FEEG6007	1	7.5(15)	O	7
Control and Instrumentation	SESM3030	1	7.5(15)	O	6
Tribological Engineering with Engine Tribology	SESM6033	1	7.5(15)	O	7
Advances in Ship Resistance and Propulsion	SESS6063	1	7.5(15)	O	7
Maritime Robotics	SESS6072	1	7.5(15)	O	7

MSc Maritime Engineering Science with Naval Architecture

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

The MSc Research Project (FEEG6012) is a core module. Compulsory modules are marked “C” and account for 60 ECTS (120 CATS) an additional 30 ECTS (60 CATS) must be selected from the optional modules marked “O”, with a maximum of 15 ECTS (30 CATS) at level 6.

Module Title	Code	Semester	ECTS(CATS)	Type	Level
MSc Research Project (Core)	FEEG6012	2+	30(60)	C	7
Fundamentals of Ship Science	SESS6065	1	7.5(15)	C	7
Maritime Safety and Law	SESS60xx	Full	7.5(15)	C	7
Marine Structures in Fluids	SESS6071	2	7.5(15)	C	7
Advances in Ship Resistance and Propulsion	SESS6063	1	7.5(15)	C	7
Finite Element Analysis in Solid Mechanics	FEEG3001	1	7.5(15)	O	6
Applications of CFD	FEEG6005	1	7.5(15)	O	7
Design Search and Optimisation	FEEG6009	2	7.5(15)	O	7
Numerical Methods	MATH6141	1	7.5(15)	O	7
Failure of Materials and Components	SESG6040	2	7.5(15)	O	7
Ship Manoeuvring and Control	SESS3022	2	7.5(15)	O	6
Marine Hydrodynamics	SESS3023	2	7.5(15)	O	6
Marine Structures	SESS3026	2	7.5(15)	O	6
Yacht and High Performance Craft	SESS3027	1	7.5(15)	O	6
Offshore Engineering and Analysis	SESS6070	1	7.5(15)	O	7
Renewable Energy from Environmental Flows	SESS6067	2	7.5(15)	O	7

MSc Maritime Engineering Science with Ocean Energy and Offshore Engineering

This pathway 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.

The MSc Research Project (FEEG6012) is a core module. Compulsory modules are marked “C” and account for 75 ECTS (150 CATS) an additional 15 ECTS (30 CATS) must be selected from the optional modules marked “O”, with a maximum of 7.5 ECTS (15 CATS) at level 6.

Module Title	Code	Semester	ECTS(CATS)	Type	Level
MSc Research Project (Core)	FEEG6012	2+	30(60)	C	7
Fundamentals of Ship Science	SESS6065	1	7.5(15)	C	7
Maritime Safety and Law	SESS60xx	Full	7.5(15)	C	7
Marine Structures in Fluids	SESS6071	2	7.5(15)	C	7
Advances in Ship Resistance and Propulsion	SESS6063	1	7.5(15)	C	7
Maritime Robotics	SESS6072	1	7.5(15)	C	7
Finite Element Analysis in Solid Mechanics	FEEG3001	1	7.5(15)	C	6
Applications of CFD	FEEG6005	1	7.5(15)	O	7
Design Search and Optimisation	FEEG6009	2	7.5(15)	O	7
Thermofluid Engineering for Low Carbon Energy	SESM6040	1	7.5(15)	O	7
Ship Manoeuvring and Control	SESS3022	2	7.5(15)	O	6
Marine Hydrodynamics	SESS3023	2	7.5(15)	O	6
Marine Structures	SESS3026	2	7.5(15)	O	6
Advances in Ship Resistance and Propulsion	SESS6063	1	7.5(15)	O	7
Renewable Energy from Environmental Flows	SESS6067	2	7.5(15)	O	7

MSc Maritime Engineering Science with Yacht and High Performance Craft

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

The MSc Research Project (FEEG6012) is a core module. Compulsory modules are marked “C” and account for 60 ECTS (120 CATS) an additional 30 ECTS (60 CATS) must be selected from the optional modules marked “O”, with a maximum of 7.5 ECTS (15 CATS) at level 6.

