PROGRAMME QUALITY HANDBOOK 2020-21

FdSc-HNC Marine Technologies

Contents

1. Welcome and Introduction to FdSc Marine Technologies.

Welcome to FdSc Marine Technologies delivered at South Devon Marine Academy (Noss on Dart Marina) and University Centre South Devon.

This programme has been designed to equip you with the skills and knowledge base required to work in your chosen specialism or other graduate opportunities. It is also a platform from which you can undertake additional vocational and academic qualifications.

This Programme Quality handbook contains important information including:
The approved programme specification
Module records

Note: The information in this handbook should be read in conjunction with the current edition of:

- Your Institution & University Student Handbook which contains student support based information on issues such as finance and studying at HE
    - Available in University News & Information on Moodle.
- Plymouth University's Student Handbook
    - available at: https://www.plymouth.ac.uk/your-university/governance/student-handbook

1.1. Programme Management

The FdSc-HNC Marine Technologies is led and overseen by the Programme Co-ordinator for South Devon Marine Academy, Matthew Prowse. The Section Head for this programme is Adrian Bevin. Module leaders for this programme are, Matthew Prowse, Harri Smith, Rob Smith and Angela Morris

1.2. Personal Tutor

Personal tutors are designated as a sustained and first point of reference for individual students on personal, domestic or academic matters; detailed information will be available in your teaching, learning and assessment module guides.

Your personal tutor is Matthew Prowse. Matthew has over 10 years of industry experience within the fields of Naval Architecture, CAD and Production Management. Studying a HND in Boat Design and Production at Falmouth Marine and then completing a BSc (Hons) in Marine and Composites Technology at University of Plymouth. Matthew has started a PhD in Vessel Stability this academic year at the University of Plymouth.

Further information about personal tutoring at UCSD can be found by following this link to the Student Development policy.

1.3. Module Leaders

Matthew Prowse – Matthew is the module lead for Naval Architecture, Materials, Production Management, CAD, Composites Engineering. He has been teaching in FE and HE for over 7 years and teaches a range of other subjects including Boatbuilding and Marine Engineering.

Geoff Jaggs – Geoff is the module lead for Independent Research Project and Developing Research and Practice and has been involved with the supervision and support of many research projects, in which a wide range of research methodologies have been used. These range from highly quantitative studies in which statistical software has been used in the analysis of numerical data, to qualitative research in which interviews and focus groups have been the source of material for interpretation. This year in Marine Technology I have supervised an Action Research project which has resulted in creative and useful innovations within a local industry; I have also helped a second-year student adapt his dissertation, which analysed computer-based simulations of the behaviour of different bow designs, for submission for publication.

Ben Bryant – Ben is module lead for Engineering Principles has experience from a working career as a development engineer working across the automotive and additive manufacturing sectors, a key principle for development engineers is to lead, manage, monitor and control projects and process. Using experience from my career history to determine critical aspects of management principles, techniques and process, linking this to theory and practice learnt from my FdSc, BSc and PhD degrees. I also have experience as module lead for a level 5 Quality and Project Management module on FdSc Manufacturing and Mechatronic Engineering and FdSc Electrical and Robotic Control Engineering.

Rob Smith – Rob is the module lead for Engineering Mathematics and Engineering Principles lecturing within the High Tech Engineering department. Rob delivers Mathematics, Electrical/Electronic theory and Robotics across the range, level 2 to level 5. Rob has worked in main stream secondary education for 6 years prior to joining the college in 2013. My industrial engineering background was in Hi-Tech optoelectronic where I worked as an engineer for 28 years, working in all areas from R & D to manufacturing.

1.4. Course Contact List

If you have any questions about the programme or your pastoral needs please contact your personal tutor, Matthew Prowse on matthewprowse@southdevon.ac.uk

1.5. Preparing for your programme

At UCSD, we understand that degree level study is a big step up from previous studies. To help prepare you for the degree we recommend engaging with preparatory activities. Each year UCSD organise step up to HE workshops, with a focus on supporting you to develop your research and writing skills, alongside academic techniques. For more information on the workshops and resources available, please visit our website: https://www.ucsd.ac.uk/the-first-year-at-university/.

The Student Support Hub is available throughout the duration of your programme and offers a range of services, acting as a first port of call for academic, study, wellbeing, disability, fees/funding, employability and progression support. When progressing to the next level of study of your higher education, there are also workshops and activities available to support you with progressing your graduate skills.

Preparatory reading is a great way to develop your knowledge and skills to be ready for the next level of study in higher education. Please see below some recommended reading to undertake prior to the start of your course:

Preparatory Reading

Recommended books/ebooks:

- Eliasson, R. Larsson, L. Orych, M. (2014) 'Principles of Yacht Design'. 4th Edition, Cambridge: Bloomsbury
- Derrett, D R and Barrass, B (1999) Ship stability for masters and mates, Elsevier, Oxford
- Rawson, K J and Tupper, E C (2001) Basic ship theory: combined volume, Elsevier, Oxford Stokoe, E A (1999) Reed's ship construction for marine students, Adlard Coles Nautical, London Barrass, B (2001) Ship stability: notes and examples, Elsevier, Oxford
- Eyres, D J (2001) Ship construction, Elsevier, Oxford

1.6. COVID19 Programme Planning

<table>
<tr><th colspan="3">Covid 19 programme Planning</th></tr>
<tr><td>General approach being undertaken</td><td colspan="2">We will follow government advice on social distancing and personal safety to ensure a ‘Covid secure’ working and learning environment.

We know that we all may need to adapt if Covid conditions change. We will continue to provide a high quality learning experience utilising technology solutions as may be required.

We will continue to update our dedicated Covid 19 webpage if and when circumstances change. We encourage all new and returning students to review this page to better understand the approach we are taking.</td></tr>
<tr><td>Programme Teaching and Learning changes being undertaken</td><td colspan="2">In the event another COVID outbreak effecting the UCSD. We will continue to deliver content via Microsoft Teams platform as per the usual timetable of modules. Practical elements of the course may be effected and the use of simulated software will be used instead of physical components.</td></tr>
<tr><td rowspan="5">Programme Assessment changes being undertaken</td><td colspan="2">In the event another COVID outbreak effecting the UCSD. There are elements of the programme assessment such as practical’s or test elements which may be required to be adapted to suit the COVID conditions.</td></tr>
<tr><td>Module title and code</td><td>Change</td></tr>
<tr><td>SOUD1512</td><td>100% Coursework</td></tr>
<tr><td>SOUD1511</td><td>100% Coursework</td></tr>
<tr><td>SOUD2383</td><td>Virtual Survey</td></tr>
</table>

2. Programme Specification

2.1. Programme Details

Awarding Institution:	University of Plymouth
Partner Institution and delivery site (s):	South Devon College, University Centre, Paignton.
Accrediting Body:	N/A
Language of Study:	English[1]
Mode of Study:	Full Time/Part time
Final Award:	FdSc Marine Technologies
Intermediate Award:	HNC Marine Technologies
Programme Title:	FdSc Marine Technologies
UCAS Code:	610J
JACS Code:	J610
Benchmarks:	Framework for Higher Education Qualifications (FHEQ)(2008) Foundation Degrees Characteristic Statement (FDCS) (2015) QAA Engineering Benchmark (2015)
Date of Programme Approval:	25th May 2016

2.2. Brief Description of the Programme

The programme has been designed to run in a step by step approach that mimics the design process seen in industry. From project conception, material and engine selection, systems design to inspection and testing techniques. The broad scope of the programme endeavours to allow students to select particular specialisms for further development and progression. A detailed appreciation and focus will be gained for the systems commonly operating in a broad range of vessels and particularly the growing luxurious super yacht market in the marine industry.

The aim of the programme is to produce highly adaptive and well-informed marine design engineers. It enables students to develop awareness of the marine design process including materials and systems used to produce commercially viable products for the marine industry. It will extend and develop their knowledge and understanding of the needs of industry including customer and employer requirements as well as meeting industry standards of design and build. Students will acquire and refine a range of effective soft skills for supporting industry in a team work and individual context.

[1] Unless otherwise approved through Plymouth University's Academic Development and Partnerships Committee

2.3. Details of Accreditation by a Professional/Statutory Body (if appropriate)

Students will be encouraged to apply for free student membership to the Institute of Marine Engineering, Science and Technology (IMarEST) whilst studying on the course.
South Devon College is actively seeking accreditation with the IMarEST
Potential other accreditation bodies for further exploration include the Royal Institute of Naval Architects (RINA) and the Royal Yachting Association (RYA)

2.4. Exceptions to Plymouth University Regulations

(Note: Plymouth University's Academic Regulations are available on the extranet: https://www.plymouth.ac.uk/student-life/academic-regulations)
None

2.5. Programme Aims

The programme will deliver:

1. Highly adaptive and well-informed marine design engineers. It will enable students to apply the principles and disciplines of naval architecture and marine engineering to practical applications within the marine sector.
2. Students who can analyse, interpret and evaluate knowledge of materials and production techniques available whilst employing these factors to product design to maximise life expectancy.
3. Industry with self-managers and Independent enquirers with the confidence and experience in managing a wide range of design skills and optimum problem solving ability.
4. Students who can adapt to the ever changing and broadening role of design within engineering and be capable of managing projects with respect for the commercial impacts on a business.
5. Emphasis on the requirement for practical ability along with academic competency to reinforce the decisions made in design stages and support production with clear and confident communication skills.

2.6. Programme Intended Learning Outcomes (ILO)

By the end of this programme the student will be able to:

Knowledge and Understanding

1. Evaluate and apply appropriate knowledge as an aid to product design and problem-solving ability in the sector involving marine design technologies.

Cognitive/Intellectual Skills

2. Synthesise, appraise and evaluate evidence from appropriate sources to make independent judgements about systems available in the design and manufacture of components.

Key Transferable

3. Independently plan, manage and evaluate the acquisition of new knowledge and skills as part of a lifelong learning strategy.

CPD and Lifelong Learning

4. Identify own strengths and weaknesses to develop their own area of expertise
5. Approach problems with a “Can do” mentality that reflects the growing need of employers and success of commercial projects

Practical/Professional Skills

6. Be able to act autonomously with limited supervision or direction within agreed guidelines in both practice and academic study.

