

# **University of Plymouth**

Faculty of Science and Engineering

School of Engineering, Computing and Mathematics

## **Programme Specification**

**BEng (Hons) Marine Technology 1836**  
**BEng (Hons) Marine Technology (Integrated) 4378**

September 2021

### 1. **BEng (Hons) Marine Technology (MT)**

**Final award title(s):** BEng (Hons) Marine Technology

BEng (Hons) Marine Technology with Composites (for  
AY2020/2021 entrants only)

**Level 4 Intermediate award title:** Certificate of Higher Education (Cert. HE)

**Level 5 Intermediate award title:** Diploma of Higher Education (Dip. HE)

**UCAS code :** J610

**HECOS code : MT :** 100194 / 100207   **MTC:** 100194 / 101217

2. **Awarding Institution:** University of Plymouth

**Teaching institution(s):** University of Plymouth

### 3. **Accrediting bodies**

The Institute of Marine Engineering, Science and Technology (IMarEST) - MT

The Royal Institution of Naval Architects (RINA) - MT

The Institution of Mechanical Engineers (IMechE) - MT

This degree (MT) is accredited by the professional institutions as follows:

- Fully satisfying the educational requirement for the status of Incorporated Engineer (IEng).
- Partially satisfying the educational requirement for Chartered Engineer (CEng) status. A programme of accredited Further Learning will be needed to complete the remaining educational requirements for CEng.

Date of re-accreditation: 2021/22. Programme accredited for intakes 2017-2021.

### 4. **Distinctive Features of the Programme and the Student Experience**

The programme is designed to provide students with a sound appreciation of the fundamental principles of marine technology and its importance for the economic well-being, and development, of the country. Students will gain experience in coping with the interdisciplinary and uncertain nature of the engineering profession, and an understanding of the marine technologist's role and responsibility in society.

The primary distinctive feature, and a unique selling point, of the programme is the opportunity for students, by choosing appropriate modules, to obtain a good grounding in composite engineering materials, and their importance in the marine sector. In this context, students will be aware of the wide, and growing range, of industrial applications of engineering composites, and of the particular economic and design-related challenges presented by these materials. Particular emphasis will be placed on the required specialised practical skills related to the design and

manufacture of composite materials and structures for marine applications. Also considered will be the environmental and sustainability issues associated with the use of these engineering materials. Graduates from the composites pathway are also particularly employable in the aerospace, renewable energy, motor sport and the materials supply sectors.

A further distinctive feature of the programme is a one week, immersive experience at the start of the autumn semester for all Stage 1 students starting at the University. This immersive week will allow students to participate in a series of activities related to the context of their chosen programme of study. In this way, it is hoped that they will start to develop an effective cohort identity, and cohesiveness, which will facilitate their future studies together.

In addition to the generic skills listed in Section 8, it is a condition of the current EAB accreditation that the student's Stage 4 individual research projects are centred on a pathway specific topic. For example, they should have either a marine technology theme or a composites theme. These pathway specific project titles will be developed with students, under the guidance of an appointed supervisor, towards the end of Stage 2, or Stage 3 for returning placement students.

The overarching programme teaching and learning scheme has been developed in line with the University Education and Student Experience strategy to ensure a positive student journey. The student experience will include the following distinctive features;

- As well as a varied lecture programme, the students have regular laboratory experience, tutorials, seminars and group and individual projects.
- Regular feedback sessions ensure that their views are built into the design and delivery of the programmes. We encourage the interplay between marine technology and engineering teaching and the research activities of our staff as one of our guiding principles.
- The students also benefit from academic and personal support and guidance throughout the years. Personal development planning is integrated into the degree programmes through the tutor system and gives students time to plan and reflect on their learning and to apply it to personally relevant objectives and opportunities.
- Assessment involves a wide range of innovative coursework, including case studies, presentations and problem solving projects as well as traditional examinations.