Module Title	Code	Semester	ECTS(CATS)	Type	Level
MSc Research Project (Core)	FEEG6012	2+	30(60)	C	7
Fundamentals of Ship Science	SESS6065	1	7.5(15)	C	7
Maritime Safety and Law	SESS60xx	Full	7.5(15)	C	7
Yacht and High Performance Craft	SESS3027	1	7.5(15)	C	6
Sailing Yacht and Powercraft Design	SESS6066	2	7.5(15)	C	7
Finite Element Analysis in Solid Mechanics	FEEG3001	1	7.5(15)	O	6
Applications of CFD	FEEG6005	1	7.5(15)	O	7
Design Search and Optimisation	FEEG6009	2	7.5(15)	O	7
Manufacturing and Materials	SESG3024	1	7.5(15)	O	6
Advanced Sensors and Conditioning Monitoring	SESG6035	1	7.5(15)	O	7
Composites Engineering Design and Mechanics	SESG6039	1	7.5(15)	O	7
Ship Manoeuvring and Control	SESS3022	2	7.5(15)	O	6
Marine Hydrodynamics	SESS3023	2	7.5(15)	O	6
Marine Structures	SESS3026	2	7.5(15)	O	6
Failure of Materials and Components	SESG6040	2	7.5(15)	O	7
Advances in Ship Resistance and Propulsion	SESS6063	1	7.5(15)	O	7
Renewable Energy from Environmental Flows	SESS6067	2	7.5(15)	O	7

Appendix 2: 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.

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 species permissible models from time to time and these may be purchased from any source. https://www.southampton.ac.uk/blog/wp-content/uploads/sites/19/2019/02/APPROVED-CALCULATORS_Feb-19.pdf

Stationery: You will be expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc). The third year module FEEG6012 MSc Research Project requires you to print an AI portrait poster on paper. The typical cost for this is in the range £5 to £20.

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

Printing and photocopying: 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 FEEG6012 MSc Research Project requires you to print an AI portrait poster on paper at a typical cost of £20.

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.

Travel and subsistence: For visits organised by Ship Science, transport to and from the visit site will be provided. Where required, a safety hat and Hi-Vis vest will be provided.

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.

Appendix 3: Learning outcomes

As outlined under programme learning outcomes each pathway meets the criteria set out by the Engineering Council for accreditation. The tables below indicate which module contributes to each of the AHEP3 learning outcomes pathway by pathway. Modules that are compulsory in each pathway are highlighted as **bold and underlined**

- Advanced Computational Engineering
- Marine Engineering and Autonomy
- Naval Architecture
- Ocean Energy and Offshore Engineering
- Yacht and High Performance Craft