Key Assessment Methods

Throughout the Programme, a range of formative assessment methods are used to facilitate core professional and academic development.
Students are summatively assessed through written assignments that demonstrate different academic skills. Examples include: practical assessments, essays and reports including critical analysis, critical comparative discourse, an original research proposal and a dissertation.

2.7. Distinctive Features

The programme has been developed based on the needs of employers, learner feedback and industry research. The programme provides a broad and diverse depth of knowledge that allows to the learner to appreciate and identify specialisms in the fields of Naval Architecture and Marine Engineering Systems. The programme will be delivered in a highly practical manner allowing the student to identify with all levels of the design, manufacture and management process maximising employability potential. The programme has been designed to allow students to study whilst continuing to work in employment whilst funding their studies. A broad range of teaching methods have been adopted to maximise the practical ability of the learner including live commercial research and build projects working on a range of vessels including RIB’s, Yachts, Displacement Boats and Sailing Dinghies. We also work closely with local employees willing to offer research opportunities for our students including at the time of writing: Ribeye, Princess Yachts PLC, OTS Marine, Scanstrut and many more. More information on this can be found at the college website.
This programmes offer students the opportunity to: develop an understanding of the expectations of their role; benefit from supported professional development and training that will enable them to undertake their professional role more effectively; be offered an opportunity for career development and progression; gain from the vocational focus of the programme and the increased relevancy of programme content, allowing relationships between theory and practice to be understood and applied.
The delivery team are experienced sector specialists offering an in depth practical and theoretical perspective. The relevance of the modules is in tune with the current issues and targets for education in the UK today.

2.8. Student Numbers

The following provides information that should be considered nominal, and therefore not absolutely rigid, but is of value to guide assurance of the quality of the student experience, functional issues around enabling progression opportunities to occur and staffing and resource planning:
Minimum student numbers per stage =5
Target student numbers per stage = 10
Maximum student numbers per stage = 15

2.9. Progression Route(s)

Approved 'progression route(s)' are those where successful achievement in this programme enables direct alignment to join a stage of another programme. This is an approach employed primarily for Foundation Degree students to 'top-up' to complete a Bachelor degree, but may be employed for other award types.

This is in part an automated admissions criterion and therefore progression may be impacted on by availability of a position on the progression award; however progression opportunity, if not available in the first year of application, is guaranteed within 3-years.

Progression arrangements with institutions other than Plymouth University carry an increased element of risk. It is necessary for the delivering partner institution to obtain formal agreement from that institution to guarantee progression for existing students on the programme. For progression to Plymouth University, should there be the need to withdraw the progression route programme(s) then either this will be delayed to provide progression or appropriate solutions will be found. This arrangement is guaranteed for existing students that complete their programme of study with no suspensions or repeat years and who wish to progress immediately to the University.

The potential academic and employment progression routes for the student are vast, some of the following specialisms available include however not limited to:

Position	Industry Area
Project Manager	• Marine Engineering • Composite Manufacture • Boat Building • Structural Engineering • Marina Operations • Sales and Marketing • Transferable skills to Automotive, Aviation and Renewable sectors
CAD Technician	• Product Designers • Marine Engineering • Boat Building • Naval Architecture • Transferable skills to Automotive, Aviation and Renewable sectors
Marine Surveying	• Marine Sales and Brokerage • Regulatory Bodies
Marine Engineering	• Main Dealer workshops • Installation, Servicing and Maintenance
Naval Architect	• Further academic progression route to BSc or MSc in a related discipline
Composite Materials Technician	• Boat Builders • Structural Fibre Components • Bespoke Moulding and Manufacturers • Transferable skills to automotive, Aviation and Renewable sectors

Students who successfully complete the HNC Marine Technologies programme may progress to the FdSc Marine Technologies programme to Stage 5.

Students who successfully complete the Foundation Degree may progress to the following programmes at the University of Plymouth:-

- (Level 6) BEng Marine Technology (for those students with a 60% overall average)

The contribution of marks from prior levels of study to the progression award is governed by University regulations.

2.10. Admissions Criteria

Qualification(s) Required for Entry to this Programme:	Details:
Level 2: - **Key Skills requirement / Higher Level Diploma:** **and/or** - **GCSEs required at Level 4 or above:**	Communication and Application of number Level 2 combined with either GCSE or A-Levels (key skills will not be accepted on their own) In 4 relevant subject areas including Maths and English
Level 3: at least one of the following: - **AS/A Levels** - **Advanced Level Diploma:** - **BTEC National Certificate/Diploma:** - **VDA: AGNVQ, AVCE, AVS:** - **Access to HE or Year 0 provision:** - **International Baccalaureate:** - **Irish / Scottish Highers / Advanced Highers:**	48 points from a relevant subject area Access to HE Engineering, Science or Mathematics
Work Experience:	Considered on individual merit
Other HE qualifications / non-standard awards or experiences:	Candidates are encouraged to apply if they feel they can benefit from the programme. Candidates with non-standard entry qualifications will be considered on the basis of relevant work experience and attainment of transferable skills, which demonstrate an ability to study at this level. Students with non-standard qualifications may be asked to complete a written piece of work on a relevant subject and/or learning needs assessment Be able to undertake practical field work in a variety of educational environments and undertake practical experience.
APEL / APCL[2] possibilities:	APL will be considered as per Plymouth University Regulations
Interview / Portfolio requirements:	Interviews maybe required depending on previous qualifications and industry experience

[2] Accredited Prior Experiential Learning and Accredited Prior Certificated Learning

Independent Safeguarding Agency (ISA) / Disclosure and Barring Service (DBS) clearance required:	Yes

2.11. Academic Standards and Quality Enhancement

The Programme Leader/Manager (or other descriptor) leads the Programme Committee in the following of Plymouth University's annual programme monitoring process (APM), as titled at the time of approval. APM culminates in the production, maintenance and employment of a programme level Action Plan, which evidences appropriate management of the programme in terms of quality and standards. Any formally agreed change to this process will continue to be followed by the Programme Leader/Manager (or other descriptor) and their Programme Committee.
Elements of this process include engaging with stakeholders. For this definitive document it is important to define:

Subject External Examiner(s): All modules are parented by this programme and therefore covered by this programme's external examiner.

Additional stakeholders specific to this programme: Students, graduates, local employers, industry expert speakers and PU

2.12. Programme Structure

The following structure diagram(s) provides the current structure for this programme:

FHEQ level: 4 For: HNC/FdSc Marine Technologies Full Time				
F/T Route Year	**When in Year? (i.e. Autumn, Spring etc.)**	**Core or Option Module**	**Credits**	**Module**
1	Autumn	Core	20	SOUD1512 Engineering Mathematics
1	Autumn	Core	20	SOUD1424 Developing Research & Practice with Work Related Research
1	Autumn and Spring	Core	20	SOUD1425 Naval Architecture Design
1	Autumn and Spring	Core	20	SOUD1426 Materials Engineering with Production Techniques
1	Spring	Core	20	SOUD1427 Vessel Propulsion Systems
1	Spring	Core	20	SOUD1511 Engineering Principles

FHEQ level: 5 For: FdSc Marine Technologies Full Time				
F/T Route Year	When in Year? (i.e. Autumn, Spring etc.)	Core or Option Module	Credits	Module
2	Autumn	Core	20	SOUD2379 Production Management
2	Autumn	Core	20	SOUD2380 Computer Aided Design (CAD)
2	Autumn and Spring	Core	20	SOUD2381 Independent Research and Development Project
2	Autumn and Spring	Core	20	SOUD2382 Marine Engineering Systems
2	Spring	Core	20	SOUD2383 Vessel Surveying
2	Spring	Core	20	SOUD2384 Composite Materials and Manufacture

FHEQ level: 4 For: FdSc Marine Technologies Part Time				
F/T Route Year	When in Year? (i.e. Autumn, Spring etc.)	Core or Option Module	Credits	Module
1	Autumn	Core	20	SOUD1424 Developing Research & Practice with Work Related Research
1	Autumn and Spring	Core	20	SOUD1425 Naval Architecture Design
1	Spring	Core	20	SOUD1511 Engineering Principles
2	Autumn	Core	20	SOUD1512 Engineering Mathematics
2	Autumn and Spring	Core	20	SOUD1426 Materials Engineering with Production Techniques
2	Spring	Core	20	SOUD1427 Vessel Propulsion Systems

FHEQ level: 5 For: FdSc Marine Technologies Part Time				
F/T Route Year	When in Year? (i.e. Autumn, Spring etc.)	Core or Option Module	Credits	Module
3	Autumn	Core	20	SOUD2379 Production Management
3	Autumn	Core	20	SOUD2380 Computer Aided Design (CAD)
3	Autumn and Spring	Core	20	SOUD2382 Marine Engineering Systems
4	Autumn and Spring	Core	20	SOUD2381 Independent Research and Development Project
4	Spring	Core	20	SOUD2383 Vessel Surveying
4	Spring	Core	20	SOUD2384 Composite Materials and Manufacture

FHEQ level: 4 For: HNC Marine Technologies Full Time				
F/T Route Year	When in Year? (i.e. Autumn, Spring etc.)	Core or Option Module	Credits	Module
1	Autumn	Core	20	SOUD1512 Engineering Mathematics
1	Autumn	Core	20	SOUD1424 Developing Research & Practice with Work Related Research
1	Autumn and Spring	Core	20	SOUD1425 Naval Architecture Design
1	Autumn and Spring	Core	20	SOUD1426 Materials Engineering with Production Techniques
1	Spring	Core	20	SOUD1427 Vessel Propulsion Systems
1	Spring	Core	20	SOUD1511 Engineering Principles

FHEQ level: 4 For: HNC Marine Technologies Part Time				
F/T Route Year	When in Year? (i.e. Autumn, Spring etc.)	Core or Option Module	Credits	Module
1	Autumn on FT Route	Core	20	SOUD1424 Developing Research & Practice with Work Related Research
1	Autumn and Spring	Core	20	SOUD1425 Naval Architecture Design
1	Spring	Core	20	SOUD1511 Engineering Principles
2	Autumn	Core	20	SOUD1512 Engineering Mathematics
2	Autumn and Spring	Core	20	SOUD1426 Materials Engineering with Production Techniques
2	Spring	Core	20	SOUD1427 Vessel Propulsion Systems

