



**UNIVERSITY  
CENTRE**  
SOUTH DEVON

**IN  
PARTNERSHIP  
WITH  
PLYMOUTH  
UNIVERSITY**

# **PROGRAMME QUALITY HANDBOOK 2017-18**

## **FdSc-HNC Marine Technologies**

- 1. Welcome and Introduction to FdSc Marine Technologies..... 3
- 2. Programme Specification..... 3
- 3. Module Records..... 38

## 1. Welcome and Introduction to FdSc Marine Technologies.

Welcome to FdSc Marine Technologies delivered at 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
  - o Available in University News & Information on Moodle.
- Plymouth University's Student Handbook
  - o available at:  
<https://www.plymouth.ac.uk/your-university/governance/student-handbook>

## 2. FdSc Programme Specification

### 2.1. Programme Details

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

### 2.2. Brief Description of the Programme

This text is definitively approved at programme approval and therefore may be directly used for promotion of the programme without the need for further confirmation (approx.. 200-250 words):

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

---

<sup>1</sup> Unless otherwise approved through Plymouth University's Academic Development and Partnerships Committee

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.

### **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**

This text is definitively approved at programme approval and therefore may be directly used for promotion of the programme without the need for further confirmation:

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, Aquaflyte, 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	<ul style="list-style-type: none"> <li>• Marine Engineering</li> <li>• Composite Manufacture</li> <li>• Boat Building</li> <li>• Structural Engineering</li> </ul>

	<ul style="list-style-type: none"> <li>• Marina Operations</li> <li>• Sales and Marketing</li> <li>• Transferable skills to Automotive, Aviation and Renewable sectors</li> </ul>
CAD Technician	<ul style="list-style-type: none"> <li>• Product Designers</li> <li>• Marine Engineering</li> <li>• Boat Building</li> <li>• Naval Architecture</li> <li>• Transferable skills to Automotive, Aviation and Renewable sectors</li> </ul>
Marine Surveying	<ul style="list-style-type: none"> <li>• Marine Sales and Brokerage</li> <li>• Regulatory Bodies</li> </ul>
Marine Engineering	<ul style="list-style-type: none"> <li>• Main Dealer workshops</li> <li>• Installation, Servicing and Maintenance</li> </ul>
Naval Architect	<ul style="list-style-type: none"> <li>• Further academic progression route to BSc or MSc in a related discipline</li> </ul>
Composite Materials Technician	<ul style="list-style-type: none"> <li>• Boat Builders</li> <li>• Structural Fibre Components</li> <li>• Bespoke Moulding and Manufacturers</li> <li>• Transferable skills to automotive, Aviation and Renewable sectors</li> </ul>

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

- Stage 3 (Level 6) BSc (Hons) Marine and Composites Technology
- Stage 2 (Level 5) 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:
<b>Level 2:</b> - <b>Key Skills requirement / Higher Level Diploma:</b> <b>and/or</b> - <b>GCSEs required at Level 5 or above:</b>	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
<b>Level 3: at least one of the following:</b> - <b>AS/A Levels</b> - <b>Advanced Level Diploma:</b>	48 points from a relevant subject area

<ul style="list-style-type: none"> <li>- <b>BTEC National Certificate/Diploma:</b></li> <li>- <b>VDA: AGNVQ, AVCE, AVS:</b></li> <li>- <b>Access to HE or Year 0 provision:</b></li> <li>- <b>International Baccalaureate:</b></li> <li>- <b>Irish / Scottish Highers / Advanced Highers:</b></li> </ul>	<p>Access to HE Engineering, Science or Mathematics</p>
<p><b>Work Experience:</b></p>	<p>Considered on individual merit</p>
<p><b>Other HE qualifications / non-standard awards or experiences:</b></p>	<p>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</p> <p>Be able to undertake practical field work in a variety of educational environments and undertake practical experience.</p>
<p><b>APEL / APCL<sup>2</sup> possibilities:</b></p>	<p>APL will be considered as per Plymouth University Regulations</p>
<p><b>Interview / Portfolio requirements:</b></p>	<p>Interviews maybe required depending on previous qualifications and industry experience</p>
<p><b>Independent Safeguarding Agency (ISA) / Disclosure and Barring Service (DBS) clearance required:</b></p>	<p>Yes</p>

<sup>2</sup> Accredited Prior Experiential Learning and Accredited Prior Certificated Learning

## 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<sup>3</sup>

For programmes containing more than one FHEQ level of study: copy and paste the table below as required (hover the mouse over the table then left-click on the box in the top left corner to highlight the table → right-click → copy → select a line at least one further than the bottom of this table → right-click and select 'paste – keep formatting' For users employing pre-2010 versions of MS Word the text entry box guidance will not be visible. Please see footnotes for guidance.

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

<b>FHEQ level: 4 For: HNC/FdSc Marine Technologies Full Time</b>				
<b>F/T Route Year</b>	<b>When in Year? (i.e. Autumn, Spring etc)</b>	<b>Core or Option Module</b>	<b>Credits</b>	<b>Module</b>
1	Autumn	Core	20	SOUND1423 Engineering Mathematics
1	Autumn	Core	20	SOUND1424 Developing Research & Practice with Work Related Research
1	Autumn and Spring	Core	20	SOUND1425 Naval Architecture Design
1	Autumn and Spring	Core	20	SOUND1426 Materials Engineering with Production Techniques
1	Spring	Core	20	SOUND1427 Vessel Propulsion Systems
1	Spring	Core	20	SOUND1428 Engineering Principles

<sup>3</sup> The provided table includes only a single line. This should be multiplied by copying and pasting to produce the correct number of modules for the level of the programme. For ease of consideration and clarity, please include a separate table for each level by again copying and pasting this table. Colour coding/ shading may be used to differentiate between new modules and existing approved modules shared with other programmes.

<b>FHEQ level: 5 For: FdSc Marine Technologies Full Time</b>				
<b>F/T Route Year</b>	<b>When in Year? (i.e. Autumn, Spring etc)</b>	<b>Core or Option Module</b>	<b>Credits</b>	<b>Module</b>
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

<b>FHEQ level: 4 For: FdSc Marine Technologies Part Time</b>				
<b>F/T Route Year</b>	<b>When in Year? (i.e. Autumn, Spring etc)</b>	<b>Core or Option Module</b>	<b>Credits</b>	<b>Module</b>
1	Autumn	Core	20	SOUND1424 Developing Research & Practice with Work Related Research
1	Autumn and Spring	Core	20	SOUND1425 Naval Architecture Design
1	Spring	Core	20	SOUND1428 Engineering Principles

<b>FHEQ level: 4 For: FdSc Marine Technologies Part Time</b>				
<b>F/T Route Year</b>	<b>When in Year? (i.e. Autumn, Spring etc)</b>	<b>Core or Option Module</b>	<b>Credits</b>	<b>Module</b>
2	Autumn	Core	20	SOUND1423 Engineering Mathematics
2	Autumn and Spring	Core	20	SOUND1426 Materials Engineering with Production Techniques
2	Spring	Core	20	SOUND1427 Vessel Propulsion Systems

<b>FHEQ level: 5 For: FdSc Marine Technologies Part Time</b>				
<b>F/T Route Year</b>	<b>When in Year? (i.e. Autumn, Spring etc)</b>	<b>Core or Option Module</b>	<b>Credits</b>	<b>Module</b>
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

<b>FHEQ level: 5 For: FdSc Marine Technologies Part Time</b>				
<b>F/T Route Year</b>	<b>When in Year? (i.e. Autumn, Spring etc)</b>	<b>Core or Option Module</b>	<b>Credits</b>	<b>Module</b>
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

The previous table is a mandatory requirement of the approval process. An additional structure diagram may be added here, to further clarify the design and operation of the awards proposed. A suggested simplified diagram has been inserted below; this should be deleted if not used.

## 2.13. Explanation and Mapping of Learning Outcomes, Teaching & Learning and Assessment<sup>4</sup>

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	Prog Aims	Prog intended Learning Outcomes	Range of Assessments	Related Core Modules
<p><b>Knowledge / Understanding:</b></p> <p>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).</p> <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p>	<p><b>Primary:</b></p> <ul style="list-style-type: none"> <li>Lectures, Seminars and tutorials</li> </ul>	1	ILO 1	<ul style="list-style-type: none"> <li>Project report</li> <li>In-class tests</li> <li>Essay</li> </ul>	SOUD142 3 SOUD142 4

<sup>4</sup> For programmes containing more than one FHEQ level of study, i.e. a bachelor programme with levels 4, 5 & 6, a separate map must be provided for each level. The table should be copied and pasted to enable this.