## **5. Relevant QAA Subject Benchmark Group**

The QAA Engineering Subject Benchmark Statement<sup>1</sup> defines the academic standard expected of graduates with an engineering degree. The defined learning outcomes are those published by the Engineering Council in the UK Standard for Professional Engineering Competence (UK-SPEC): The Accreditation of Higher Education Programmes<sup>2</sup>, AHEP 3<sup>rd</sup> edition. AHEP 4th edition was published on 31 August 2020 and will be implemented by 31 December 2021. The learning outcomes defined here will be aligned with AHEP 4th in future versions of this document.

## **6. Programme Structure**

The BEng Marine Technology programme structure has been developed in line with the new university Education and Student Experience strategy. To meet the Subject Benchmark requirements<sup>3</sup>, modules are delivered, where possible, in a 60 credits per semester format and include elements of both research informed teaching and industry professional requirements.

The programme was developed from the long standing Marine Technology, but was revised to account for feedback from accrediting bodies and student liaison committees. The overwhelming majority of the content and learning outcomes are the same, but the organisation of delivery has been refined. An example of this is within stage 1, where to improve the student learning experience and to provide a more effective delivery mode for stage one modules, the “Engineering Design” and the “Engineering Practice and Experimental Techniques” modules extend over two semesters. These modules bring together students from the different engineering programmes to gain a basic understanding of Design and CAD skills, and to apply problem-based, and student-centred, learning, with a view to developing a more holistic understanding of their subject and how it sits within a wider engineering context.

A significant change is that the entrants to the BEng/MEng programme have the opportunity of a “with Composites” pathway in Stage 4, as opposed to Composites being studied as a separate programme.

The academic year 2020-2021 was the first year of transition towards this new format of delivery, with the introduction of Stage 1 and Stage 5 for the MEng programmes. The new format for stages 2 and 4 will be introduced in academic year 2021-2022. Details of this transition and the relationship between the old and revised format of the programmes can be found in section 12 of this document.

The following tables summarise the year-by-year content delivered in the academic year 2021-2022.

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<sup>1</sup> <http://www.qaa.ac.uk/en/Publications/Documents/SBS-engineering-15.pdf>

<sup>2</sup> [The Accreditation of Higher Education Programmes: Third edition](#)

<b>STAGE 1</b>							
<b>Duration</b>	<b>Module Code</b>	<b>Credits</b>	<b>Module Title</b>	<b>CW (%)</b>	<b>P (%)</b>	<b>Exam (%)</b>	<b>Test (%)</b>
S1+S2	ENGR101	20	Engineering Design	70			30
S1+S2	ENGR102	20	Engineering Practice and Experimental Techniques	100			
S1	ENGR103	20	Engineering Science	50		50	
S1	ENGR104	20	Engineering Mathematics	50		50	
S2	ENGR105	20	Engineering Mechanics & Structures	50		50	
S2	ENGR106	20	Engineering Materials	50		50	
S2	BPIE115	-	Stage 1 Mechanical Placement Preparation	-	-	-	-
<b>STAGE 2</b>							
S1+S2	MATS235	20	Materials & Structural Integrity	50		50	
S1+S2	MECH233	20	Manufacturing Processes	100			
S1	MECH234	20	Thermo-Fluids	30		70	
S1	CONT222	20	Engineering Maths & Control	30		70	
S2	MARN220	20	Naval Architecture 1	30		70	
S2	MARN221	20	Marine Engineering Design & Commercialisation*	70			30
S1+S2	BPIE215	-	Stage 2 Mechanical Placement Preparation	-	-	-	-
(* MARN221 should be timetabled alongside MECH235)							
<b>STAGE 3</b>							
<p><i>BPIE335 Engineering Related Placement (Generic)</i></p> <p>All students are encouraged to complete a period of work experience (placement) lasting 48 weeks.</p> <p>Students' progress is monitored by a visiting tutor, who will also assess the Professional Training Report at the end of the placement. Students who successfully complete a placement (including interim and final reports) to the satisfaction of their academic tutor and industry supervisor will have their degree endorsed as a 'sandwich' award, in recognition of their industrial experience.</p>							<b>PASS / FAIL</b>
<b>STAGE 4</b>							
S1+S2	PRME307	40	MT Honours Project (with Research Methods)	100			