Learning outcome	Maritime Computational Fluid Dynamics
SM7	FEEG3001, FEEG6002, <u>FEEG6005</u> , <u>FEEG6012</u> , SESA6061, SESA6067, SESA6077, SESS3022, SESS3026, <u>SESS6063</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6070, SESS6071
SM8	FEEG3001, FEEG6002, <u>FEEG6005</u> , <u>FEEG6012</u> , SESA6061, SESA6067, SESS3026, <u>SESS6063</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6070, SESS6071
SM9	FEEG3001, FEEG6002, <u>FEEG6005</u> , <u>FEEG6012</u> , SESA6067, <u>SESS60xx</u>
EA5	FEEG3001, FEEG6002, <u>FEEG6005</u> , FEEG6009, <u>FEEG6012</u> , SESA6061, SESA6067, <u>SESS3023</u> , SESS3026, <u>SESS6063</u> , <u>SESS60xx</u> , SESS6070
EA6M	FEEG3001, FEEG6002, <u>FEEG6005</u> , FEEG6009, <u>FEEG6012</u> , SESA6061, SESA6067, SESS3022, <u>SESS3023</u> , <u>SESS6063</u> , SESS6070, SESS6071
EA7	FEEG3001, <u>FEEG6005</u> , FEEG6009, <u>FEEG6012</u> , SESA6061, <u>SESS6063</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6071
D9	FEEG3001, FEEG6002, <u>FEEG6005</u> , FEEG6009, <u>FEEG6012</u> , SESA6061, SESA6067, <u>SESS60xx</u> , SESS6071
D10	FEEG3001, FEEG6002, <u>FEEG6005</u> , FEEG6009, <u>FEEG6012</u> , SESA6067, <u>SESS6063</u> , <u>SESS6065</u> , SESS6070
D11	FEEG3001, <u>FEEG6005</u> , FEEG6009, <u>SESS6065</u> , SESS6070
EL8	<u>FEEG6012</u> , <u>SESS60xx</u> , SESS6070
EL9	FEEG3001, FEEG6002, <u>FEEG6005</u> , SESA6067, <u>SESS6065</u> , <u>SESS60xx</u>
EL10	<u>SESS6065</u>
EL11	FEEG6002, <u>FEEG6005</u> , SESA6067, <u>SESS60xx</u> , SESS6070, SESS6071
EL12	<u>FEEG6005</u> , <u>FEEG6012</u> , <u>SESS60xx</u> , SESS6071
EL13	<u>FEEG6005</u> , <u>FEEG6012</u> , <u>SESS60xx</u> , SESS6071
P9	FEEG3001, FEEG6002, <u>FEEG6005</u> , FEEG6009, SESA6061, SESA6067, <u>SESS3023</u> , SESS3026, <u>SESS6063</u> , <u>SESS60xx</u> , SESS6070, SESS6071
P10	<u>FEEG6005</u> , FEEG6009, SESA6067, <u>SESS3023</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6070
P11	<u>SESS6065</u> , <u>SESS60xx</u>
P12	FEEG3001, <u>FEEG6005</u> , FEEG6009, SESA6061, SESS3026, SESS6071
G1	FEEG3001, FEEG6002, <u>FEEG6005</u> , FEEG6009, <u>FEEG6012</u> , SESA6061, SESA6067, SESS3022, <u>SESS3023</u> , SESS3026, <u>SESS6063</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6070, SESS6071
G2	<u>FEEG6005</u> , <u>FEEG6012</u> , SESA6061, SESA6077, SESS6071
G3	<u>FEEG6012</u>
G4	<u>FEEG6012</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6071

Learning outcome	Marine Engineering and Autonomy
SM7	FEEG6007, <u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM3030, SESM6033, SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> SESS6072
SM8	FEEG6007, <u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM6033, SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> , SESS6072
SM9	FEEG6007, <u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM3030, SESM6033, <u>SESM6034</u> , <u>SESS60xx</u> , SESS6072
EA5	FEEG6007, <u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM6033, <u>SESM6034</u> , SESS3025, SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> , SESS6072
EA6M	FEEG6007, <u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM3030, SESM6033, <u>SESM6034</u> , SESS3025, SESS6063, <u>SESS60xx</u>
EA7	<u>FEEG6012</u> , SESM3030, SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> , SESS6072
D9	FEEG6007, <u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM3030, <u>SESS60xx</u> , SESS6072
D10	<u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM3030, SESM6033, SESS6063, <u>SESS6065</u> , SESS6072
D11	<u>SESG6035</u> , SESG6036, SESM6033, <u>SESS6065</u> , SESS6072
EL8	<u>FEEG6012</u> , <u>SESG6035</u> , SESM6033, <u>SESS60xx</u> , SESS6072
EL9	<u>SESG6035</u> , SESG6036, SESM6033, SESS3025, <u>SESS6065</u> , <u>SESS60xx</u>
EL10	<u>SESS6065</u>
EL11	FEEG6007, SESM6033, <u>SESM6034</u> , SESS3025, <u>SESS60xx</u>
EL12	<u>FEEG6012</u> , <u>SESG6035</u> , SESM6033, <u>SESS60xx</u>
EL13	<u>FEEG6012</u> , SESM6033, <u>SESS60xx</u>
P9	FEEG6007, <u>SESG6035</u> , SESG6036, SESM3030, SESM6033, SESS3025, SESS6063, <u>SESS60xx</u> , SESS6072
P10	FEEG6007, <u>SESG6035</u> , SESG6036, SESM6033, <u>SESS6065</u> , <u>SESS60xx</u>
P11	<u>SESG6035</u> , <u>SESS6065</u> , <u>SESS60xx</u>
P12	FEEG6007, SESM3030, SESS3025, SESS6072
G1	FEEG6007, <u>FEEG6012</u> , <u>SESG6035</u> , SESG6036, SESM3030, SESM6033, <u>SESM6034</u> , SESS3025, SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> , SESS6072
G2	<u>FEEG6012</u> , <u>SESG6035</u> , SESM6033, <u>SESM6034</u>
G3	<u>FEEG6012</u> , <u>SESG6035</u> , SESM6033
G4	<u>FEEG6012</u> , <u>SESG6035</u> , SESM6033, SESS3025, <u>SESS6065</u> , <u>SESS60xx</u> , SESS6072