<ul style="list-style-type: none"> <li>• Demonstrate the ability to evaluate and interpret underlying concepts and principles associated with Naval Architecture and vessel design.</li> <li>• Employ skills, knowledge and understanding to provide sustainable solutions to engineering problems by innovation and creativity</li> <li>• Apply commercial awareness to problem solving with respect for the environment social and ethical considerations.</li> <li>• Demonstrate analytical, numerical and computational solutions to a variety of engineering solutions</li> <li>• Appreciate the local and international dimensions of engineering and key transferable skills in the industry</li> <li>• Awareness that principles in technology are open to ongoing debate and reformulation</li> </ul>	<ul style="list-style-type: none"> <li>• Self-directed independent study</li> <li>• Practice sessions</li> </ul> <p>Secondary/Supplementary:</p> <ul style="list-style-type: none"> <li>• Case studies</li> <li>• Problem-solving exercises</li> <li>• Evaluation of “live and completed projects</li> <li>• Group and individual presentations and peer assessments</li> <li>• Site visits</li> </ul>		<ul style="list-style-type: none"> <li>• Scenario report</li> <li>• Case Study</li> <li>• Presentation</li> <li>• Portfolio</li> <li>• Laboratory Practice</li> </ul>	<p>SOUND142 5 SOUND142 6 SOUND142 7 SOUND142 8</p>
--	--	--	---	--

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:

- SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.
- SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.
- SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
- SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.
- SOUND 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
- SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives
- SOUND 1424 – LO3 To support students in developing as autonomous students at HE level
- SOUND 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.

<p><b>Cognitive and Intellectual Skills:</b></p>					
<p>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).</p>					
<p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <ul style="list-style-type: none"> <li>Assume a logical, systematic and pragmatic approach to solving a range of engineering problems and design requirements</li> </ul>	<p>Primary:</p> <ul style="list-style-type: none"> <li>Class exercises</li> <li>Presentations</li> <li>Tutorial/seminar discussions</li> <li>Feedback via coursework assessment process (essays etc)</li> </ul>	<p>2</p>	<p>ILO2</p>	<p>Presentations</p> <ul style="list-style-type: none"> <li>Essays</li> <li>Projects</li> <li>Tests</li> <li>Journal</li> <li>Laboratory practice</li> </ul>	<p>SOUD142 3 SOUD142 4 SOUD142 5 SOUD142 6</p>

<ul style="list-style-type: none"> <li>• Evaluate and interpret data to develop arguments and demonstrate sound engineering judgement in alignment with basic theory and research.</li> <li>• Evaluate the appropriateness of engineering solutions related to their field of study</li> <li>• Assume flexibility in argument and appreciation for new technologies and the wider environment</li> <li>• Use reflection in the learning process to enhance personal development and refine professional practice.</li> </ul>	<ul style="list-style-type: none"> <li>• Practical Observation</li> </ul> <p>Secondary/Supplementary:</p> <ul style="list-style-type: none"> <li>• Laboratory analysis in practice</li> <li>• Computer-based practical's on data and measurement problems</li> </ul>				SOUD142 7 SOUD142 8
<p>An explanation for embedding Cognitive and Intellectual Skills through Teaching &amp; 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:</p> <p>SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.            SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.            SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.            SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.            SOUND 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            SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives            SOUND 1424 – LO3 To support students in developing as autonomous students at HE level            SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer            SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations            SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory            SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption            SOUND1426 – LO1 Describe and group materials by classification and analyse results.            SOUND1426 – LO2 Analyse and evaluate the results of test data.</p>					

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

SOUD142  
3  
SOUD142  
4  
SOUD142  
5  
SOUD142  
6  
SOUD142  
7  
SOUD142  
8

- 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:

SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.

SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.

SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.

SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.

SOUND 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

SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives

SOUND 1424 – LO3 To support students in developing as autonomous students at HE level

SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer

SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations

SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

SOUND1426 – LO1 Describe and group materials by classification and analyse results.

SOUND1426 – LO2 Analyse and evaluate the results of test data.

SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.

SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements

SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system

SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications

SOUND 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, FDCE 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

SOUD142  
3  
SOUD142  
4  
SOUD142  
5  
SOUD142  
6  
SOUD142  
7  
SOUD142  
8

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:

- SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.
- SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.
- SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
- SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.
- SOUND 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
- SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives
- SOUND 1424 – LO3 To support students in developing as autonomous students at HE level
- SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer
- SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations
- SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory
- SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption
- SOUND1426 – LO1 Describe and group materials by classification and analyse results.
- SOUND1426 – LO2 Analyse and evaluate the results of test data.
- SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.
- SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.
- SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements
- SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system
- SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications
- SOUND 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability
- SOUND 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.
- SOUND 1428 – LO2 Show an understanding of an AC to DC conversion system.
- SOUND 1428 – LO3 Apply static theory to simple mechanical applications.
- SOUND 1428 – LO4 Apply dynamic theory to simple mechanical systems.

**Practical Skills:**

The guidance provided by QAA, FDCE and the SEEC Credit Level Descriptors

<p>(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).</p> <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to conduct themselves in a workshop environment with respect for health and safety and responsibility for others</li> <li>• Identify the skills of themselves and others to apply to solving engineering problems in independent and teamwork situations</li> <li>• Undertake and identify CPD opportunities to further enhance professional development and commercial viability</li> </ul>	<p><b>Primary:</b></p> <ul style="list-style-type: none"> <li>• Projects</li> <li>• Designated practical tasks</li> <li>• Lectures and tutorials</li> <li>• Learning from work</li> </ul> <p><b>Secondary/Supplementary:</b></p> <ul style="list-style-type: none"> <li>• Tutorials</li> <li>• Site Visits</li> </ul>	5	ILO5	<ul style="list-style-type: none"> <li>• Portfolio</li> <li>• Project Report</li> <li>• Case Study</li> <li>• Scenario Report</li> </ul>	SOUD142 3 SOUD142 4 SOUD142 5 SOUD142 6 SOUD142 7 SOUD142 8
<p><b>An explanation for embedding Practical Skills through Teaching &amp; Learning and Assessment at this level of the programme:</b></p> <p>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 will 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:</p> <p>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</p>					

SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives

SOUND 1424 – LO3 To support students in developing as autonomous students at HE level

SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer

SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations

SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

SOUND1426 – LO1 Describe and group materials by classification and analyse results.

SOUND1426 – LO2 Analyse and evaluate the results of test data.

SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.

SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements

SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system

SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications

SOUND 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability

SOUND 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.

SOUND 1428 – LO2 Show an understanding of an AC to DC conversion system.

SOUND 1428 – LO3 Apply static theory to simple mechanical applications.

SOUND 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	Prog Aims	Prog intended Learning Outcomes	Range of Assessments	Related <u>Core</u> Modules
<b>Knowledge / Understanding:</b>  The guidance provided by QAA,					

<p>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).</p> <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to apply and critically analyse concepts and principles associated with Naval Architecture and vessel design.</li> <li>• Apply skills, knowledge and understanding previously learnt and critically evaluate solutions to engineering problems in</li> </ul>	<p><b>Primary:</b></p> <ul style="list-style-type: none"> <li>• Lectures, Seminars and tutorials</li> <li>• Self-directed independent study</li> <li>• Practice sessions</li> </ul> <p><b>Secondary/Supplementary:</b></p> <ul style="list-style-type: none"> <li>• Case studies</li> <li>• Problem-solving exercises</li> <li>• Evaluation of “live and completed projects</li> <li>• Group and individual presentations and peer assessments</li> <li>• Site visits</li> </ul>	<p>1</p>	<p>ILO 1</p>	<ul style="list-style-type: none"> <li>• Project report</li> <li>• In-class tests</li> <li>• Essay</li> <li>• Scenario report</li> <li>• Case Study</li> <li>• Presentation</li> <li>• Portfolio</li> <li>• Laboratory Practice</li> </ul>	<p>SOUND2379 SOUND2380 SOUND2381 SOUND2382 SOUND2383 SOUND2384</p>
--	--	----------	--------------	--	--