S1	MECH341	20	Computer Aided Engineering (FEA/CFD)	70			30
S1	MARN342	20	Naval Architecture 2	70			30
S2	MARN341	20	Marine Engineering	50		50	
S2	CONT317	20	Control and Intelligent Systems Design	30		70	

<b>Stage 4/Level 6 Marine Technology with Composites Pathway</b> (for AY2020/2021 entrants only)							
S1+S2	PRME307	40	MTC Honours Project (with Research Methods)	100			
S1	MARN342	20	Naval Architecture 2	70			30
S1	MATS347	20	Composites Design and Manufacture	50		50	
S2	MARN341	20	Marine Engineering	50		50	
S2	MATS348	20	Composites Engineering	100			

## 7. Programme Aims

The School of Engineering, Computing and Mathematics has adopted common aims for all engineering degree programmes:

- To be informative and challenging, and to establish a knowledge base suitable for a future career in engineering or further study.
- To give students with a variety of entry qualifications an opportunity to realise their potential.
- To enrich curriculum content and teaching quality through the professional and research expertise of staff, and through links with industry.
- To encourage and support students to develop and learn to apply technical and transferable skills that will facilitate life-long learning and continuing professional development.
- To produce graduates who can make a significant contribution to their professional field.

The programme aims to produce graduates that should be able to:

- Adopt an integrated approach to design, manufacturing, materials and engineering in a marine technology context;
- Demonstrate appropriate knowledge of the scientific principles which underpin the practice of marine engineering and technology;
- Apply analytical skills in applying the principles of engineering science to the solution of problems in the context of composite materials production, properties, design, manufacture and applications in marine technology.
- Apply practical skills in engineering measurement and instrumentation;

- Use modern Computer Aided Engineering (CAE) and Computer Aided Design (CAD) tools in marine technology applications;
- Specify processes and technologies used in marine technology;
- Demonstrate an awareness of standards, codes of practice, risk assessment and reliability;
- Display an awareness of the marine technologist' role in business, and his/her responsibilities to society and particularly the natural environment;
- Communicate effectively, clearly and concisely, by written, verbal and graphical techniques;
- Work effectively in a team;
- Display a creative approach to engineering design and marine technology.

## **8. Programme Intended Learning Outcomes**

The general and specific learning outcomes of these programmes are aligned with the EAB's UK-SPEC (Standards for Professional Engineering Competence <sup>3,4</sup>), which has been adopted as the QAA subject benchmark for engineering.

### **8.1 Knowledge and Understanding**

Marine Technology is underpinned by science and mathematics, and other associated disciplines, as defined by the relevant accrediting professional engineering institutions. On completion, graduates will need:

- 1) SM1b  
A comprehensive knowledge and understanding of the scientific principles and methodology necessary to underpin their education in marine technology and engineering, and an understanding, and know-how, of the scientific principles of related disciplines, to enable appreciation of the scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies.
- 2) SM2b  
Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in marine technology and engineering and to enable them to apply a range of mathematical and statistical methods, tools and notations proficiently and critically in the analysis and solution of engineering problems.
- 3) SM3b  
Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of marine technology and engineering to support study of their own discipline.

### **8.2 Cognitive and Intellectual Skills**

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<sup>3</sup> [Accreditation of HE Programmes \(AHEP\): Collated learning outcomes for six areas of learning](#)

<sup>4</sup> <http://www.engc.org.uk/standards-guidance/standards/uk-spec/>

Technical analysis for marine technology, and its applications, involves the use of many standard engineering concepts and tools to solve the engineering problems involved. On completion graduates should have developed:

- 1) EA1b  
Understanding of engineering principles and the ability to apply them to the critical analysis of key engineering processes.
- 2) EA2  
Ability to identify, classify and describe the performance of systems and components using suitable analytical methods and modelling techniques.
- 3) EA3b  
Ability to apply quantitative and computational methods in order to solve engineering problems and implement appropriate action.
- 4) EA4b  
Understanding of, and the ability to apply, an integrated or systems approach to solving complex engineering problems.