Learning outcome	Naval Architecture
SM7	FEEG3001, FEEG6005, <u>FEEG6012</u> , MATH6141, SESS3022, SESS3026, SESS3027, <u>SESS6063</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6070, <u>SESS6071</u>
SM8	FEEG3001, FEEG6005, <u>FEEG6012</u> , MATH6141, SESS3026, SESS3027, <u>SESS6063</u> , <u>SESS6065</u> , <u>SESS60xx</u> , SESS6070, <u>SESS6071</u>
SM9	FEEG3001, FEEG6005, <u>FEEG6012</u> , MATH6141, <u>SESS60xx</u>
EA5	FEEG3001, FEEG6005, FEEG6009, <u>FEEG6012</u> , MATH6141, SESS3023, SESS3026, SESS3027, <u>SESS6063</u> , SESS6067, <u>SESS60xx</u> , SESS6070
EA6M	FEEG3001, FEEG6005, FEEG6009, <u>FEEG6012</u> , SESS3022, SESS3023, <u>SESS6063</u> , SESS6067, SESS6070, <u>SESS6071</u>
EA7	FEEG3001, FEEG6005, FEEG6009, <u>FEEG6012</u> , SESS3027, <u>SESS6063</u> , <u>SESS6065</u> , <u>SESS60xx</u> , <u>SESS6071</u>
D9	FEEG3001, FEEG6005, FEEG6009, <u>FEEG6012</u> , <u>SESS60xx</u> , <u>SESS6071</u>
D10	FEEG3001, FEEG6005, FEEG6009, <u>FEEG6012</u> , SESS3027, <u>SESS6063</u> , <u>SESS6065</u> , SESS6070
D11	FEEG3001, FEEG6005, FEEG6009, <u>SESS6065</u> , SESS6070
EL8	<u>FEEG6012</u> , <u>SESS60xx</u> , SESS6070
EL9	FEEG3001, FEEG6005, SESS6040, SESS3027, <u>SESS6065</u> , SESS6067, <u>SESS60xx</u>
EL10	<u>SESS6065</u>
EL11	FEEG6005, <u>SESS60xx</u> , SESS6070, <u>SESS6071</u>
EL12	FEEG6005, <u>FEEG6012</u> , SESS6040, <u>SESS60xx</u> , <u>SESS6071</u>
EL13	FEEG6005, <u>FEEG6012</u> , SESS6067, <u>SESS60xx</u> , <u>SESS6071</u>
P9	FEEG3001, FEEG6005, FEEG6009, SESS3023, SESS3026, <u>SESS6063</u> , SESS6067, <u>SESS60xx</u> , SESS6070, <u>SESS6071</u>
P10	FEEG6005, FEEG6009, SESS3023, <u>SESS6065</u> , SESS6067, <u>SESS60xx</u> , SESS6070
P11	<u>SESS6065</u> , <u>SESS60xx</u>
P12	FEEG3001, FEEG6005, FEEG6009, SESS6040, SESS3026, <u>SESS6071</u>
G1	FEEG3001, FEEG6005, FEEG6009, <u>FEEG6012</u> , MATH6141, SESS3022, SESS3023, SESS3026, SESS3027, <u>SESS6063</u> , <u>SESS6065</u> , SESS6067, <u>SESS60xx</u> , SESS6070, <u>SESS6071</u>
G2	FEEG6005, <u>FEEG6012</u> , MATH6141, SESS3027, <u>SESS6071</u>
G3	<u>FEEG6012</u> , MATH6141
G4	<u>FEEG6012</u> , MATH6141, <u>SESS6065</u> , <u>SESS60xx</u> , <u>SESS6071</u>