2.13. Explanation and Mapping of Learning Outcomes, Teaching & Learning and Assessment

Developing graduate attributes and skills, at any level of HE, is dependent on the clarity of strategies and methods for identifying the attributes and skills relevant to the programme and where and how these are operationalized. The interrelated factors of Teaching, Learning and Assessment and how these are inclusive in nature, are fundamentally significant to these strategies and methods, as are where and how these are specifically distributed within the programme.
Ordered by graduate attributes and skills, the following table provides a map of the above, plus an exposition to describe and explain the ideas and strategy of each. Therefore, subsequent to the initial completion for approval, maintenance of this table as and when programme structure changes occur is also important:

FHEQ level: 4					
Definitions of Graduate Attributes and Skills Relevant to this Programme	**Teaching and Learning Strategy / Methods**	**Programme Aims**	**Programme intended Learning Outcomes**	**Range of Assessments**	**Related Core Modules**
Knowledge / Understanding: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this foundation degree. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010).					
By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Demonstrate the ability to evaluate and interpret underlying concepts and	Primary: • Lectures, Seminars and tutorials • Self-directed independent study	1	ILO 1	• Project report • In-class tests • Essay	SOUD1512 SOUD1424 SOUD1425 SOUD1426 SOUD1427

principles associated with Naval Architecture and vessel design. • Employ skills, knowledge and understanding to provide sustainable solutions to engineering problems by innovation and creativity • Apply commercial awareness to problem solving with respect for the environment social and ethical considerations. • Demonstrate analytical,, numerical and computational solutions to a variety of engineering solutions • Appreciate the local and international dimensions of engineering and key transferable skills in the industry • Awareness that principles in technology are open to ongoing debate and reformulation	• Practice sessions Secondary/Supplementary: • Case studies • Problem-solving exercises • Evaluation of "live and completed projects • Group and individual presentations and peer assessments • Site visits			• Scenario report • Case Study • Presentation • Portfolio • Laboratory Practice	SOUD1511

An explanation for embedding Knowledge and Understanding through Teaching & Learning and Assessment at this level of the programme:

All modules will embed knowledge and understanding to enable students to reach the threshold standards to a pass level. Various methods of teaching will be used accompanied by a range of different assessments with Learning Outcomes designed to ascertain the level of knowledge and understanding of the students. Knowledge and understanding will be delivered by lectures, presentations, seminars and practical work. Specifically, the following learning objectives will measure knowledge and understanding:

SOUD 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.
SOUD 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.
SOUD 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
SOUD 1423 – LO4 Apply statistical techniques and probability to engineering situations.
SOUD 1424 – LO1 To enable students to develop a comprehensive portfolio of evidence that supports their career development and practice by carrying out a work related research project
SOUD 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives
SOUD 1424 – LO3 To support students in developing as autonomous students at HE level
SOUD 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer
SOUD 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations
SOUD 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUD 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption SOUD1426 – LO1 Describe and group materials by classification and analyse results. SOUD1426 – LO2 Analyse and evaluate the results of test data. SOUD1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications. SOUD1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques. SOUD 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements SOUD 1427 – LO2 Identify typical components in a modern marine power plant transmission system SOUD 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications SOUD 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability SOUD 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation. SOUD 1428 – LO2 Show an understanding of an AC to DC conversion system. SOUD 1428 – LO3 Apply static theory to simple mechanical applications. SOUD 1428 – LO4 Apply dynamic theory to simple mechanical systems.					
Cognitive and Intellectual Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this foundation degree. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Assume a logical, systematic and pragmatic approach to solving a range of engineering problems and design requirements • Evaluate and interpret data to develop arguments and demonstrate sound	Primary: • Class exercises • Presentations • Tutorial/seminar discussions • Feedback via coursework assessment process (essays etc.) • Practical Observation	2	ILO2	Presentations • Essays • Projects • Tests • Journal • Laboratory practice	SOUD1512 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1511

engineering judgement in alignment with basic theory and research. • Evaluate the appropriateness of engineering solutions related to their field of study • Assume flexibility in argument and appreciation for new technologies and the wider environment • Use reflection in the learning process to enhance personal development and refine professional practice.	Secondary/Supplementary: • Laboratory analysis in practice • Computer-based practical's on data and measurement problems				

An explanation for embedding Cognitive and Intellectual Skills through Teaching & Learning and Assessment at this level of the programme:

Cognitive and intellectual skills will be fundamental to all modules. Students will be required to access information regarding their subject area from a range of different sources. Students will be encouraged to communicate and validate their findings in different contexts. Cognitive and intellectual skills will be delivered by lectures, presentations, seminars, project and practical work. Typical assessments will include exams and coursework (e.g. Essays, Reports, and Presentations). Specifically, cognitive and intellectual skills will be measured by the following learning outcomes:

SOUD 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.
SOUD 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.
SOUD 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
SOUD 1423 – LO4 Apply statistical techniques and probability to engineering situations.
SOUD 1424 – LO1 To enable students to develop a comprehensive portfolio of evidence that supports their career development and practice by carrying out a work related research project
SOUD 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives
SOUD 1424 – LO3 To support students in developing as autonomous students at HE level
SOUD 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer
SOUD 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations
SOUD 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory
SOUD 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption
SOUD1426 – LO1 Describe and group materials by classification and analyse results.
SOUD1426 – LO2 Analyse and evaluate the results of test data.
SOUD1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.
SOUD1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUD 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements
SOUD 1427 – LO2 Identify typical components in a modern marine power plant transmission system
SOUD 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications
SOUD 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability
SOUD 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.
SOUD 1428 – LO2 Show an understanding of an AC to DC conversion system.
SOUD 1428 – LO3 Apply static theory to simple mechanical applications.
SOUD 1428 – LO4 Apply dynamic theory to simple mechanical systems.

Key Transferable Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this foundation degree. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Demonstrate the ability to appreciate the commercial aspects and function on design in industry • Conduct themselves in a professional manner in design and practical scenarios. • Approach problem solving design situations with a pragmatic “can do” approach. • Exercise responsibility and sound management in ethical and social situations	Primary: • Library and other research exercises • Group work awareness and practice • Presentations • Group and individual peer assessment • Computer-based learning and assessment • Tutorials and seminars	3	ILO3	• Presentation • Examination • In-Class tests • Assessed discussions • Group project work	SOUD1512 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1511

• Demonstrate effective appreciation for the impact of industry on the environment • Communicate in a clear and professional manner • Reflect on own skills and identify CPD opportunities where necessary	Secondary/Supplementary: • Class and seminar interactions and feedback				

An explanation for embedding Key Transferable Skills through Teaching & Learning and Assessment at this level of the programme:

The programme of study is specifically designed to ensure students will be equipped with skills that will certainly be transferable to the work place. Each module taught will embed transferable skills through teaching, learning and assessment in some measure. For example, students will need to demonstrate that they are able to solve problems, organise themselves, work to deadlines, make decisions, research, communicate effectively and be self-aware. Assessment will be primarily through coursework (e.g. Essays, Reports, Portfolios, Practical and Presentations). Specifically the learning outcomes from the modules below will embed transferable skills:

SOUD 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.
SOUD 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.
SOUD 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
SOUD 1423 – LO4 Apply statistical techniques and probability to engineering situations.
SOUD 1424 – LO1 To enable students to develop a comprehensive portfolio of evidence that supports their career development and practice by carrying out a work related research project
SOUD 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives
SOUD 1424 – LO3 To support students in developing as autonomous students at HE level
SOUD 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer
SOUD 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations
SOUD 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory
SOUD 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption
SOUD1426 – LO1 Describe and group materials by classification and analyse results.
SOUD1426 – LO2 Analyse and evaluate the results of test data.
SOUD1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.
SOUD1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.
SOUD 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements
SOUD 1427 – LO2 Identify typical components in a modern marine power plant transmission system
SOUD 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications
SOUD 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability

SOUD 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.
SOUD 1428 – LO2 Show an understanding of an AC to DC conversion system.
SOUD 1428 – LO3 Apply static theory to simple mechanical applications.
SOUD 1428 – LO4 Apply dynamic theory to simple mechanical systems.

Employment Related Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this foundation degree. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Exercise ability to identify engineering problems and apply theory and practical knowledge to find sustainable solutions • Demonstrate autonomous and team work related skills to a range of industry scenarios • Ability to formulate and present data in arrange of design contexts • Demonstrate a high level of written text in a professional manner • Embed and identify the correct use of ICT software to present information	Primary: • Lectures • Research Tasks • Portfolio Development Secondary/Supplementary: Site Visits	4	ILO4	• Project report • Scenario report • Case Study • Presentation	SOUD1512 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1511

An explanation for embedding Employment Related Skills through Teaching & Learning and Assessment at this level of the programme:
The programme is intended embed a variety of employment related skills. Within the context of engineering and construction these skills could include: having a breadth and depth of knowledge about emerging issues and developments across industry sectors, having developed practical and analytical

skills, being able to present information effectively and being able to link all of these elements together coherently to identify relationships. Specifically the learning outcomes from the modules below will embed employment related skills:

SOUD 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.
SOUD 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.
SOUD 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
SOUD 1423 – LO4 Apply statistical techniques and probability to engineering situations.
SOUD 1424 – LO1 To enable students to develop a comprehensive portfolio of evidence that supports their career development and practice by carrying out a work related research project
SOUD 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives
SOUD 1424 – LO3 To support students in developing as autonomous students at HE level
SOUD 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer
SOUD 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations
SOUD 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory
SOUD 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption
SOUD1426 – LO1 Describe and group materials by classification and analyse results.
SOUD1426 – LO2 Analyse and evaluate the results of test data.
SOUD1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.
SOUD1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.
SOUD 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements
SOUD 1427 – LO2 Identify typical components in a modern marine power plant transmission system
SOUD 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications
SOUD 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability
SOUD 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.
SOUD 1428 – LO2 Show an understanding of an AC to DC conversion system.
SOUD 1428 – LO3 Apply static theory to simple mechanical applications.
SOUD 1428 – LO4 Apply dynamic theory to simple mechanical systems.