### **8.3. Key and Transferable Skills**

The process of design in marine technology at this level is a key skill and involves the creation and development of an economically viable product, process or system to meet a defined need. It involves significant technical and intellectual challenges and integrates engineering understanding, knowledge and skills to the solution of real problems. On completion, graduates should have developed the knowledge, understanding and skills, in a marine technology context, to:

- 1) D1  
Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics.
- 2) D2  
Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards.
- 3) D3b  
Work with information that may be incomplete or uncertain, quantify the effect of this on the design.
- 4) D4  
Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal.
- 5) D5  
Plan and manage the design process, including cost drivers, and evaluate outcomes.
- 6) D6  
Communicate their work to technical and non-technical audiences.

### **8.4. Employment Related Skills**



Marine Technology can have a very real impact on the environment, commerce, society and the individual. On successful completion, graduates therefore need the skills to manage their activities and to be aware of the various legal and ethical constraints under which they should operate, including:

- 1) EL1  
Understanding of the need for a high level of professional and ethical conduct in marine technology, and a knowledge of professional codes of practise.
- 2) EL2  
Knowledge and understanding of the commercial, economic and social context of engineering processes in a marine technology context.
- 3) EL3  
Knowledge and understanding of management techniques, including project and change management, used to achieve marine technology objectives.
- 4) EL4  
Understanding of the requirement for marine engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate.
- 5) EL5  
Awareness of relevant legal requirements governing marine technology activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues.
- 6) EL6 Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, risk assessment and risk management techniques.

### **8.5. Practical Skills**

This is the practical application of marine engineering skills, combining theory and experience, and the use of relevant knowledge and skills. On successful completion marine technology graduates should have developed:

- 1) P1  
Understanding of contexts in which marine engineering knowledge is applicable to operations and management, and to the application and development of marine technology.
- 2) P2  
Knowledge of characteristics of particular equipment, processes or products appropriate to marine technology.
- 3) P3  
Ability to apply relevant practical, laboratory skills and other appropriate transferrable skills.
- 4) P4  
Understanding of the use of technical literature and other information sources appropriate to marine technology.
- 5) P5  
Knowledge of relevant legal and contractual issues in a marine technology context.
- 6) P6

Understanding of codes of practice and industry standards appropriate to marine technology.

- 7) P7  
Awareness of quality issues and their application to continuous improvement in marine technology.
- 8) P8  
Ability to work with technical uncertainty.
- 9) P11  
Understanding of different roles within a marine technology team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader.

### **Additional General Skills (Required for Accreditation)**

On successful completion, graduates will have developed the following additional competences that will be of value in a wide range of employment situations. These will include the ability to:

- 1) G1  
Apply their skills in problem solving, communication, working with others, information retrieval and the effective use of general IT facilities.
- 2) G2  
Plan self-learning and improve performance, as the foundation for lifelong learning and CPD.
- 3) G3  
Monitor and adjust a personal programme of work, adjusting where appropriate.
- 4) G4 Exercise initiative and personal responsibility, which may be as a team member or leader.

### **9. Admissions Criteria, including APCL, APEL and DAS arrangements**

All applicants must have GCSE (or equivalent) Maths and English at Grade C or above.