Learning outcome	Ocean Energy and Offshore Engineering
SM7	<u>FEEG3001</u> , FEEG6005, <u>FEEG6012</u> , SEM6040, SESS3022, SESS3026, SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> , <u>SESS6070</u> , <u>SESS6071</u> , <u>SESS6072</u>
SM8	<u>FEEG3001</u> , FEEG6005, <u>FEEG6012</u> , SEM6040, SESS3026, SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> , <u>SESS6070</u> , <u>SESS6071</u> , <u>SESS6072</u>
SM9	<u>FEEG3001</u> , FEEG6005, <u>FEEG6012</u> , SEM6040, <u>SESS60xx</u> , <u>SESS6072</u>
EA5	<u>FEEG3001</u> , FEEG6005, FEEG6009, <u>FEEG6012</u> , SEM6040, SESS3023, SESS3026, SESS6063, SESS6067, <u>SESS60xx</u> , <u>SESS6070</u>
EA6M	<u>FEEG3001</u> , FEEG6005, FEEG6009, <u>FEEG6012</u> , SESS3022, SESS3023, SESS6063, SESS6067, <u>SESS6070</u> , <u>SESS6071</u> , <u>SESS6072</u>
EA7	<u>FEEG3001</u> , FEEG6005, FEEG6009, <u>FEEG6012</u> , SESS6063, <u>SESS6065</u> , <u>SESS60xx</u> , <u>SESS6071</u> , <u>SESS6072</u>
D9	<u>FEEG3001</u> , FEEG6005, FEEG6009, <u>FEEG6012</u> , <u>SESS60xx</u> , <u>SESS6071</u> , <u>SESS6072</u>
D10	<u>FEEG3001</u> , FEEG6005, FEEG6009, <u>FEEG6012</u> , SESS6063, <u>SESS6065</u> , <u>SESS6070</u> , <u>SESS6072</u>
D11	<u>FEEG3001</u> , FEEG6005, FEEG6009, <u>SESS6065</u> , <u>SESS6070</u> , <u>SESS6072</u>
EL8	<u>FEEG6012</u> , <u>SESS60xx</u> , <u>SESS6070</u> , <u>SESS6072</u>
EL9	<u>FEEG3001</u> , FEEG6005, <u>SESS6065</u> , SESS6067, <u>SESS60xx</u>
EL10	<u>SESS6065</u>
EL11	FEEG6005, <u>SESS60xx</u> , <u>SESS6070</u> , <u>SESS6071</u>
EL12	FEEG6005, <u>FEEG6012</u> , <u>SESS60xx</u> , <u>SESS6071</u>
EL13	FEEG6005, <u>FEEG6012</u> , SEM6040, SESS6067, <u>SESS60xx</u> , <u>SESS6071</u>
P9	<u>FEEG3001</u> , FEEG6005, FEEG6009, SESS3023, SESS3026, SESS6063, SESS6067, <u>SESS60xx</u> , <u>SESS6070</u> , <u>SESS6071</u> , <u>SESS6072</u>
P10	FEEG6005, FEEG6009, SESS3023, <u>SESS6065</u> , SESS6067, <u>SESS60xx</u> , <u>SESS6070</u>
P11	<u>SESS6065</u> , <u>SESS60xx</u>
P12	<u>FEEG3001</u> , FEEG6005, FEEG6009, SESS3026, <u>SESS6071</u> , <u>SESS6072</u>
G1	<u>FEEG3001</u> , FEEG6005, FEEG6009, <u>FEEG6012</u> , SESS3022, SESS3023, SESS3026, SESS6063, <u>SESS6065</u> , SESS6067, <u>SESS60xx</u> , <u>SESS6070</u> , <u>SESS6071</u> , <u>SESS6072</u>
G2	FEEG6005, <u>FEEG6012</u> , <u>SESS6071</u>
G3	<u>FEEG6012</u>
G4	<u>FEEG6012</u> , <u>SESS6065</u> , <u>SESS60xx</u> , <u>SESS6071</u> , <u>SESS6072</u>