<p>employment situations</p> <ul style="list-style-type: none"> <li>• Influence commercial awareness to problem solving with respect for the environment social and ethical considerations.</li> <li>• Demonstrate and communicate analytical, numerical and computational solutions to a variety of engineering solutions</li> <li>• Analyse the local and international dimensions of engineering and key transferable skills in the industry</li> <li>• Appreciate that principles in technology are open to ongoing debate and reformulation and define areas for limits in their own knowledge base</li> </ul>					
<p>An explanation for embedding Knowledge and Understanding through Teaching &amp; 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</p>					

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:

- SOUND2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production
- SOUND2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company
- SOUND2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry
- SOUND2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.
- SOUND2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards
- SOUND2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes.
- SOUND2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment
- SOUND2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.
- SOUND2381 – ILO1 Plan for and collect suitable data, using appropriate methods.
- SOUND2381 – ILO2 Interpret the data collected within the parameters of the project.
- SOUND2381 – ILO3 Present the findings of research using appropriate formats.
- SOUND2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.
- SOUND2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.
- SOUND2382 – ILO2 Gain appreciation for the different systems through practical and financial justification
- SOUND2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.
- SOUND2382 – ILO4 Provide calculations to reinforce design selection and proposal
- SOUND2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector
- SOUND2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.
- SOUND2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry
- SOUND2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability
- SOUND2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry
- SOUND2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production
- SOUND2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes
- SOUND2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques

**Cognitive and Intellectual Skills:**

The guidance provided by QAA, FDCE and the SEEC Credit Level Descriptors

<p>(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).</p> <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <ul style="list-style-type: none"> <li>• Assume a logical, systematic and pragmatic approach to solving a range of engineering problems and design requirements</li> <li>• Critically evaluate and synthesise data to develop arguments and demonstrate sound engineering judgement in alignment with basic theory and research.</li> <li>• Evaluate the appropriateness of engineering solutions and analyse related to their field of study</li> <li>• Assume flexibility and openness in argument and appreciation for new technologies and the wider environment</li> <li>• Use reflection in the learning process to enhance personal development, refine professional practice and acquire new competences.</li> </ul>	<p>Primary:</p> <ul style="list-style-type: none"> <li>• Class exercises</li> <li>• Presentations</li> <li>• Tutorial/seminar discussions</li> <li>• Feedback via coursework assessment process (essays etc)</li> <li>• Practical Observation</li> </ul> <p>Secondary/Supplementary:</p> <ul style="list-style-type: none"> <li>• Laboratory analysis in practice</li> <li>• Computer-based practical's on data and measurement problems</li> </ul>	2	ILO2	<p>Presentations</p> <ul style="list-style-type: none"> <li>• Essays</li> <li>• Projects</li> <li>• Tests</li> <li>• Journal</li> <li>• Laboratory practice</li> </ul>	<p>SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383 SOUD2384</p>
<p>An explanation for embedding Cognitive and Intellectual Skills through Teaching &amp; 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:</p> <p>SOUD2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production</p>					

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, FDSC 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).

<p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to apply commercial acumen and appreciation in the design industry</li> <li>• Conduct themselves in a professional manner in design and practical scenarios.</li> <li>• Apply problem solving ability in situations with a pragmatic “can do” approach.</li> <li>• Exercise and leadership responsibility with sound management in ethical and social situations</li> <li>• Demonstrate effective appreciation for the impact of industry on the environment</li> <li>• Communicate and manage in a clear and professional manner</li> <li>• Reflect and apply own skills and identify CPD opportunities where necessary</li> </ul>	<p>Primary:</p> <ul style="list-style-type: none"> <li>• Library and other research exercises</li> <li>• Group work awareness and practice</li> <li>• Presentations</li> <li>• Group and individual peer assessment</li> <li>• Computer-based learning and assessment</li> <li>• Tutorials and seminars</li> </ul> <p>Secondary/Supplementary:</p> <ul style="list-style-type: none"> <li>• Class and seminar interactions and feedback</li> </ul>	A3	ILO3	<ul style="list-style-type: none"> <li>• Presentation</li> <li>• Examination</li> <li>• In-Class tests</li> <li>• Assessed discussions</li> <li>• Group project work</li> </ul>	<p>SOUD2379 SOUD2380 SOUD2381 SOUD2382 SOUD2383 SOUD2384</p>
<p>An explanation for embedding Key Transferable Skills through Teaching &amp; 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:</p> <p>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.</p>					

SOUND2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment  
 SOUND2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.  
 SOUND2381 – ILO1 Plan for and collect suitable data, using appropriate methods.  
 SOUND2381 – ILO2 Interpret the data collected within the parameters of the project.  
 SOUND2381 – ILO3 Present the findings of research using appropriate formats.  
 SOUND2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.  
 SOUND2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.  
 SOUND2382 – ILO2 Gain appreciation for the different systems through practical and financial justification  
 SOUND2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.  
 SOUND2382 – ILO4 Provide calculations to reinforce design selection and proposal  
 SOUND2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector  
 SOUND2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.  
 SOUND2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry  
 SOUND2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability  
 SOUND2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry  
 SOUND2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production  
 SOUND2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes  
 SOUND2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques

**Employment Related Skills:**

The guidance provided by QAA, FDSC 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

**Primary:**

- Lectures
- Research Tasks
- Portfolio Development

**Secondary/Supplementary:**  
Site Visits

A4

ILO4

- Project report
- Scenario report
- Case Study
- Presentation

SOUND2379  
 SOUND2380  
 SOUND2381  
 SOUND2382  
 SOUND2383

<p>practical knowledge to find sustainable solutions</p> <ul style="list-style-type: none"> <li>• Demonstrate autonomous and team work related skills to a range of industry scenarios</li> <li>• Ability to formulate and present data in arrange of design contexts</li> <li>• Demonstrate a high level of written text in a professional manner</li> <li>• Embed and identify the correct use of ICT software to present information</li> </ul>					SOUND2384
<p><b>An explanation for embedding Employment Related Skills through Teaching &amp; Learning and Assessment at this level of the programme:</b>  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:</p> <p>SOUND2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production  SOUND2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company  SOUND2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry  SOUND2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.  SOUND2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards  SOUND2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes.  SOUND2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment  SOUND2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.  SOUND2381 – ILO1 Plan for and collect suitable data, using appropriate methods.  SOUND2381 – ILO2 Interpret the data collected within the parameters of the project.  SOUND2381 – ILO3 Present the findings of research using appropriate formats.  SOUND2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.  SOUND2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.  SOUND2382 – ILO2 Gain appreciation for the different systems through practical and financial justification  SOUND2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.  SOUND2382 – ILO4 Provide calculations to reinforce design selection and proposal  SOUND2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector</p>					<p>Primary:</p> <ul style="list-style-type: none"> <li>• Le</li> <li>• Re</li> <li>• Po</li> <li>De</li> </ul> <p>Secondary:</p> <p>Site Visits</p>

<p>SOUND2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.</p> <p>SOUND2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry</p> <p>SOUND2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability</p> <p>SOUND2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry</p> <p>SOUND2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production</p> <p>SOUND2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes</p> <p>SOUND2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques</p>					
<p><b>Practical Skills:</b></p> <p>The guidance provided by QAA, FDSC 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).</p> <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <p>Demonstrate the ability to conduct themselves in a workshop environment with respect for health and safety and responsibility for others</p> <p>Identify the skills of themselves and others to apply to solving engineering problems in independent and teamwork situations</p> <p>Undertake and identify CPD opportunities to further enhance professional development and commercial viability</p>	<p><b>Primary:</b></p> <ul style="list-style-type: none"> <li>• Projects</li> <li>• Designated practical tasks</li> <li>• Lectures and tutorials</li> <li>• Learning from work</li> </ul> <p><b>Secondary/Supplementary:</b></p> <ul style="list-style-type: none"> <li>• Tutorials</li> <li>• Site Visits</li> </ul>	5	ILO5	<ul style="list-style-type: none"> <li>• Portfolio</li> <li>• Project Report</li> <li>• Case Study</li> <li>• Scenario Report</li> </ul>	<p>SOUND2379</p> <p>SOUND2380</p> <p>SOUND2381</p> <p>SOUND2382</p> <p>SOUND2383</p> <p>SOUND2384</p>
<p><b>An explanation for embedding Practical Skills through Teaching &amp; Learning and Assessment at this level of the programme:</b></p> <p>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</p>					

primarily through coursework (e.g. Reports and reflective statements). There are several Learning Outcomes that specifically measure the development of practical skills:

- SOUND2379 – ILO1 Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production
- SOUND2379 – ILO2 Evaluate the commercial aspects effecting the running of an engineering company
- SOUND2379 – ILO3 Research technical build standards that influence the design and production of components in the marine industry
- SOUND2379 – ILO4 Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.
- SOUND2380 – ILO1 Produce 2D drawings of components to recognised drawing and technical build standards
- SOUND2380 – ILO2 Produce a 3D model and assembly whilst relating to company processes.
- SOUND2380 – ILO3 Evaluate the benefits of CAD and relate to the use in a commercial environment
- SOUND2380 – ILO4 Research and investigate current and future technologies relating to CAD and discuss their implementation into a production environment.
- SOUND2381 – ILO1 Plan for and collect suitable data, using appropriate methods.
- SOUND2381 – ILO2 Interpret the data collected within the parameters of the project.
- SOUND2381 – ILO3 Present the findings of research using appropriate formats.
- SOUND2381 – ILO4 Demonstrate compliance with ethical standards and legal restrictions.
- SOUND2382 – ILO1 Research and describe the typical systems found on marine vessels including hydraulic, HVAC, water and fire.
- SOUND2382 – ILO2 Gain appreciation for the different systems through practical and financial justification
- SOUND2382 – ILO3 Present a design proposal meeting a design specification which reflects knowledge and appreciation of marine engineering systems.
- SOUND2382 – ILO4 Provide calculations to reinforce design selection and proposal
- SOUND2383 – ILO1 Research and analyse the requirements regarding vessel surveying for the leisure and commercial sector
- SOUND2383 – ILO2 Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.
- SOUND2383 – ILO3 Assess the of the environment factors acting on materials and structures in the marine industry
- SOUND2383 – ILO4 Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability
- SOUND2384 – ILO1 Evaluate and practice mould construction techniques utilised in the composite manufacturing industry
- SOUND2384 – ILO2 Describe the materials used in preparation and manufacturing for composite production
- SOUND2384 – ILO3 Gain a practical knowledge of handling and working composite materials and manufacturing processes
- SOUND2384 – ILO4 Justify composite performance using mathematical calculations and prediction techniques

## 2.14. Work Based/Related Learning<sup>5</sup>

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	Prog Aim	Prog 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 SOUD1428
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	SOUD1423 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1428
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	1,2,3,4,5	1,2,4,5	In-class tests, Written report,	SOUD1425 SOUD1427

<sup>5</sup> The provided table includes only a single line. This will need replicating for each WBL/WRL activity (I.e, placements / real-world industry provided problems to solve / visits / trade shows etc). Additionally, the table should be replicated for each stage of the programme for clarity.

	provide guest speaker opportunities			Essay, Presentation, Exam	
<p><b>An explanation of this map:</b>  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.</p>					
<b>FHEQ level: 5</b>					
<b>WBL/WRL Activity:</b>	<b>Logistics</b>	<b>Prog Aim</b>	<b>Prog Intended LO</b>	<b>Range of Assessments</b>	<b>Related Core Module(s)</b>
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	SOUND2379 SOUND2380 SOUND2382 SOUND2383 SOUND2384
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	SOUND2379 SOUND2380 SOUND2381 SOUND2382 SOUND2383 SOUND2384
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	SOUND2381
Guest speakers	Continue to develop and maintain links with industry to provide guest	1,2,3,4,5	1,2,4,5	In-class tests, Written report, Essay, Presentation, Exam	SOUND2383 SOUND2384

	speaker opportunities				
<p><a href="#">An explanation of this map:</a></p> <p>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.</p>					



### 3. HNC Programme Specification

#### 3.1. Programme Details

<b>Awarding Institution:</b>	University of Plymouth
<b>Partner Institution and delivery site (s):</b>	South Devon College, University Centre, Paignton.
<b>Accrediting Body:</b>	N/A
<b>Language of Study:</b>	English <sup>6</sup>
<b>Mode of Study:</b>	Full Time/Part time
<b>Final Award:</b>	HNC Marine Technologies
<b>Intermediate Award:</b>	N/A
<b>Programme Title:</b>	HNC Marine Technologies
<b>UCAS Code:</b>	610J
<b>JACS Code:</b>	J610
<b>Benchmarks:</b>	Framework for Higher Education Qualifications (FHEQ)(2008) QAA Engineering Benchmark (2015)
<b>Date of Programme Approval:</b>	25 <sup>th</sup> May 2016

#### 3.2. Brief Description of the Programme

This text is definitively approved at programme approval and therefore may be directly used for promotion of the programme without the need for further confirmation (approx.. 200-250 words):

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

<sup>6</sup> Unless otherwise approved through Plymouth University's Academic Development and Partnerships Committee

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.

### **3.3. 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)

### **3.4. 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

### **3.5. Programme Aims**

The programme will deliver:

6. The skills and knowledge for learners to appreciate the disciplines of naval architecture and marine design engineering within the marine sector.
7. Students who can distinguish and select materials and production techniques for design applications whilst appreciating the environmental factors on product design and life expectancy.
8. Learners into industry with the confidence and capability to handle a wide range of practical design skills and problem solving ability.
9. Students who can appreciate the ever changing and broadening role of design within engineering and be capable of working with projects in the wide ranging engineering sector.
10. Practical ability along with academic competency support the design and production stages along with clear and confident communication skills.

### **3.6. Programme Intended Learning Outcomes (ILO)**

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

#### **Knowledge and Understanding**

7. Practice appropriate knowledge as an aid to problem-solving issues and apply to the sector involving marine design technologies.

#### **Cognitive/Intellectual Skills**

8. Compare and discuss evidence from appropriate sources to make independent judgements.

#### **Key Transferable**

9. Plan and manage the acquisition of new knowledge and skills as part of a lifelong learning strategy.

### **CPD and Lifelong Learning**

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

### **Practical/Professional Skills**

12. Be able to act independently 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.

## **3.7. Distinctive Features**

*This text is definitively approved at programme approval and therefore may be directly used for promotion of the programme without the need for further confirmation:*

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, Aquaflyte, 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.

### **3.8. 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

Current resources within the college campus limit group sizes to approximately 15 students primarily within a workshop environment.

### **3.9. 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.

Upon successful completion of the HNC, students may progress to Level 5 (Stage 2) of the FdSc Marine Technologies programme.

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

### 3.10. Admissions Criteria

<b>Qualification(s) Required for Entry to this Programme:</b>	<b>Details:</b>
<p><b>Level 2:</b></p> <ul style="list-style-type: none"> <li>- <b>Key Skills requirement / Higher Level Diploma:</b></li> <li>and/or</li> <li>- <b>GCSEs required at Level 5 or above:</b></li> </ul>	<p>Communication and Application of number Level 2 combined with either GCSE or A-Levels (key skills will not be accepted on their own)</p> <p>In 4 relevant subject areas including Maths and English</p>
<p><b>Level 3: at least one of the following:</b></p> <ul style="list-style-type: none"> <li>- <b>AS/A Levels</b></li> <li>- <b>Advanced Level Diploma:</b></li> <li>- <b>BTEC National Certificate/Diploma:</b></li> <li>- <b>VDA: AGNVQ, AVCE, AVS:</b></li> <li>- <b>Access to HE or Year 0 provision:</b></li> <li>- <b>International Baccalaureate:</b></li> <li>- <b>Irish / Scottish Highers / Advanced Highers:</b></li> </ul>	<p>48 from a relevant subject area</p> <p>Access to HE Engineering, Science or Mathematics</p>
<p><b>Work Experience:</b></p>	<p>Considered on individual merit</p>
<p><b>Other HE qualifications / non-standard awards or experiences:</b></p>	<p>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</p> <p>Be able to undertake practical field work in a variety of educational environments and undertake practical experience.</p>
<p><b>APEL / APCL<sup>7</sup> possibilities:</b></p>	<p>APL will be considered as per Plymouth University Regulations</p>

<sup>7</sup> Accredited Prior Experiential Learning and Accredited Prior Certificated Learning

<b>Interview / Portfolio requirements:</b>	Interviews maybe required depending on previous qualifications and industry experience
<b>Independent Safeguarding Agency (ISA) / Disclosure and Barring Service (DBS) clearance required:</b>	Yes

### 3.11. 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

Students with aspiration to progress to HE within the local area



### 3.12. Programme Structure<sup>8</sup>

For programmes containing more than one FHEQ level of study: copy and paste the table below as required (hover the mouse over the table then left-click on the box in the top left corner to highlight the table → right-click → copy → select a line at least one further than the bottom of this table → right-click and select 'paste – keep formatting')

For users employing pre-2010 versions of MS Word the text entry box guidance will not be visible. Please see footnotes for guidance.