Practical Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors					

(2010) have been used during the development of this foundation degree. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Demonstrate the ability to conduct themselves in a workshop environment with respect for health and safety and responsibility for others • Identify the skills of themselves and others to apply to solving engineering problems in independent and teamwork situations • Undertake and identify CPD opportunities to further enhance professional development and commercial viability	Primary: • Projects • Designated practical tasks • Lectures and tutorials • Learning from work Secondary/Supplementary: • Tutorials • Site Visits	5	ILO5	• Portfolio • Project Repot • Case Study • Scenario Report	SOUD1512 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1511

An explanation for embedding Practical Skills through Teaching & Learning and Assessment at this level of the programme:
The range of practical techniques that will be taught will include collection of data, analysis and interpretation of results, and skills relevant to effective project management. Teaching methods with include practical demonstrations, field work and management of live projects. Assessment will be primarily through coursework (e.g. Reports and reflective statements). There are several Learning Outcomes that specifically measure the development of practical skills:

SOUD 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.
SOUD 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.
SOUD 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
SOUD 1423 – LO4 Apply statistical techniques and probability to engineering situations.
SOUD 1424 – LO1 To enable students to develop a comprehensive portfolio of evidence that supports their career development and practice by carrying out a work related research project

SOUD 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives
SOUD 1424 – LO3 To support students in developing as autonomous students at HE level
SOUD 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer
SOUD 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations
SOUD 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory
SOUD 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption
SOUD1426 – LO1 Describe and group materials by classification and analyse results.
SOUD1426 – LO2 Analyse and evaluate the results of test data.
SOUD1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.
SOUD1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.
SOUD 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements
SOUD 1427 – LO2 Identify typical components in a modern marine power plant transmission system
SOUD 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications
SOUD 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability
SOUD 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.
SOUD 1428 – LO2 Show an understanding of an AC to DC conversion system.
SOUD 1428 – LO3 Apply static theory to simple mechanical applications.
SOUD 1428 – LO4 Apply dynamic theory to simple mechanical systems.

FHEQ level: 5						
Definitions of Graduate Attributes and Skills Relevant to this Programme	**Teaching and Learning Strategy / Methods**	**Programme Aims**	**Programme intended Learning Outcomes**	**Range of Assessments**	**Related Core Modules**	
Knowledge / Understanding: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this FdSc. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Demonstrate the ability to apply	Primary: • Lectures, Seminars and tutorials • Self-directed independent study • Practice sessions Secondary/Supplementary: • Case studies		1	ILO 1	• Project report • In-class tests • Essay • Scenario report • Case Study • Presentation	SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383 SOUD2384

	and critically analyse concepts and principles associated with Naval Architecture and vessel design. • Apply skills, knowledge and understanding previously learnt and critically evaluate solutions to engineering problems in employment situations • Influence commercial awareness to problem solving with respect for the environment social and ethical considerations. • Demonstrate and communicate analytical, numerical and computational solutions to a variety of engineering solutions • Analyse the local and international dimensions of engineering and	• Problem-solving exercises • Evaluation of "live and completed projects • Group and individual presentations and peer assessments • Site visits			• Portfolio • Laboratory Practice	

key transferable skills in the industry • Appreciate that principles in technology are open to ongoing debate and reformulation and define areas for limits in their own knowledge base					

An explanation for embedding Knowledge and Understanding through Teaching & Learning and Assessment at this level of the programme:
All modules will embed knowledge and understanding to enable students to reach the threshold standards to a pass level. Various methods of teaching will be used accompanied by a range of different assessments with Learning Outcomes designed to ascertain the level of knowledge and understanding of the students. Knowledge and understanding will be delivered by lectures, presentations, seminars and practical work. Specifically, the following learning objectives will measure knowledge and understanding:

SOUD2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production
SOUD2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company
SOUD2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry
SOUD2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.
SOUD2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards
SOUD2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes.
SOUD2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment
SOUD2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.
SOUD2381 – ILO1 Plan for and collect suitable data, using appropriate methods.
SOUD2381 – ILO2 Interpret the data collected within the parameters of the project.
SOUD2381 – ILO3 Present the findings of research using appropriate formats.
SOUD2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.
SOUD2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.
SOUD2382 – ILO2 Gain appreciation for the different systems through practical and financial justification
SOUD2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.
SOUD2382 – ILO4 Provide calculations to reinforce design selection and proposal
SOUD2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector
SOUD2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.

SOUD2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry SOUD2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability SOUD2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry SOUD2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production SOUD2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes SOUD2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques					
Cognitive and Intellectual Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this FdSc. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Assume a logical, systematic and pragmatic approach to solving a range of engineering problems and design requirements • Critically evaluate and synthesise data to develop arguments and demonstrate sound engineering judgement in alignment with basic theory and research. • Evaluate the appropriateness of engineering solutions and analyse related to their field of study • Assume flexibility and openness in argument and appreciation for new	Primary: • Class exercises • Presentations • Tutorial/seminar discussions • Feedback via coursework assessment process (essays etc.) • Practical Observation Secondary/Supplementary: • Laboratory analysis in practice • Computer-based practical's on data and measurement problems	2	ILO2	Presentations • Essays • Projects • Tests • Journal • Laboratory practice	SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383 SOUD2384

technologies and the wider environment • Use reflection in the learning process to enhance personal development, refine professional practice and acquire new competences.					

An explanation for embedding Cognitive and Intellectual Skills through Teaching & Learning and Assessment at this level of the programme:

Cognitive and intellectual skills will be fundamental to all modules. Students will be required to access information regarding their subject area from a range of different sources. Students will be encouraged to communicate and validate their findings in different contexts. Cognitive and intellectual skills will be delivered by lectures, presentations, seminars, project and practical work. Typical assessments will include exams and coursework (e.g. Essays, Reports, and Presentations). Specifically, cognitive and intellectual skills will be measured by the following learning outcomes:

SOUD2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production
SOUD2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company
SOUD2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry
SOUD2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.
SOUD2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards
SOUD2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes.
SOUD2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment
SOUD2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.
SOUD2381 – ILO1 Plan for and collect suitable data, using appropriate methods.
SOUD2381 – ILO2 Interpret the data collected within the parameters of the project.
SOUD2381 – ILO3 Present the findings of research using appropriate formats.
SOUD2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.
SOUD2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.
SOUD2382 – ILO2 Gain appreciation for the different systems through practical and financial justification
SOUD2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.
SOUD2382 – ILO4 Provide calculations to reinforce design selection and proposal
SOUD2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector
SOUD2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.
SOUD2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry
SOUD2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability
SOUD2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry
SOUD2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production

SOUD2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes SOUD2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques					
Key Transferable Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this FdSc. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Demonstrate the ability to apply commercial acumen and appreciation in the design industry • Conduct themselves in a professional manner in design and practical scenarios. • Apply problem solving ability in situations with a pragmatic "can do" approach. • Exercise and leadership responsibility with sound management in ethical and social situations • Demonstrate effective appreciation for the impact of industry on the environment • Communicate and manage in a clear and professional manner • Reflect and apply own skills and identify CPD opportunities where necessary	Primary: • Library and other research exercises • Group work awareness and practice • Presentations • Group and individual peer assessment • Computer-based learning and assessment • Tutorials and seminars Secondary/Supplementary: • Class and seminar interactions and feedback	A3	ILO3	• Presentation • Examination • In-Class tests • Assessed discussions • Group project work	SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383 SOUD2384

An explanation for embedding Key Transferable Skills through Teaching & Learning and Assessment at this level of the programme:

The programme of study is specifically designed to ensure students will be equipped with skills that will certainly be transferable to the work place. Each module taught will embed transferable skills through teaching, learning and assessment in some measure. For example, students will need to demonstrate that they are able to solve problems, organise themselves, work to deadlines, make decisions, research, communicate effectively and be self-aware. Assessment will be primarily through coursework (e.g. Essays, Reports, Portfolios, Practical and Presentations). Specifically the learning outcomes from the modules below will embed transferable skills:

SOUD2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production
SOUD2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company
SOUD2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry
SOUD2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.
SOUD2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards
SOUD2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes.
SOUD2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment
SOUD2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.
SOUD2381 – ILO1 Plan for and collect suitable data, using appropriate methods.
SOUD2381 – ILO2 Interpret the data collected within the parameters of the project.
SOUD2381 – ILO3 Present the findings of research using appropriate formats.
SOUD2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.
SOUD2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.
SOUD2382 – ILO2 Gain appreciation for the different systems through practical and financial justification
SOUD2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.
SOUD2382 – ILO4 Provide calculations to reinforce design selection and proposal
SOUD2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector
SOUD2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.
SOUD2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry
SOUD2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability
SOUD2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry
SOUD2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production
SOUD2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes
SOUD2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques

Employment Related Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this FdSc. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: • Critically evaluate engineering problems and apply theory and practical knowledge to find sustainable solutions • Demonstrate autonomous and team work related skills to a range of industry scenarios • Ability to formulate and present data in arrange of design contexts • Demonstrate a high level of written text in a professional manner • Embed and identify the correct use of ICT software to present information	Primary: • Lectures • Research Tasks • Portfolio Development Secondary/Supplementary: Site Visits	A4	ILO4	• Project report • Scenario report • Case Study • Presentation	SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383 SOUD2384
An explanation for embedding Employment Related Skills through Teaching & Learning and Assessment at this level of the programme: The programme is intended embed a variety of employment related skills. Within the context of engineering and construction these skills could include: having a breadth and depth of knowledge about emerging issues and developments across industry sectors, having developed practical and analytical skills, being able to present information effectively and being able to link all of these elements together coherently to identify relationships. Specifically the learning outcomes from the modules below will embed employment related skills: SOUD2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production SOUD2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company SOUD2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry SOUD2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance. SOUD2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards					Primary: • Le • Re • Po De Secondary Site Visits

SOUD2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes. SOUD2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment SOUD2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment. SOUD2381 – ILO1 Plan for and collect suitable data, using appropriate methods. SOUD2381 – ILO2 Interpret the data collected within the parameters of the project. SOUD2381 – ILO3 Present the findings of research using appropriate formats. SOUD2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions. SOUD2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire. SOUD2382 – ILO2 Gain appreciation for the different systems through practical and financial justification SOUD2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems. SOUD2382 – ILO4 Provide calculations to reinforce design selection and proposal SOUD2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector SOUD2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures. SOUD2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry SOUD2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability SOUD2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry SOUD2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production SOUD2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes SOUD2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques					
Practical Skills: The guidance provided by QAA, FDCS and the SEEC Credit Level Descriptors (2010) have been used during the development of this FdSc. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2010). By the end of this level of this programme the students will be able to demonstrate for a threshold pass: Demonstrate the ability to conduct themselves in a workshop environment	Primary: • Projects • Designated practical tasks • Lectures and tutorials • Learning from work	5	ILO5	• Portfolio • Project Repot • Case Study Scenario Report	SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383

with respect for health and safety and responsibility for others Identify the skills of themselves and others to apply to solving engineering problems in independent and teamwork situations Undertake and identify CPD opportunities to further enhance professional development and commercial viability	Secondary/Supplementary: • Tutorials Site Visits				SOUD2384