Learning outcome	Yacht and High Performance Craft
SM7	FEEG3001, FEEG6005, FEEG6012 , SESG3024, SESG6035, SESS3022, SESS3026, SESS3027 , SESS6063, SESS6065 , SESS60xx
SM8	FEEG3001, FEEG6005, FEEG6012 , SESG6035, SESS3026, SESS3027 , SESS6063, SESS6065 , SESS60xx
SM9	FEEG3001, FEEG6005, FEEG6012 , SESG6035, SESS60xx
EA5	FEEG3001, FEEG6005, FEEG6009, FEEG6012 , SESG3024, SESG6035, SESS3023, SESS3026, SESS3027 , SESS6063, SESS6067, SESS60xx
EA6M	FEEG3001, FEEG6005, FEEG6009, FEEG6012 , SESG6035, SESS3022, SESS3023, SESS6063, SESS6066 , SESS6067
EA7	FEEG3001, FEEG6005, FEEG6009, FEEG6012 , SESS3027 , SESS6063, SESS6065 , SESS60xx
D9	FEEG3001, FEEG6005, FEEG6009, FEEG6012 , SESG6035, SESS6065 , SESS6066 , SESS60xx
D10	FEEG3001, FEEG6005, FEEG6009, FEEG6012 , SESG3024, SESG6035, SESG6039, SESS3027 , SESS6063, SESS6065 , SESS6066
D11	FEEG3001, FEEG6005, FEEG6009, SESG6035, SESG6039, SESS6065 , SESS6066
EL8	FEEG6012 , SESG6035, SESS60xx
EL9	FEEG3001, FEEG6005, SESG3024, SESG6035, SESG6040, SESS3027 , SESS6065 , SESS6067, SESS60xx
EL10	SESS6065
EL11	FEEG6005, SESS60xx
EL12	FEEG6005, FEEG6012 , SESG6035, SESG6040, SESS6066 , SESS60xx
EL13	FEEG6005, FEEG6012 , SESS6067, SESS60xx
P9	FEEG3001, FEEG6005, FEEG6009, SESG3024, SESG6035, SESS3023, SESS3026, SESS6063, SESS6067, SESS60xx
P10	FEEG6005, FEEG6009, SESG3024, SESG6035, SESS3023, SESS6065 , SESS6066 , SESS6067, SESS60xx
P11	SESG6035, SESS6065 , SESS60xx
P12	FEEG3001, FEEG6005, FEEG6009, SESG6040, SESS3026, SESS6066
G1	FEEG3001, FEEG6005, FEEG6009, FEEG6012 , SESG6035, SESS3022, SESS3023, SESS3026, SESS3027 , SESS6063, SESS6065 , SESS6067, SESS60xx
G2	FEEG6005, FEEG6012 , SESG6035, SESS3027 ,
G3	FEEG6012 , SESG6035
G4	FEEG6012 , SESG6035, SESS6065 , SESS60xx