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

<b>FHEQ level: 4 For: HNC Marine Technologies Full Time</b>				
<b>F/T Route Year</b>	<b>When in Year? (i.e. Autumn, Spring etc)</b>	<b>Core or Option Module</b>	<b>Credits</b>	<b>Module</b>
1	Autumn	Core	20	SOUD1423 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	SOUD1428 Engineering Principles

<sup>8</sup> The provided table includes only a single line. This should be multiplied by copying and pasting to produce the correct number of modules for the level of the programme. For ease of consideration and clarity, please include a separate table for each level by again copying and pasting this table. Colour coding/ shading may be used to differentiate between new modules and existing approved modules shared with other programmes.

**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	SOUND1424 Developing Research & Practice with Work Related Research
1	Autumn and Spring	Core	20	SOUND1425 Naval Architecture Design
1	Spring	Core	20	SOUND1428 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
2	Autumn	Core	20	SOUND1423 Engineering Mathematics
2	Autumn and Spring	Core	20	SOUND1426 Materials Engineering with Production Techniques
2	Spring	Core	20	SOUND1427 Vessel Propulsion Systems

### 3.13. Explanation and Mapping of Learning Outcomes, Teaching & Learning and Assessment<sup>9</sup>

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	Prog Aims	Prog intended Learning Outcomes	Range of Assessments	Related Core Modules
<p><b>Knowledge / Understanding:</b></p> <p>The guidance provided by QAA, FHEQ and the SEEC Credit Level Descriptors (2010) have been used during the development of this HNC. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2015).</p> <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to evaluate and interpret underlying concepts and principles associated with Naval Architecture and vessel design engineering.</li> <li>• Employ skills, knowledge and understanding to provide sustainable</li> </ul>	<p><b>Primary:</b></p> <ul style="list-style-type: none"> <li>• Lectures, Seminars and tutorials</li> <li>• Self-directed independent study</li> <li>• Practice sessions</li> </ul> <p><b>Secondary/Supplementary:</b></p> <ul style="list-style-type: none"> <li>• Case studies</li> <li>• Problem-solving exercises</li> </ul>	1	ILO 1	<ul style="list-style-type: none"> <li>• Project report</li> <li>• In-class tests</li> <li>• Essay</li> <li>• Scenario report</li> <li>• Case Study</li> <li>• Presentation</li> <li>• Portfolio</li> <li>• Laboratory Practice</li> </ul>	SOUD1423 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1428

<sup>9</sup> For programmes containing more than one FHEQ level of study, i.e. a bachelor programme with levels 4, 5 & 6, a separate map must be provided for each level. The table should be copied and pasted to enable this.

- 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

- Evaluation of “live and completed projects
- Group and individual presentations and peer assessments
- Site visits

**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:

SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.

SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.

SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.

SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.

SOUND 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

SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives

SOUND 1424 – LO3 To support students in developing as autonomous students at HE level

SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer

SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations

SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

SOUND1426 – LO1 Describe and group materials by classification and analyse results.

SOUND1426 – LO2 Analyse and evaluate the results of test data.

SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.

SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements

SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system

SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications  
 SOUND 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability  
 SOUND 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.  
 SOUND 1428 – LO2 Show an understanding of an AC to DC conversion system.  
 SOUND 1428 – LO3 Apply static theory to simple mechanical applications.  
 SOUND 1428 – LO4 Apply dynamic theory to simple mechanical systems.

**Cognitive and Intellectual Skills:**

The guidance provided by QAA, FDQB and the SEEC Credit Level Descriptors (2010) have been used during the development of this HNC. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2015).

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 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.

**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

SOUND1423  
 SOUND1424  
 SOUND1425  
 SOUND1426  
 SOUND1427  
 SOUND1428

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:

SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.

SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.

SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.

SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.

SOUND 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

SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives

SOUND 1424 – LO3 To support students in developing as autonomous students at HE level

SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer

SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations

SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

SOUND1426 – LO1 Describe and group materials by classification and analyse results.

SOUND1426 – LO2 Analyse and evaluate the results of test data.

SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.

SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements

SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system

SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications

SOUND 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability

SOUND 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.

SOUND 1428 – LO2 Show an understanding of an AC to DC conversion system.

SOUND 1428 – LO3 Apply static theory to simple mechanical applications.

SOUND 1428 – LO4 Apply dynamic theory to simple mechanical systems.

<p><b>Key Transferable Skills:</b></p> <p>The guidance provided by QAA, FDQB and the SEEC Credit Level Descriptors (2010) have been used during the development of this HNC. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2015).</p> <p>By the end of this level of this programme the students will be able to demonstrate for a threshold pass:</p> <ul style="list-style-type: none"> <li>• Demonstrate the ability to appreciate the commercial aspects and function on design in industry</li> <li>• Conduct themselves in a professional manner in design and practical scenarios.</li> <li>• Approach problem solving design situations with a pragmatic “can do” approach.</li> <li>• Exercise responsibility and sound management in ethical and social situations</li> <li>• Demonstrate effective appreciation for the impact of industry on the environment</li> <li>• Communicate in a clear and professional manner</li> <li>• Reflect on own skills and identify CPD opportunities where necessary</li> </ul>	<p><b>Primary:</b></p> <ul style="list-style-type: none"> <li>• Library and other research exercises</li> <li>• Group work awareness and practice</li> <li>• Presentations</li> <li>• Group and individual peer assessment</li> <li>• Computer-based learning and assessment</li> <li>• Tutorials and seminars</li> </ul> <p><b>Secondary/Supplementary:</b></p> <ul style="list-style-type: none"> <li>• Class and seminar interactions and feedback</li> </ul>	<p>3</p>	<p>ILO3</p>	<ul style="list-style-type: none"> <li>• Presentation</li> <li>• Examination</li> <li>• In-Class tests</li> <li>• Assessed discussions</li> <li>• Group project work</li> </ul>	<p>SOUD1423 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1428</p>
<p><b>An explanation for embedding Key Transferable Skills through Teaching &amp; Learning and Assessment at this level of the programme:</b></p> <p>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:</p> <p>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.</p>					

SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.

SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.

SOUND 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

SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives

SOUND 1424 – LO3 To support students in developing as autonomous students at HE level

SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer

SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations

SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

SOUND1426 – LO1 Describe and group materials by classification and analyse results.

SOUND1426 – LO2 Analyse and evaluate the results of test data.

SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.

SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements

SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system

SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications

SOUND 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability

SOUND 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.

SOUND 1428 – LO2 Show an understanding of an AC to DC conversion system.

SOUND 1428 – LO3 Apply static theory to simple mechanical applications.

SOUND 1428 – LO4 Apply dynamic theory to simple mechanical systems.

### Employment Related Skills:

The guidance provided by QAA, FDQB and the SEEC Credit Level Descriptors (2010) have been used during the development of this HNC. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2015).

By the end of this level of this programme the students will be able to demonstrate for a threshold pass:

#### Primary:

- Lectures
- Research Tasks
- Portfolio Development

4

ILO4

- Project report
- Scenario report
- Case Study
- Presentation

SOUND1423  
SOUND1424  
SOUND1425  
SOUND1426  
SOUND1427  
SOUND1428

- 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

Secondary/Supplementary:  
Site Visits

**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:

SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.

SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.

SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.

SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.

SOUND 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

SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives

SOUND 1424 – LO3 To support students in developing as autonomous students at HE level

SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer

SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations

SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

SOUND1426 – LO1 Describe and group materials by classification and analyse results.

SOUND1426 – LO2 Analyse and evaluate the results of test data.

SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.

SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements

SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system

SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications

SOUND 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability

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

**Practical Skills:**

The guidance provided by QAA, FDQB and the SEEC Credit Level Descriptors (2010) have been used during the development of this HNC. In addition the programme has been informed by the following QAA Subject Benchmark statements, Engineering (2015).

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 Report
- Case Study
- Scenario Report

SOUND1423  
 SOUND1424  
 SOUND1425  
 SOUND1426  
 SOUND1427  
 SOUND1428

**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:

SOUND 1423 – LO1 Demonstrate the ability to solve problems involving algebraic number systems.  
 SOUND 1423 – LO2 Apply trigonometric methods to analyse and model Engineering problems.