An explanation for embedding Practical Skills through Teaching & Learning and Assessment at this level of the programme:

The range of practical techniques that will be taught will include collection of data, analysis and interpretation of results, and skills relevant to effective project management. Teaching methods with include practical demonstrations, field work and management of live projects. Assessment will be primarily through coursework (e.g. Reports and reflective statements). There are several Learning Outcomes that specifically measure the development of practical skills:

SOUD2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production
SOUD2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company
SOUD2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry
SOUD2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.
SOUD2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards
SOUD2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes.
SOUD2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment
SOUD2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.
SOUD2381 – ILO1 Plan for and collect suitable data, using appropriate methods.
SOUD2381 – ILO2 Interpret the data collected within the parameters of the project.
SOUD2381 – ILO3 Present the findings of research using appropriate formats.
SOUD2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.
SOUD2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.
SOUD2382 – ILO2 Gain appreciation for the different systems through practical and financial justification
SOUD2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.
SOUD2382 – ILO4 Provide calculations to reinforce design selection and proposal
SOUD2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector
SOUD2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.
SOUD2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry

SOUD2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability
SOUD2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry
SOUD2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production
SOUD2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes
SOUD2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques

2.14. Work Based/Related Learning

WBL is an essential element of Foundation Degrees and therefore needs to be detailed here. However, for all types of HE programmes there should be an element of employability focus through, at least, Work Related Learning, and therefore the following is applicable for all:

FHEQ **level:** 4					
WBL/WRL Activity:	**Logistics**	**Programme Aim**	**Programme Intended LO**	**Range of Assessments**	**Related Core Module(s)**
Field work, Field trips, Site visits	Identify suitable locations and organise off-site activities	1,3,4,5	1,2,4,4	In-class tests, Written report, Essay, Presentation, Exam, Reflective report, Portfolio	SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1511
Practical techniques	Identify suitable locations and organise off-site activities	1,2,3,5	1,2,3,4,5	In-class tests, Written report, Essay, Presentation, Practical	SOUD1512 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1511
Work Related Research	Work with local industry/employers/ charities to deliver relevant training and industry updating	1,2,3,4,5	1,2,3,5	Practical, reflective report	SOUD1424

Guest speakers	Continue to develop and maintain links with industry to provide guest speaker opportunities	1,2,3,4,5	1,2,4,5	In-class tests, Written report, Essay, Presentation, Exam	SOUD1425 SOUD1427

An explanation of this map:
WBL and WRL are very significant to this programme and are embedded into every module. Students will work very closely with industry throughout to ensure that they develop the skills necessary for successful employment in the marine engineering sector. Each module will focus on developing employer-related skills – both specifically for engineering and also important transferable skills. There will be a focus on developing practical skills in the field and undertaking "real life" projects. Guest speakers and industry visits will be used to enhance modules and enable students to apply their theoretical knowledge to real-life situations as well as gain additional qualifications and training. Where appropriate assignments will be linked to local, national and international topics to ensure they have a real-world emphasis and prepare students for employment.

FHEQ **level:** 5					
WBL/WRL Activity:	**Logistics**	**Programme Aim**	**Programme Intended LO**	**Range of Assessments**	**Related Core Module(s)**
Field work, Field trips, Site visits	Identify suitable locations and organise off-site activities	1,3,4,5	1,2,4,4	In-class tests, Written report, Essay, Presentation, Exam, Reflective report, Portfolio	SOUD2379 SOUD2380 SOUD2382 SOUD2383 SOUD2384
Practical techniques	Identify suitable locations and organise off-site activities	1,2,3,5	1,2,3,4,5	In-class tests, Written report, Essay, Presentation, Practical	SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383 SOUD2384
Work Related Research	Work with local industry/employers/ charities to deliver relevant training and industry updating	1,2,3,4,5	1,2,3,5	Practical, reflective report	SOUD2381
Guest speakers	Continue to develop and maintain links	1,2,3,4,5	1,2,4,5	In-class tests, Written report,	SOUD2383

	with industry to provide guest speaker opportunities			Essay, Presentation, Exam	SOUD2384

An explanation of this map:

WBL and WRL are very significant to this programme and are embedded into every module. Students will work very closely with industry throughout to ensure that they develop the skills necessary for successful employment in the marine engineering sector. Each module will focus on developing employer-related skills – both specifically for engineering and also important transferable skills. There will be a focus on developing practical skills in the field and undertaking "real life" projects. Guest speakers and industry visits will be used to enhance modules and enable students to apply their theoretical knowledge to real-life situations as well as gain additional qualifications and training. Where appropriate assignments will be linked to local, national and international topics to ensure they have a real-world emphasis and prepare students for employment.

3. Module Records

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE: SOUD1512	**MODULE TITLE: Engineering Mathematics**	
CREDITS: 20	**FHEQ LEVEL: 4**	**HECOS CODE: 101028 Engineering & Industrial Mathematics**
PRE-REQUISITES: None	**CO-REQUISITES: None**	**COMPENSATABLE: N**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module is designed to provide an introduction to mathematical principles that underpin the knowledge and skills required to study in marine engineering. A focus will be made on applying mathematics to practical problem solving in a variety of marine engineering contexts

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*	
C1 (Coursework)	30%
T1 (Test)	70%

SUBJECT ASSESSMENT PANEL to which module should be linked: FdSc/HNC Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:
To provide a stable base of analytical knowledge and technique required to complete a range of design scenarios and to prepare for further studies in Engineering.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	**Award/ Programme Learning Outcomes contributed to**
1. Analyse and provide solutions for a range of mathematical engineering problems, involving algebraic systems, trigonometrical methods, calculus and engineering statistical methods. 2. Demonstrate the ability to solve a range of technical calculations involving algebraic methods and engineering statistics 3. Demonstrate the ability to solve a range of technical calculations involving Engineering Calculus and trigonometrical methods.	PLO, 1 PLO, 3 PLO, 5

DATE OF APPROVAL: 16/01/2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: 23-09-2019	**SCHOOL/PARTNER: South Devon College**
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER: Semester 1 & 2**

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020/21 **NATIONAL COST CENTRE:121**
MODULE LEADER: Rob Smith **OTHER MODULE STAFF: None**

Summary of Module Content

Polynomial Division, Number sequences and series, Linear equation systems. Sinusoidal functions and co-ordinate systems, waveform properties and synthesis. Theory and application of the calculus with relevant subject examples. Methods to collect, analyse and display engineering data

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*		
Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Scheduled activity, and tutorials	60	Examples such as traditional lectures, group tasks, peer learning, practical session and one to one support
Guided independent Study	140	Learner centred support, recommended reading, extension tasks
Total	**200**	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	**Component Name**	**Component Weighting**
Test	LO2 - Demonstrate the ability to solve a range of technical calculations involving algebraic methods and engineering statistics – (2 hour test) LO3 - Demonstrate the ability to solve a range of technical calculations involving Engineering Calculus and trigonometrical methods. – (2 hour test)	50% 50% Total: 100%
Coursework	LO1 - Analyse and provide solutions for a range of mathematical engineering problems, involving algebraic systems, trigonometrical methods, calculus and engineering statistical methods. (2000 word effort).	100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Test	LO2 - Demonstrate the ability to solve a range of technical calculations involving algebraic methods and engineering statistics – (2 hour test) LO3 - Demonstrate the ability to solve a range of technical calculations involving Engineering Calculus and trigonometrical methods. – (2 hour test)	50% 50% Total: 100%
Coursework	LO1 - Analyse and provide solutions for a range of mathematical engineering problems, involving algebraic systems, trigonometrical methods, calculus and engineering statistical methods. (2000 word effort).	100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Matt Prowse Date: 09/07/2020	**Approved by**: Adrian Bevin Date: 09/07/2020

UNIVERSITY OF PLYMOUTH MODULE RECORD

SECTION A: DEFINITIVE MODULE RECORD. *Proposed changes must be submitted via Faculty/AP Quality Procedures for approval and issue of new module code.*

MODULE CODE: SOUD1511	**MODULE TITLE:** Engineering Principles	
CREDITS: 20	**FHEQ LEVEL: 4**	**HECOS CODE: 100194 Marine Technology**
PRE-REQUISITES: None	**CO-REQUISITES: None**	**COMPENSATABLE: Y**

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
An introduction to Mechanical and Electrical principles that are fundamental to the design and justification of marine engineering systems. DC and single phase AC circuit theory will sit alongside static and dynamic mechanical theory to give a comprehensive introduction for further modules fundamental to the safe and efficient design and production of vessels and marine engineering systems.

ELEMENTS OF ASSESSMENT *[Use HESA KIS definitions] – see Definitions of Elements and Components of Assessment*	
C1 (Coursework)	60%
T1 (Test)	40%

SUBJECT ASSESSMENT PANEL to which module should be linked: FdSc Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:
To provide a knowledge base of mechanical and electrical concepts as an introduction to further modules fundamental to the safe and efficient design and production of vessels and marine engineering systems.

ASSESSED LEARNING OUTCOMES: (additional guidance below; please refer to the Programme Specification for relevant award/ programme Learning Outcomes.