SOUND 1423 – LO3 Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.

SOUND 1423 – LO4 Apply statistical techniques and probability to engineering situations.

SOUND 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

SOUND 1424 – LO2 To enable students to demonstrate an approach to their practice that is informed by up to date and relevant theoretical perspectives

SOUND 1424 – LO3 To support students in developing as autonomous students at HE level

SOUND 1425 – LO1 Use computer software to draft concepts for manufacture and testing whilst evaluating hull form and production techniques available to the designer

SOUND 1425 – LO2 Determine stability at small and large angles of heel in design and real life situations

SOUND 1425 – LO3 Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory

SOUND 1425 – LO4 Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption

SOUND1426 – LO1 Describe and group materials by classification and analyse results.

SOUND1426 – LO2 Analyse and evaluate the results of test data.

SOUND1426 – LO3 Discuss effects of processing and show an ability to select materials for engineering applications.

SOUND1426 – LO4 Discuss and contrast traditional and novel manufacturing techniques.

SOUND 1427 – LO1 Appreciate current power plant systems used in marine vessels and select engines to meet customer design requirements

SOUND 1427 – LO2 Identify typical components in a modern marine power plant transmission system

SOUND 1427 – LO3 Explore the principle involved in propeller design and selection including practical applications

SOUND 1427 – LO4 Appreciate the factors involved in the design and selection of vessel handling systems with appreciation for manoeuvrability

SOUND 1428 – LO1 Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.

SOUND 1428 – LO2 Show an understanding of an AC to DC conversion system.

SOUND 1428 – LO3 Apply static theory to simple mechanical applications.

SOUND 1428 – LO4 Apply dynamic theory to simple mechanical systems.

### 3.14. Work Based/Related Learning<sup>10</sup>

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	Prog Aim	Prog 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 SOUD1428
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	SOUD1423 SOUD1424 SOUD1425 SOUD1426 SOUD1427 SOUD1428
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	1,2,3,4,5	1,2,4,5	In-class tests, Written report, Essay, Presentation, Exam	SOUD1425 SOUD1427

<sup>10</sup> The provided table includes only a single line. This will need replicating for each WBL/WRL activity (I.e, placements / real-world industry provided problems to solve / visits / trade shows etc). Additionally, the table should be replicated for each stage of the programme for clarity.

	speaker opportunities				
<p><a href="#">An explanation of this map:</a></p> <p>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.</p>					

## 4. Module Records

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

<b>MODULE CODE:</b>	SOUD1423	<b>MODULE TITLE:</b>	Engineering Mathematics
---------------------	----------	----------------------	-------------------------

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 4	<b>JACS CODE:</b> G160
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> Yes
--------------------------------	----------------------------	---------------------------

**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 engineering. A focus will be made on applying mathematics to practical problem solving in a variety of engineering contexts.

**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 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)*

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

- Demonstrate the ability to solve problems involving algebraic number systems.
- Apply trigonometric methods to analyse and model Engineering problems.
- Demonstrate the use of Differentiation and Integration on function combinations and apply the calculus to modelling of engineering problems.
- Apply statistical techniques and probability to engineering situations.

<b>DATE OF APPROVAL:</b>	05/2016	<b>FACULTY/OFFICE:</b>	Academic Partnerships
<b>DATE OF IMPLEMENTATION:</b>	09/2016	<b>SCHOOL/PARTNER:</b>	SDC
<b>DATE(S) OF APPROVED CHANGE:</b>	Click here to enter a date.	<b>TERM/SEMESTER:</b>	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

*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.*

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Rob Smith	<b>OTHER MODULE STAFF:</b> 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
Scheduled Seminars	45	Weekly classroom sessions with guided learning activities
Scheduled Tutorials	22.5	Assessment development and revision
Guided Independent Study	132.5	Directed weekly activity on Moodle and other VLE to re-enforce classroom content.
<b>Total</b>	<u>200</u>	(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 assignment A01	50%	LO1,2
		Technical calculations Assignment A02	50%	LO3,4
			Total = 100%	

<b>Updated by:</b> Matthew Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian bevin	<b>Date:</b> 29/09/17
--------------------------------------	--------------------------	-------------------------------------	--------------------------

### Recommended Texts and Sources:

- Bird, J., 2014. Engineering Mathematics. 7th ed. Oxford: Newnes.
- Bird, J., 2014. Higher Engineering Mathematics. 7th ed. Oxford: Newnes.
- Booth, D. & Stroud, K., 2007. Engineering Mathematics. 6th ed. Basingstoke: Palgrave Macmillan.
- Tooley, M. & Dingle, L., 2004. Higher National Engineering. 2nd ed. Oxford: Newnes.
- Tooley, M. & Dingle, L., 2012. Engineering Science : For Foundation Degree And Higher National. 1st ed. Oxford: Routledge.

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

<b>MODULE CODE:</b>	SOUD1424	<b>MODULE TITLE:</b>	Developing Research and Practice with Work Related Research
---------------------	----------	----------------------	---

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 4	<b>JACS CODE:</b> X220
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> 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.

<b>ELEMENTS OF ASSESSMENT Use HESA KIS definitions]</b>	
COURSEWORK	
<b>C1</b> (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

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

*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.*

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Lauren Dommett	<b>OTHER MODULE STAFF:</b> None
--------------------------------------	---------------------------------

### **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]**

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

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

<b>Updated by:</b> Lauren Dommett	<b>Date:</b> 12/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 14/09/17
--------------------------------------	--------------------------	-------------------------------------	--------------------------

### **Recommended Texts and Sources:**

- Bedford, D. and Wilson, E. (2013) *Study skills for Foundation Degrees*. 2<sup>nd</sup> 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.**

<b>MODULE CODE:</b> SOUD1425	<b>MODULE TITLE:</b> Naval Architecture Design
------------------------------	--

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 4	<b>JACS CODE:</b> H500
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> Yes
--------------------------------	----------------------------	---------------------------

<p><b>SHORT MODULE DESCRIPTOR:</b> <i>(max 425 characters)</i></p> <p>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.</p>
---

<b>ELEMENTS OF ASSESSMENT</b> <i>Use HESA KIS definitions</i>
---

<b>COURSEWORK</b>	
<b>C1</b> (Coursework)	100%

<b>SUBJECT ASSESSMENT PANEL</b> Group to which module should be linked: Marine Technologies
---

<b>Professional body minimum pass mark requirement:</b> NA
--

<p><b>MODULE AIMS:</b></p> <ul style="list-style-type: none"> <li>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.</li> </ul>
--

<p><b>ASSESSED LEARNING OUTCOMES:</b> <i>(additional guidance below)</i></p> <p>At the end of the module the student will be expected to be able to:</p> <ol style="list-style-type: none"> <li>Use computer software to draft concepts and produce models for manufacture and testing</li> <li>Determine stability at small and large angles of heel in design and real life situations</li> <li>Appreciate the varied forces acting on marine structures and perform calculations whilst applying static and dynamic theory</li> <li>Analyse methods to determine vessel resistance and link to prediction of performance, determination of power and expected fuel consumption</li> </ol>
--

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

<b>Additional notes (for office use only):</b> 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.*

<b>ACADEMIC YEAR:</b> 2017-18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Matthew Prowse	<b>OTHER MODULE STAFF:</b> 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]**

<b>Scheduled Activities</b>	<b>Hours</b>	<b>Comments/Additional Information</b>
Scheduled Lectures	10	Classroom sessions
Scheduled Seminars	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
<b>Total</b>	<b><u>200</u></b>	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc)

<b>Category</b>	<b>Element</b>	<b>Component Name</b>	<b>Component Weighting</b>	<b>Comments include links to learning objectives</b>
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%	

<b>Updated by:</b> Matt Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> .29/09/17
-----------------------------------	--------------------------	-------------------------------------	---------------------------

### **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.***

<b>MODULE CODE:</b>	SOUD1426	<b>MODULE TITLE:</b>	Materials Engineering with Production Techniques
---------------------	----------	----------------------	--

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 4	<b>JACS CODE:</b> H100
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> 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.