At the end of the module the learner will be expected to be able to:

Assessed Module Learning Outcomes	**Award/ Programme Learning Outcomes contributed to**
1. Apply circuit theory to solve simple AC/DC passive circuits for resistance, current and power dissipation. 2. Apply static & dynamic theory to simple mechanical applications. 3. Demonstrate the ability to solve mechanical and electrical calculations for given scenarios	PLO, 1 PLO, 3 PLO, 5

DATE OF APPROVAL: 16/01/2019	**FACULTY/OFFICE: Academic Partnerships**
DATE OF IMPLEMENTATION: 23/09/2019	**SCHOOL/PARTNER: South Devon College**
DATE(S) OF APPROVED CHANGE: XX/XX/XXXX	**SEMESTER: AY**

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21 **NATIONAL COST CENTRE: 111**
MODULE LEADER: Ben Bryant **OTHER MODULE STAFF: None**

Summary of Module Content
An introduction to circuit theorems, passive components, series and parallel circuits, C-R circuits. Waveforms, R-L-C and combination circuits, filters, power, resonance, transformer losses. Vectors, forces and moments, Shear force and Bending moments, sectional properties, columns, Torsion. Linear and angular motion, energy systems and energy transfer, simple oscillating systems

SUMMARY OF TEACHING AND LEARNING ***[Use HESA KIS definitions]***		
Scheduled Activities	**Hours**	**Comments/Additional Information (briefly explain activities, including formative assessment opportunities)**
Scheduled activities	45	Weekly classroom sessions with guided learning activities
Scheduled Practical / Lab sessions	22	Weekly practical sessions with guided learning activities
Scheduled Tutorials	5	Individual/small group discussion and progress tracking
Guided Independent Study	128	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	**200**	**(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc.)**

SUMMATIVE ASSESSMENT

Element Category	**Component Name**	**Component Weighting**
Test	Technical Calculation Report LO1 & LO2	100%
Coursework	Technical Calculation LO3	100%

REFERRAL ASSESSMENT

Element Category	Component Name	Component Weighting
Test	Technical Calculation Report LO1 & LO2	100%
Coursework	Technical Calculation LO3	100%

To be completed when presented for Minor Change approval and/or annually updated	
Updated by: Matt Prowse Date: 09/07/2020	**Approved by**: Adrian Bevin Date: 09/07/2020

SECTION A: DEFINITIVE MODULE RECORD. ***Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.***

MODULE CODE:	SOUD1424	**MODULE TITLE:**	Developing Research and Practice with Work Related Research

CREDITS: 20	**FHEQ Level:** 4	**JACS CODE:** X220

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module is designed to enable students to demonstrate that they have all the qualities and transferable skill necessary for relevant employment requiring the exercise of responsibility and decision making, including the ability to relate their professional practice to underlying theory and principles.

ELEMENTS OF ASSESSMENT ***Use HESA KIS definitions]***

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To enable students to develop a comprehensive portfolio of evidence that supports their career development and practice by carrying out work related research.
- To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives.
- To support students in developing as autonomous students at HE level. Be able to evaluate the results of a work related research project and present the project outcomes.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Demonstrate the ability to research, identify and collate information relevant to the programmes area(s) of study and relate this to how theoretical perspectives have informed and enhanced examples from own practice.
2. Demonstrate the ability to work independently and in a team in a manner that meets professional requirements and the ability to communicate in styles appropriate for a variety of professional purposes and audiences.
3. Demonstrate the ability to reflectively examine own practice for strengths and weaknesses and apply this to the development of a continuing Personal Development Plan (PDP).
4. Formulate a work related research project and implement within agreed procedures and specification

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships

DATE OF IMPLEMENTATION:	09/2016.	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	AUTUMN

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Geoff Jaggs	**OTHER MODULE STAFF: Ben Bryant**

SUMMARY of MODULE CONTENT

Academic and industry literacy and research conventions in their chosen field; The requirements of professional practice; Informed reflection, self-evaluation and personal action planning; Relevant ICT competences to support academic and professional practice; Group working; structured approaches to the generation of design or system solutions.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Project Supervision	20	Moodle Activities and support seminar activities
Scheduled activities	10	Classroom sessions to re-enforce key concepts
Scheduled activities	30	Individual discussion and progress tracking
Guided Independent Study	140	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Portfolio and Report	40%	Portfolio including PDP tasks and report on industry related career LO3 LO4
		Literature Review	60%	2000 word literature review LO1 LO2
			Total = 100%	

Updated by:	**Date:**	**Approved by:**	**Date:**
Harri Smith	15/05/20	Adrian Bevin	16/05/20

Recommended Texts and Sources:

- Bedford, D. and Wilson, E. (2013) *Study skills for Foundation Degrees*. 2nd edn. Abingdon: Routledge
- Cottrell, S. (2008) *The study skills handbook*. 3rd edn. Basingstoke: Palgrave Macmillan.
- Fairbairn, G.J. and Winch, C. (1996) Reading writing and reasoning. 2nd edn. Milton Keynes: Open University Press.
- Greetham, B. (2008) How to write better essays. New York: Palgrave Macmillan.
- Northedge, A. (2005) The good study guide. 2nd edn. Milton Keynes: Open University Press.

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE:	SOUD1425	**MODULE TITLE:**	Naval Architecture Design

CREDITS: 20	**FHEQ Level:** 4	**JACS CODE:** H500

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module introduces the student to the principles of Naval Architecture through practical design and calculation. Taking a step by step approach the following area of study will be covered, vessel form, production methods, determination and preservation of stability, static and dynamic forces acting on a vessel, resistance and propulsion calculations to determine power and predict performance.

ELEMENTS OF ASSESSMENT ***Use HESA KIS definitions]***

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To provide a basic knowledge of how stability, static and dynamic forces working on a marine structure are of vital importance to the design of a vessel. These principles will be emphasised through practical design and calculations whilst linking the use of testing techniques to determine power and fuel consumption.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Use computer software to draft concepts and produce models for manufacture and testing
2. Determine stability at small and large angles of heel in design and real life situations
3. Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory
4. Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016.	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Autumn/Spring

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Matthew Prowse	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Introduction to vessel design and construction principles including hull form, comparison coefficients and lines plan construction to identify key dimensions and location of centre of gravity

Determine stability at small and large angles of heel, stability concepts, calculation of GZ curves

Principles of loading and damage stability along with flooding of compartments and measure to improve stability

Calculate loading conditions and forces acting on a vessel including static and dynamic calculations

Identify ship resistance in powering calculations and methods to predict performance

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	10	Classroom sessions
Scheduled activities	20	Classroom sessions with guided learning activities
Scheduled Practical classes & Workshop	25	Laboratory sessions with guided learning activities
Scheduled Independent practical & workshop	20	Access to research and development laboratory with lecturer in attendance
Guided Independent Study	125	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Technical calculations and summary report of CAD drawing and Model	50%	LO1, LO2
		Technical Report with supporting calculations	50%	LO3, LO4
			Total = 100%	

Updated by:	Date:	Approved by:	Date:
Matt Prowse	09/07/2020	Adrian Bevin	**09/07/2020**

Recommended Texts and Sources:

- Eliasson, R. Larsson, L. Orych, M. (2014) 'Principles of Yacht Design'. 4th Edition, Cambridge: Bloomsbury
- Derrett, D R and Barrass, B (1999) Ship stability for masters and mates, Elsevier, Oxford
- Rawson, K J and Tupper, E C (2001) Basic ship theory: combined volume, Elsevier, Oxford Stokoe, E A (1999) Reed's ship construction for marine students, Adlard Coles Nautical, London Barrass, B (2001) Ship stability: notes and examples, Elsevier, Oxford
- Eyres, D J (2001) Ship construction, Elsevier, Oxford

SECTION A: DEFINITIVE MODULE RECORD. ***Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.***

MODULE CODE:	SOUD1426	**MODULE TITLE:**	Materials Engineering with Production Techniques

CREDITS: 20	**FHEQ Level:** 4	**JACS CODE:** H100

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module provides an introduction to engineering material properties, selection and processing of materials for engineering applications and methods of inspection and testing. Students will be able to investigate the links between material structure, properties and appropriate manufacturing methods.

ELEMENTS OF ASSESSMENT ***Use HESA KIS definitions]***

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To provide an introduction to the selection of materials based on structure, behaviour and processing methods available. An appreciation should be gained in the measurement of material properties and how these can be changed with strengthening techniques.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Describe and group materials by classification and analyse results whilst demonstrating the ability to evaluate the results of test data.
2. Discuss effects of processing and show an ability to select materials for engineering applications.
3. Discuss and contrast traditional and novel manufacturing techniques.
4. Practice a range of material production and joining techniques with the ability to select appropriate methods to meet a range of design specifications

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Autumn/Spring

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Ben Bryant	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Material characteristics, mechanical properties, electrical properties, microstructure. Industrial and specialist laboratory testing techniques, characteristics of materials, Shaping techniques, forming techniques, fabrication. Effects of forming on mechanical properties, inspection techniques. Evaluation of production techniques and joining methods to meet a variety of design contexts

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	10	Classroom sessions
Scheduled activities	30	Weekly classroom sessions with guided learning activities
Scheduled Practical classes & Workshop	35	Various directed experiments in an engineering workshop and other lab work
Trips / visits to industry	6	Guided visits to manufacturing companies
Guided Independent Study	119	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Report – Material Selection and manufacturing process	50%	LO2, LO3
		Material Analysis and Practice summary report	50%	LO1, LO4
			Total = 100%	

Updated by:	**Date:**	**Approved by:**	**Date:**
Matthew Prowse	09/07/2020	Adrian Bevin	**09/07/2020**

Recommended Texts and Sources:

- Ashby, M.F. (2013) *Materials and the Environment: eco-informed material choice*. (2nd edition), Oxford: Butterworth-Heinemann.
- Bolton, W. (2004) *Higher Engineering Science*. (2nd edition), Oxford: Newnes.
- Dingle, L. and Tooley, M. (2004) *Higher National Engineering*. (2nd edition), Oxford: Newnes.
- Fischer, T. (2009) *Materials Science for engineering students*. London: Academic Press.
- Higgins, R.A. (2010) *Materials for engineers and technicians*. Newnes.
- Timings, R.L. (1992) *Manufacturing Technology Vol.1*. Longman.
- Timings, R.L. (1993) *Manufacturing Technology Vol.2*. Longman.
- Timmings, R. (1998) *Engineering Materials Vol.1*. (2nd edition), Harlow: Longman.
- Timmings, R. (2000) *Engineering Materials Vol.2*. (2nd edition), Harlow: Pearson Education.

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE:	SOUD1427	**MODULE TITLE:**	Vessel Propulsion Systems

CREDITS: 20	**FHEQ Level:** 4	**JACS CODE:** H500
PRE-REQUISITES: None	**CO-REQUISITES**: None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This modules leads on from Naval Architecture to explore the methods of engine selection and typical plant arrangements. The student will evaluate methods of transmitting power to propulsion through gearboxes, clutches and bearings including propeller design calculations and types. Investigation will be made into factors of manoeuvrability and vessel handling systems.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To develop a comprehensive knowledge of marine propulsion power plants and factors in selection. Investigation will be held into how power is converted to propulsion by exploring transmission systems and propeller types. Handling systems will also be described and factors affecting manoeuvrability

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements whilst Identifying typical components in a modern marine power plant transmission system
2. Select and justify appropriate power plant and transmission system to meet a design criteria
3. Explore the principle involved in propeller design, selection and appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability
4. Project manage the design of a vessel propulsion system and be able to evaluate and present the project outcomes.

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Spring

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Matthew Prowse	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Introduction to main gearing and shafting including design requirements and terminology, transmission of propulsion, Couplings and clutch arrangements. Plant construction and setting-up: techniques, gearing alignment and shaft alignment. Propeller design and types including fixed and controllable pitch propellers.

Propeller power calculations, indicated power, shaft power; delivered power, thrust power and theoretical speed, propeller efficiency (thrust power and delivered power); propeller data; resistance prediction; ship and propeller interaction; propeller tests. Ship manoeuvrability systems with rudder types and forces.

Low speed ship handling systems propulsion types and configurations: thrusters including azimuth, L-drive and Z drive.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	10	Classroom sessions
Scheduled activities	30	Classroom sessions with guided learning activities
Scheduled Practical classes & Workshop	10	Laboratory sessions with guided learning activities
Scheduled Independent practical & workshop	10	Access to research and development laboratory with lecturer in attendance
Guided Independent Study	140	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Design Report	50%	LO2, LO4
		Report	50%	LO1, LO3
			Total = 100%	

Updated by:	**Date:**	**Approved by:**	**Date:**
Matt Prowse	09/07/2020	Adrian Bevin	**09/07/2020**

Recommended Texts and Sources:

- Taylor, D A (2005) Introduction to Marine Engineering 2nd Ed. Elsevier Butterworth-Heinemann
- Woodyard, D (2005) Pounders Marine Diesel Engines & Gas Turbines 9th ed. Elsevier Butterworth-Heinemann
- Rawson, K J and Tupper, E C (2001) Basic ship theory, Pearson Education, Harlow Tupper, E C (1996) Introduction to naval architecture, Elsevier, Oxford
- Bertram, V (2000) Practical ship hydrodynamics, Elsevier, Oxford
- Morton, T D (2003) Reed's steam engineering knowledge for marine engineers, Adlard Coles, London
- Woud, H K and Stapersma, D (2003) Design of propulsion and electric power generation systems, Institute of Marine Engineering, Science & Technology, London

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE:	SOUD2379	**MODULE TITLE:**	Production Management

CREDITS: 20	**FHEQ Level:** 5	**JACS CODE:** H700

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module provides the student with a comprehensive knowledge of the requirements of production management. Firstly a review will be held into the commercial running of an engineering organisation to appreciate the requirement for smooth production planning and management. Emphasis will be made on the need for skill recognition and clear and concise communication skills then the ability to evaluate production techniques to ensure build compliance and management of resources and hours.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To provide a detailed appreciation into the commercial aspect of design and production. Reflection will be made of managerial skills vital to students to succeed in managerial positions. Review technical build standards that govern design and production and select suitable materials and production techniques to manage commercial aspects.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production
2. Evaluate the commercial aspects effecting the running of an engineering company
3. Research technical build standards that influence the design and production of components in the marine industry
4. Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Autumn

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Matthew Prowse	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Definition of hard and soft management skills required to run a modern manufacturing or engineering business. Basic costing systems for job costing techniques, hours, profit, materials, marketing, production line management. Introduction to build compliance and regulatory bodies

Commercial awareness of material and production techniques that meet technical build compliance.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	30	Weekly classroom sessions with guided learning activities
Scheduled Practical / Lab sessions	15	Weekly practical sessions with guided learning activities
Scheduled Tutorials	0	Individual/small group discussion and progress tracking
Guided Independent Study	155	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C**1**	Reflective report	25%	LO1
		Report	75%	LO2,LO3,LO4
			Total = 100**%**	

Updated by:	**Date:**	**Approved by:**	**Date:**
Matt Prowse	**09/07/2020**	Adrian Bevin	**09/07/2020**

Recommended Texts and Sources:

- Halevi, G. (2001). Handbook of Production Management. 1st Edition. Oxford: Butterworth Heinemann
- Chary, S N. (2009). Production and Operations Management. 4th Edition. Nagar: Tata Mcgraw-Hill
- Panneerselvam, R. (2012). Production and Operations Management. 3rd Edition. Sonepat: PHI Learning.

SECTION A: DEFINITIVE MODULE RECORD. ***Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.***

MODULE CODE:	SOUD2380	**MODULE TITLE:**	Computer Aided Design (CAD)

CREDITS: 20	**FHEQ Level:** 5	**JACS CODE:** H131

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module provides a detailed review into the use of CAD within an engineering business. Exploration will be made into the capabilities of 2D and 3D programme software. Investigation will then be made to how CAD can be beneficial throughout key stages from conception to end product. Each stage is supported with hands-on practice and realistic customer requirements and design specifications.

ELEMENTS OF ASSESSMENT ***Use HESA KIS definitions]***

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To provide students with a compressive knowledge base into the use of CAD within an engineering organisation. Emphasis will be made on the practical applications of CAD alongside compliance with relevant drawing standards. The student will be expected to display a level of competence and self-management in the use of 2D and 3D CAD programmes when applied to the design process.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Produce 2D drawings of components to recognised drawing and technical build standards
2. Produce a 3D model and assembly whilst relating to company processes.
3. Evaluate the benefits of CAD and relate to the use in a commercial environment
4. Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Autumn

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Matthew Prowse	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

2D Design software (e.g. AutoCad), Parametric Design software (e.g. Inventor, Pro-E, Solidworks). Top-down design, design optimisation, manufacturing considerations in design. Linking and implementing the use of CAD to industry procedures and benefits within a company. Developmental research in 3D printing and 3D Scanning and potential future technologies

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	20	Classroom sessions with guided learning activities
Scheduled Practical classes & Workshop	15	Laboratory sessions with guided learning activities
Scheduled Independent practical & workshop	10	Access to research and development laboratory with lecturer in attendance
Guided Independent Study	155	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C**1**	CAD drawing and summary report Report	50% 50% Total = 100%	LO1, LO2, LO3, LO4.

Updated by:	**Date:**	**Approved by:**	**Date:**
Matt Prowse	09/07/2020	Adrian Bevin	09/07/2020

Recommended Texts and Sources:

- BS8888: 2013 Technical product documentation specification (31 December 2013), London:
- British Standards Institute PP8888-1:2007 A guide for schools and colleges to BS 8888:2006, Technical Product Specification (06 September 2007), London: British Standards Institute
- Yarwood, Alf (2013) Introduction to AutoCAD 2013 2D & 3D Design, Oxford: Elsevier

- McFarlane, B (2004) Modelling with AutoCAD 2004, Elsevier, Oxford
- Academic Partnerships Teaching, Learning and Assessment Handbook 2014-15 Page 44 of 71
- McFarlane, B (2001) Advancing with AutoCAD 2000, Elsevier, Oxford Simmons,
- C and Maguire, D (2004) Manual of engineering drawing: to British and International standards, Elsevier, Oxford

SECTION A: DEFINITIVE MODULE RECORD. ***Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.***

MODULE CODE:	SOUD2381	**MODULE TITLE:**	Independent Research and Development Project

CREDITS: 20	**FHEQ Level:** 5	**JACS CODE:** X220

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module provides students the opportunity to plan, research, produce and reflect upon the findings of a research project relevant to the Engineering Industry.

ELEMENTS OF ASSESSMENT ***Use HESA KIS definitions]***

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To further develop research skills through the planning of and the completion of an independent research project. To critically analyse and evaluate suitable research methods for the project. To effectively disseminate research findings from the project

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Plan for and collect suitable data, using appropriate methods.
2. Interpret the data collected within the parameters of the project.
3. Present the findings of research using appropriate formats.
4. Demonstrate compliance with ethical standards and legal restrictions.
5. Reflect on the research project.

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Autumn/Spring

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Geoff Jaggs	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Action planning, data collection/ handling and time management. Application of research skills. Data interpretation, application and presentation. Personal reflection and appraisal.

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	10	1.5 hours per week for 8 weeks
Scheduled Tutorials	1	One-to-one tutorial 1.5 hours per week for 5 weeks
Scheduled Tutorials	1	Group tutorial 1.5 hours per week for 5 weeks
Project Supervision	33	5 hours per week for 10 weeks
Guided Independent Study	155	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Project Report Proposal	60% 40% Total:100%	LO2, LO3, LO5 LO1,LO4

Updated by:	**Date:**	**Approved by:**	**Date:**
Matthew Prowse	**09/07/2020**	Adrian Bevin	**09/07/2020**

Recommended Texts and Sources:

- Lock D – Project Management (Gower Publishing, 2003) ISBN 9780566085512
- Melton Trish – Project Management Toolkit, the Basics for Project Success (Butterworth-Heinemann, 2007) ISBN 9780750684408
- Melton Trish – Real Project Planning: Developing a Project Development Strategy (Butterworth-Heinemann, 2007) ISBN 9780750684729
- Project Management Institute – A Guide to the Project Management Body of Knowledge (Project Management Institute, 2008) ISBN 9781933890517
- Smith N J – Engineering Project Management (Blackwell Publishing, 2007) ISBN 9781405168021
- Tooley M and Dingle L – BTEC National Engineering, 2nd Edition (Newnes, 2007) ISBN 9780750685214

SECTION A: DEFINITIVE MODULE RECORD. ***Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.***

MODULE CODE:	SOUD2382	MODULE TITLE:	Marine Engineering Systems

CREDITS: 20	**FHEQ Level:** 5	**JACS CODE:** J610

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This modules introduces the systems required for the safe and proficient operation of a vessel at sea. A detailed appreciation will be gained for the systems commonly operating in modern day vessels and particularly the growing luxurious market in the marine industry. Practical skills will be adopted to appreciate the systems and enable knowledge in the design and manufacture of marine components.