<b>ELEMENTS OF ASSESSMENT <i>Use HESA KIS definitions</i></b>	
COURSEWORK	
<b>C1</b> (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:

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

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

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Matthew Prowse	<b>OTHER MODULE STAFF:</b> 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]**

<b>Scheduled Activities</b>	<b>Hours</b>	<b>Comments/Additional Information</b>
Scheduled Lectures	10	Classroom sessions
Scheduled Seminars	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
<b>Total</b>	<b><u>200</u></b>	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc)

<b>Category</b>	<b>Element</b>	<b>Component Name</b>	<b>Component Weighting</b>	<b>Comments include links to learning objectives</b>
Coursework	C1	Report	50%	LO2, LO3
		Material Analysis Report	25%	LO1,
		Practice summary report	25%	LO4
			Total = 100%	

<b>Updated by:</b> Matthew Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17
--------------------------------------	--------------------------	-------------------------------------	--------------------------

### Recommended Texts and Sources:

- Ashby, M.F. (2013) *Materials and the Environment : eco-informed material choice*. (2<sup>nd</sup> 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.**

<b>MODULE CODE:</b>	SOUD1427	<b>MODULE TITLE:</b>	Vessel Propulsion Systems
<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 4	<b>JACS CODE:</b> H500	
<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> Yes	
<b>SHORT MODULE DESCRIPTOR:</b> <i>(max 425 characters)</i> 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.			
<b>ELEMENTS OF ASSESSMENT Use HESA KIS definitions]</b>			
COURSEWORK			
<b>C1</b> (Coursework)	100%		
<b>SUBJECT ASSESSMENT PANEL Group to which module should be linked:</b> Marine Technologies			
<b>Professional body minimum pass mark requirement:</b> NA			
<b>MODULE AIMS:</b>			
<ul style="list-style-type: none"> <li>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</li> </ul>			
<b>ASSESSED LEARNING OUTCOMES:</b> <i>(additional guidance below)</i>			
At the end of the module the student will be expected to be able to:			
<ol style="list-style-type: none"> <li>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</li> <li>2. Select and justify appropriate power plant and transmission system to meet a design criteria</li> <li>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</li> <li>4. Project manage the design of a vessel propulsion system and be able to evaluate and present the project outcomes.</li> </ol>			
<b>DATE OF APPROVAL:</b>	05/2016	<b>FACULTY/OFFICE:</b>	Academic Partnerships
<b>DATE OF IMPLEMENTATION:</b>	09/2016	<b>SCHOOL/PARTNER:</b>	South Devon College
<b>DATE(S) OF APPROVED CHANGE:</b>	Click here to enter a date.	<b>TERM/SEMESTER:</b>	Spring
<b>Additional notes (for office use only):</b> 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.*

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> John Boyne	<b>OTHER MODULE STAFF:</b> 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]**

<b>Scheduled Activities</b>	<b>Hours</b>	<b>Comments/Additional Information</b>
Scheduled Lectures	10	Classroom sessions
Scheduled Seminars	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
<b>Total</b>	200	(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc)

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

<b>Updated by:</b> Matt Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17
-----------------------------------	--------------------------	-------------------------------------	--------------------------

### **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.**

<b>MODULE CODE:</b>	SOUD1428	<b>MODULE TITLE:</b>	Engineering principles
<b>CREDITS:</b>	20	<b>FHEQ Level:</b>	4
		<b>JACS CODE:</b>	H300
<b>PRE-REQUISITES:</b>	None	<b>CO-REQUISITES:</b>	None
		<b>COMPENSATABLE:</b>	Yes
<b>SHORT MODULE DESCRIPTOR:</b> <i>(max 425 characters)</i>			
An introduction to Mechanical and Electrical principles that are fundamental to the design and justification of marine systems which will also provide a broad foundation knowledge for both Mechanical and Electrical professionals required in industry. 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.			
<b>ELEMENTS OF ASSESSMENT</b> <i>Use HESA KIS definitions</i>			
COURSEWORK			
<b>C1</b> (Coursework)	100%		
<b>SUBJECT ASSESSMENT PANEL</b> Group to which module should be linked: Marine Technologies			
<b>Professional body minimum pass mark requirement:</b> NA			
<b>MODULE AIMS:</b>			
<ul style="list-style-type: none"> <li>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.</li> </ul>			
<b>ASSESSED LEARNING OUTCOMES:</b> <i>(additional guidance below)</i>			
At the end of the module the student will be expected to be able to:			
<ol style="list-style-type: none"> <li>Apply circuit theory to solve simple DC passive circuits for resistance, current and power dissipation.</li> <li>Show an understanding of an AC to DC conversion system.</li> <li>Apply static theory to simple mechanical applications.</li> <li>Apply dynamic theory to simple mechanical systems.</li> </ol>			
<b>DATE OF APPROVAL:</b>	05/2016.	<b>FACULTY/OFFICE:</b>	Academic Partnerships
<b>DATE OF IMPLEMENTATION:</b>	09/2016	<b>SCHOOL/PARTNER:</b>	South Devon College
<b>DATE(S) OF APPROVED CHANGE:</b>	Click here to enter a date.	<b>TERM/SEMESTER:</b>	Spring
<b>Additional notes (for office use only):</b> For delivering institution's HE Operations or Academic Partnerships use if required			

## SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

<b>ACADEMIC YEAR:</b> 2017-18	<b>NATIONAL COST CENTRE:</b> 115
<b>MODULE LEADER:</b> Rob Smith	<b>OTHER MODULE STAFF:</b> 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
Scheduled Lectures	20	Classroom sessions
Scheduled Seminars	45	Weekly classroom sessions with guided learning activities
Scheduled Practical / Lab sessions	10	Weekly practical sessions with guided learning activities
Scheduled Tutorials	0	Individual/small group discussion and progress tracking
Guided Independent Study	125	Directed weekly reading, moodle based tasks, and assessment development/revision
<b>Total</b>	<u>200</u>	(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 Calculation Report	50%	LO1, LO2.
		Technical Calculation Report	50%	LO3, LO4.
			Total = 100%	

<b>Updated by:</b> Matthew Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17
--------------------------------------	--------------------------	-------------------------------------	--------------------------

### Recommended Texts and Sources:

- Tooley, M. and Dingle, L., (2004) *Higher National Engineering*. (2<sup>nd</sup> edition), Oxford: Newnes.
- Tooley, M. and Dingle, L., (2012) *Engineering Science : For Foundation Degree And Higher National*. (1<sup>st</sup> edition), Oxford: Routledge.

## **Journals**

<http://www.springer.com/engineering/mechanical+engineering/journal/12206>

[http://www.ieee.org/publications\\_standards/publications/journalmag/journals\\_magazines.html](http://www.ieee.org/publications_standards/publications/journalmag/journals_magazines.html)

## **Useful Websites**

<http://www.electronics-tutorials.ws/>

<http://www.allaboutcircuits.com/>

<http://www.theiet.org/>

<http://www.animations.physics.unsw.edu.au/>

<http://www.science-animations.com/>

**SECTION A: DEFINITIVE MODULE RECORD.**

<b>MODULE CODE:</b>	SOUD2379	<b>MODULE TITLE:</b>	Production Management
<b>CREDITS:</b>	20	<b>FHEQ Level:</b>	5
		<b>JACS CODE:</b>	H700
<b>PRE-REQUISITES:</b>	None	<b>CO-REQUISITES:</b>	None
		<b>COMPENSATABLE:</b>	Yes
<b>SHORT MODULE DESCRIPTOR:</b> <i>(max 425 characters)</i> 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.			
<b>ELEMENTS OF ASSESSMENT</b> <i>Use HESA KIS definitions</i>			
COURSEWORK			
<b>C1</b> (Coursework)	100%		
<b>SUBJECT ASSESSMENT PANEL</b> Group to which module should be linked: Marine Technologies			
<b>Professional body minimum pass mark requirement:</b> NA			
<b>MODULE AIMS:</b>			
<ul style="list-style-type: none"> <li>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.</li> </ul>			
<b>ASSESSED LEARNING OUTCOMES:</b> <i>(additional guidance below)</i>			
At the end of the module the student will be expected to be able to:			
<ol style="list-style-type: none"> <li>Reflect on own skills and recognise skills of others to demonstrate team leadership and management in production</li> <li>Evaluate the commercial aspects effecting the running of an engineering company</li> <li>Research technical build standards that influence the design and production of components in the marine industry</li> <li>Recognise and select typical materials and production techniques that reflect commercial awareness and technical compliance.</li> </ol>			
<b>DATE OF APPROVAL:</b>	05/2016	<b>FACULTY/OFFICE:</b>	Academic Partnerships
<b>DATE OF IMPLEMENTATION:</b>	09/2016	<b>SCHOOL/PARTNER:</b>	South Devon College
<b>DATE(S) OF APPROVED CHANGE:</b>	Click here to enter a date.	<b>TERM/SEMESTER:</b>	Autumn
<b>Additional notes (for office use only):</b> For delivering institution's HE Operations or Academic Partnerships use if required			

## SECTION B: DETAILS OF TEACHING, LEARNING AND ASSESSMENT

<b>ACADEMIC YEAR: 2017-18</b>	<b>NATIONAL COST CENTRE: 115</b>
-------------------------------	----------------------------------

<b>MODULE LEADER: Matthew Prowse</b>	<b>OTHER MODULE STAFF: None</b>
--------------------------------------	---------------------------------

### 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 Seminars	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
<b>Total</b>	<b><u>200</u></b>	(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	Reflective report	25%	LO1
		Report	75%	LO2,LO3,LO4
			Total = 100%	

<b>Updated by:</b> Matt Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17
-----------------------------------	--------------------------	-------------------------------------	--------------------------

### Recommended Texts and Sources:

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

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

<b>MODULE CODE:</b>	SOUD2380	<b>MODULE TITLE:</b>	Computer Aided Design (CAD)
---------------------	----------	----------------------	-----------------------------

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 5	<b>JACS CODE:</b> H131
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> 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]*

<b>COURSEWORK</b>	
<b>C1</b> (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:

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

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

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Matthew Prowse	<b>OTHER MODULE STAFF:</b> None
--------------------------------------	---------------------------------

<p><b>SUMMARY of MODULE CONTENT</b>                  2D Design software (eg 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</p>
--

<b>SUMMARY OF TEACHING AND LEARNING [Use HESA KIS definitions]</b>		
<b>Scheduled Activities</b>	<b>Hours</b>	<b>Comments/Additional Information</b>
Scheduled Seminars	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
<b>Total</b>	<u>200</u>	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc)

<b>Category</b>	<b>Element</b>	<b>Component Name</b>	<b>Component Weighting</b>	<b>Comments include links to learning objectives</b>
Coursework	C1	CAD drawing and summary report	50%	LO1, LO2,
		Report	50%	LO3, LO4.
			Total = 100%	

<b>Updated by:</b> Matt Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17
-----------------------------------	--------------------------	-------------------------------------	--------------------------

<p><b>Recommended Texts and Sources:</b></p> <ul style="list-style-type: none"> <li>BS8888: 2013 Technical product documentation specification (31 December 2013), London:</li> <li>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</li> </ul>
---

- 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.*

<b>MODULE CODE:</b>	SOUD2381	<b>MODULE TITLE:</b>	Independent Research and Development Project
---------------------	----------	----------------------	--

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 5	<b>JACS CODE:</b> X220
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> 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.

<b>ELEMENTS OF ASSESSMENT Use HESA KIS definitions]</b>	
COURSEWORK	
<b>C1</b> (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:

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

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

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Matthew Prowse	<b>OTHER MODULE STAFF:</b> 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 Lectures/Seminars	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
<b>Total</b>	<b><u>200</u></b>	(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 75%	100%	LO2, LO3, LO4, LO5
		Proposal 25%		LO1

<b>Updated by:</b> Matthew Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17
--------------------------------------	--------------------------	-------------------------------------	--------------------------

### 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.***

<b>MODULE CODE:</b>	SOUD2382	<b>MODULE TITLE:</b>	Marine Engineering Systems
---------------------	----------	----------------------	----------------------------

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 5	<b>JACS CODE:</b> J610
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> 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]**

<b>COURSEWORK</b>	
<b>C1</b> (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:

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

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

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> John Boyne	<b>OTHER MODULE STAFF:</b> 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]**

<b>Scheduled Activities</b>	<b>Hours</b>	<b>Comments/Additional Information</b>
Scheduled Seminars	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
<b>Total</b>	<b><u>200</u></b>	(NB: 1 credit = 10 hours of learning; 10 credits = 100 hours, etc)

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

<b>Updated by:</b> Matt Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17.
-----------------------------------	--------------------------	-------------------------------------	---------------------------

### **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.**

<b>MODULE CODE:</b>	SOUD2383	<b>MODULE TITLE:</b>	Vessel Surveying
<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 5	<b>JACS CODE:</b> J610	
<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> Yes	
<b>SHORT MODULE DESCRIPTOR:</b> <i>(max 425 characters)</i>			
<ul style="list-style-type: none"> <li>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.</li> </ul>			
<b>ELEMENTS OF ASSESSMENT Use HESA KIS definitions]</b>			
<b>COURSEWORK</b>		<b>PRACTICAL</b>	
<b>C1</b> (Coursework)	75%	<b>P1</b> (Practical)	25%
<b>SUBJECT ASSESSMENT PANEL Group to which module should be linked:</b> Marine Technologies			
<b>Professional body minimum pass mark requirement:</b> NA			
<b>MODULE AIMS:</b> 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.			
<b>ASSESSED LEARNING OUTCOMES:</b> <i>(additional guidance below)</i> At the end of the module the student will be expected to be able to:			
<ol style="list-style-type: none"> <li>Research and analyse the requirements and regulatory bodies regarding vessel surveying for the leisure and commercial sector</li> <li>Research and investigate typical defects occurring in traditional and modern day vessels and components and explore testing equipment and procedures.</li> <li>Assess the of the environment factors acting on materials and structures in the marine industry</li> <li>Practice vessel surveying on real life vessels and draw conclusions to its life expectancy and suitability</li> </ol>			
<b>DATE OF APPROVAL:</b>	05/2016	<b>FACULTY/OFFICE:</b>	Academic Partnerships
<b>DATE OF IMPLEMENTATION:</b>	09/2016	<b>SCHOOL/PARTNER:</b>	South Devon College
<b>DATE(S) OF APPROVED CHANGE:</b>	Click here to enter a date.	<b>TERM/SEMESTER:</b>	Spring
<b>Additional notes (for office use only):</b> 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.*

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Dave Peart	<b>OTHER MODULE STAFF:</b> 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]**

<b>Scheduled Activities</b>	<b>Hours</b>	<b>Comments/Additional Information</b>
Scheduled Seminars	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
<b>Total</b>	<u>200</u>	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc)

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

<b>Updated by:</b> Matthew Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Adrian Bevin	<b>Date:</b> 29/09/17
--------------------------------------	--------------------------	-------------------------------------	--------------------------

### **Recommended Texts and Sources:**

- Gerwick BC, 1999, Construction of Marine & Offshore Structures, 2nd Edition Hofmann-Wellenhof,
- B., Lichtenegger, H., Wasse, 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.*

<b>MODULE CODE:</b>	SOUD2384	<b>MODULE TITLE:</b>	Composite Materials and Manufacture
---------------------	----------	----------------------	-------------------------------------

<b>CREDITS:</b> 20	<b>FHEQ Level:</b> 5	<b>JACS CODE:</b> J510
--------------------	----------------------	------------------------

<b>PRE-REQUISITES:</b> None	<b>CO-REQUISITES:</b> None	<b>COMPENSATABLE:</b> 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]*

<b>COURSEWORK</b>	
<b>C1</b> (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:

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

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

<b>ACADEMIC YEAR:</b> 2017/18	<b>NATIONAL COST CENTRE:</b> 115
-------------------------------	----------------------------------

<b>MODULE LEADER:</b> Dave Peart	<b>OTHER MODULE STAFF:</b> 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]**

<b>Scheduled Activities</b>	<b>Hours</b>	<b>Comments/Additional Information</b>
Scheduled Seminars	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
<b>Total</b>	<b><u>200</u></b>	(NB: 1 credit = 10 hours or learning; 10 credits = 100 hours, etc)

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

<b>Updated by:</b> Matt Prowse	<b>Date:</b> 26/09/17	<b>Approved by:</b> Matthew Prowse	<b>Date:</b> 29/09/17
-----------------------------------	--------------------------	---------------------------------------	--------------------------

### **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. Sheno, J.F. Wellicome, (2008)
- Composite Materials in Maritime Structures: Volume 1, Fundamental Aspects (Cambridge Ocean Technology Series). Cambridge University Press. Cambridge.
- R.A. Sheno, J.F. Wellicome, (2008) Composite Materials in Maritime Structures: Volume 2, Practical Considerations (Cambridge Ocean Technology Series). Cambridge University Press. Cambridge.