ELEMENTS OF ASSESSMENT ***Use HESA KIS definitions]***

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To provide an introduction to the design and justification of marine engineering systems found on vessels including hydraulic, HVAC, water and fire. Students will be required to present design proposals to a variety of system requirements whilst appreciation will be made on the practical and financial constraints of each system whilst providing justification in the form of calculation to reinforce proposals.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water, fire and electrical distribution.
2. Apply systems through practical and financial justification
3. Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.
4. Provide calculations to reinforce design selection and proposal

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Autumn/Spring

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

Items in this section must be considered annually and amended as appropriate, in conjunction with the Module Review Process. Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students. Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Matthew Prowse	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Typical systems found on marine vessels including hydraulic, HVAC, water, fire and electrical distribution.
Through practical and financial justification, sourcing and pricing
Review specifications of existing vessels which reflects knowledge and appreciation of marine engineering systems.
Evaluate calculations to reinforce design selection and proposal

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	**Hours**	**Comments/Additional Information**
Scheduled activities	30	Classroom sessions with guided learning activities
Scheduled Practical classes & Workshop	15	Laboratory sessions with guided learning activities
Scheduled Independent practical & workshop	0	Access to research and development laboratory with lecturer in attendance
Guided Independent Study	155	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Design proposal report Report	30% 70% Total = 100%	LO3 LO1,2,4

Updated by: Matt Prowse	**Date:** **09/07/2020**	**Approved by:** Adrian Bevin	**Date:** **09/07/2020**

Recommended Texts and Sources:

- Watt, A (1999) 3D computer graphics, Addison Wesley, Harlow Barber, A (1997) Pneumatic Handbook, Elsevier, New York.
- Esposito, A (2000) Fluid power with applications, Practice Hall, Indiana.
- Hunt, T & Vaughan, N (1997) Hydraulic Handbook, Elsevier, Oxford.
- Parr, A (2011) Hydraulics and Pneumatics: A technicians and engineers guide, 3rd ed, Butterworth-Heinemann, Oxford.
- Kossiakoff,A et al (2011) Systems Engineering: Principles and Practice (2nd edition) , Wiley and Sons, New Jersey.
- Eisner, H (2011) Systems Engineering: Building Successful Systems. Morgan and Claypool, California
- Daines, J.R. (2012) Fluid Power: Hydraulics and Pneumatics, Goodheart-Willcox,

SECTION A: DEFINITIVE MODULE RECORD.

MODULE CODE:	SOUD2383	**MODULE TITLE:**	Vessel Surveying

CREDITS: 20	**FHEQ Level:** 5	**JACS CODE:** J610

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*

- Having gained appreciation for the design and manufacture techniques used in the marine industry the student will be introduced to the principles of vessel surveying. In depth investigation will be held into environmental considerations on product life expectancy and typical manufacturing defects. Research and practical study will be used to allow the student to appreciate the field of vessel surveying.

ELEMENTS OF ASSESSMENT *Use HESA KIS definitions]*

COURSEWORK		PRACTICAL	
C1 (Coursework)	75%	P1 (Practical)	25%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

To provide a detailed appreciation for the process of vessel surveying including the compliance of technical standards, environmental and manufacturing considerations. Emphasis will be made on practical surveying techniques and methods of inspection.

ASSESSED LEARNING OUTCOMES: (additional guidance below)

At the end of the module the student will be expected to be able to:

1. Research and analyse the requirements and regulatory bodies regarding vessel surveying for the leisure and commercial sector
2. Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.
3. Assess the of the environment factors acting on materials and structures in the marine industry
4. Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Spring

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

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ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Matthew Prowse	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Regulatory bodies regarding vessel surveying for the leisure and commercial sector
Typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.
Environment factors acting on materials and structures in the marine industry
Vessel surveying on real life vessels

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	30	Classroom sessions with guided learning activities
Scheduled Practical classes & Workshop	15	Laboratory sessions with guided learning activities
Scheduled Independent practical & workshop	0	Access to research and development laboratory with lecturer in attendance
Guided Independent Study	155	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Written Assignment	75%	LO1,2,3
Practical	P1	Practical Assessment	25% Total = 100%	LO4

Updated by:	**Date:**	**Approved by:**	**Date:**
Matthew Prowse	**09/07/2020**	Adrian Bevin	**09/07/2020**

Recommended Texts and Sources:

- Gerwick BC, 1999, Construction of Marine & Offshore Structures, 2nd Edition Hofmann-Wellenhof,
- B., Lichtenegger, H., Wasle, E. 2008. GNSS – Global Navigation Satellite Systems GPS, GLONASS, Galileo, and more, Springer-Verlag, 978-3-211-73012-6
- ASK,T., (2006) Reed's Marine Surveying; Thomas Reed Publications. ISBN 0713677147

- BUCHANAN, G., (2003) Boat Repair Manual, Gulf Publishing Co. ISBN 155992070
- CASEY, D., (2004) Inspecting the Aging Sailboat, Mc Graw-Hill Education. ISBN 0071445455
- DUNCAN, J., (2003) A Guide to the Principles and Practice of Consulting Marine Engineering and Ship Surveying, Whitherby & Co. Ltd. ISBN 1856092402
- GERR, D., (2000) Elements of Boat Strength for Designers, Builders and Owners, International Marine Publishing Co. ISBN 0070231591
- MUSTIN, H Surveying Fiberglass Sailboats, International Marine, 1994. ISBN 0877423474
- DU PLESSIS, H, Fibreglass Boats, Adlard Coles, 2006. ISBN 9780713673951
- STEVENS, P (2010) Surveying Yachts and Small Craft, Adlard Coles. ISBN 9781408114032
- THOMPSON, C.,(2005) Surveying Marine Damage, Whitherby & Co. Ltd. ISBN 856092879
- WARREN,N., (2006), Metal Corrosion in Boats, Adlard Coles Nautical. ISBN 0713678178

SECTION A: DEFINITIVE MODULE RECORD. ***Proposed changes must be submitted via Faculty Quality Procedures for approval and issue of new module code.***

MODULE CODE:	SOUD2384	**MODULE TITLE:**	Composite Materials and Manufacture

CREDITS: 20	**FHEQ Level:** 5	**JACS CODE:** J510

PRE-REQUISITES: None	**CO-REQUISITES:** None	**COMPENSATABLE:** Yes

SHORT MODULE DESCRIPTOR: *(max 425 characters)*
This module provides the student with an in depth knowledge of Composite Materials and Manufacturing techniques. Topics covered include, evaluation of existing composite materials and processing techniques and tailoring composite components to meet a design specification along with current standards and testing procedures relevant to application. Mathematical prediction of composite properties will also be evaluated.

ELEMENTS OF ASSESSMENT ***Use HESA KIS definitions]***

COURSEWORK	
C1 (Coursework)	100%

SUBJECT ASSESSMENT PANEL Group to which module should be linked: Marine Technologies

Professional body minimum pass mark requirement: NA

MODULE AIMS:

- To enable students to apply knowledge of composite materials and manufacturing techniques to practical component design and manufacturing techniques.

ASSESSED LEARNING OUTCOMES: (additional guidance below)
At the end of the module the student will be expected to be able to:

1. Evaluate and practice mould construction techniques utilised in the composite manufacturing industry
2. Critically evaluate the materials used in preparation and manufacturing for composite production
3. Practice handling and working composite materials and manufacturing processes
4. Justify composite performance using mathematical calculations and prediction techniques that meet technical build compliance

DATE OF APPROVAL:	05/2016	**FACULTY/OFFICE:**	Academic Partnerships
DATE OF IMPLEMENTATION:	09/2016	**SCHOOL/PARTNER:**	South Devon College
DATE(S) OF APPROVED CHANGE:	Click here to enter a date.	**TERM/SEMESTER:**	Spring

Additional notes (for office use only): For delivering institution's HE Operations or Academic Partnerships use if required

SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

Items in this section must e considered annually and amended as appropriate, in conjunction with the Module Review Process. Some parts of this page may be used in the KIS return and published on the extranet as a guide for prospective students. Further details for current students should be provided in module guidance notes.

ACADEMIC YEAR: 2020-21	**NATIONAL COST CENTRE:** 115

MODULE LEADER: Matthew Prowse	**OTHER MODULE STAFF:** None

SUMMARY of MODULE CONTENT

Health and safety in the workshop environment
General overview and practical handling of materials and manufacturing methods.
Practical appreciation for the marine environment emphasising the requirements for composite materials and structures.
Manufacturing defects
Classification codes and standards.
Long term properties of composites (fatigue, corrosion...).
Coatings for marine composite structure
Mathematical prediction of composite properties
End of life considerations

SUMMARY OF TEACHING AND LEARNING *[Use HESA KIS definitions]*

Scheduled Activities	Hours	Comments/Additional Information
Scheduled activities	20	Classroom sessions with guided learning activities
Scheduled Practical classes & Workshop	25	Laboratory sessions with guided learning activities
Scheduled Independent practical & workshop	0	Access to research and development laboratory with lecturer in attendance
Guided Independent Study	155	Directed weekly reading, Moodle based tasks, and assessment development/revision
Total	200	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc.)

Category	*Element*	*Component Name*	*Component Weighting*	*Comments include links to learning objectives*
Coursework	C1	Practice report Investigation report	50% 50% Total = 100%	LO1,LO3 LO2, LO4

Updated by:	**Date:**	**Approved by:**	**Date:**
Matt Prowse	**09/07/2020**	Adrian Bevin	**09/07/2020**

Recommended Texts and Sources:

- Bai, Yong (2003) Marine Structural Design. Elsevier, Oxford. Eyres, D, Bruce, G (2012)

- Ship Construction, 7th ed. Butterworth-Heinemann, Oxford. Callister, W and Rethwisch, D,G (2008) Fundamentals of materials science and engineering: an integrated approach. Wiley, Hoboken Askeland, D,R (2011)
- The science and engineering of materials 6th ed. Cengage Learning, Florence. R.A. Shenoi, J.F. Wellicome, (2008)
- Composite Materials in Maritime Structures: Volume 1, Fundamental Aspects (Cambridge Ocean Technology Series). Cambridge University Press. Cambridege.
- R.A. Shenoi, J.F. Wellicome, (2008) Composite Materials in Maritime Structures: Volume 2, Practical Considerations (Cambridge Ocean Technology Series). Cambridge University Press. Cambridge.