<b>Entry Requirements for BEng programmes</b>	
A-level/AS-level	104 -120 points. A typical offer is 120 points to include C @ Maths, C @ 2nd relevant subject in Science or Technology. Excluding General Studies.
BTEC National Diploma/QCF Extended Diploma	BTEC National Diploma/QCF Extended Diploma: DDD in a relevant science or Engineering subject. Must include Maths units. Candidates may be interviewed before an offer is made.
Access to Higher Education at level 3	Access to HE Diploma in a Science or Engineering. Pass Access in Engineering to include 45 credits at level 3. Must include 33 credits to include at least 12 credits at level 3 in Maths with Distinction and 12 credits at level 3 in a second relevant subject with Merit. Must have GCSE English and Maths grade C / 4 or above or equivalent (If a Mature candidate

	then lower grades requirements <u>possible</u> depending on experience as agreed by admissions tutor.)
Welsh Baccalaureate	120 points from Welsh Baccalaureate – accepted as additional points in addition to the two A-Levels described above
Scottish Qualifications Authority	300 points including grade C in a relevant subject at Advanced Higher Level (applied ICT; applied science; biology; chemistry; computing; DT (product design); DT (systems and control tech); DT (textiles tech); electronics; engineering; environmental science; maths/further maths; stats; physics; science; tech and design). Plus pass Higher level maths.
Irish Leaving Certificate	Grades required: BBBB including mathematics and a science or technology subject at higher level plus Ordinary Level Grade C Maths and English.
International Baccalaureate	International Baccalaureate: 30 points overall to include 5 at Higher Level Maths and 4 at Higher Level Sci/Tech subject. English and Mathematics must be included.
Progression from BEng (Hons) Mechanical Engineering with Foundation Year	Subject to students passing with an overall aggregate of 60% or above. Students reaching a slightly lower attainment will be considered on an individual basis.
UPIC Integrated Programme	Admission to the programme is subject to successful completion of the University of Plymouth International College (UPIC) Foundation Year with an aggregate mark of at least 60% in each of the modules studied. Students reaching a slightly lower attainment will be considered on an individual basis.

A minimum 104 -120 points are required for entry to BEng. This must normally include grade C in mathematics and at least one science/technology subject. A complete list of current UK and equivalent European qualifications<sup>5</sup> and English Language requirements for overseas applicants<sup>6</sup> can be found on the University website.

Exceptionally, direct entry to stages 2 and 4 is possible, provided that previous equivalent study at the appropriate levels can be demonstrated to the satisfaction of the Programme Manager. In addition, enrollment to study on a part-time basis is possible at any stage. The sequencing of the modules to be studied part-time will be mutually agreed with the Programme Manager at enrollment.

<sup>5</sup> <http://www1.plymouth.ac.uk/courses/undergraduate/3126/Pages/EntryRequirements.aspx>

<sup>6</sup> <http://www1.plymouth.ac.uk/internationalplymouth/Pages/entry.aspx>

The University has strategies to promote equality of opportunity, widen participation and encourage access. Applications are welcomed from younger students from disadvantaged backgrounds, mature students and people with disability. The Disability ASSIST Service supports disabled students across the University<sup>7</sup>.

## **Partnership Arrangements**

### **UPIC Stage 1 Equivalent Integrated Programmes**

To progress to Stage 1 of the BEng (Hons) integrated degree programme, UPIC Foundation Stage students normally would be required to achieve 120 credits with a minimum weighted average grade of 60%. The 120 credits does not include the ILSC1&3 Study Skills or BUS107 ICT modules.

Continued progression to Stage 2 of the BEng (Hons) integrated degree programme is dependent upon successful completion of Stage 1 and passing ILS1005 (The UPIC DMR for ILS1005 is included as Appendix 2).

### **Direct Entry - FDS Sc students from Partner College -**

Where a progression agreement exists with a Partner College then direct entry to Stage 4 is possible for students progressing with a good FdSc, provided that a suitable attainment level can be demonstrated. Where the attainment level is judged to be lower, then progression to Stage 2 (Level 5) is required.

## **10. Progression Criteria for Final and Intermediate Awards**

- 120 credits at Level 4 are required for the award of Certificate of Higher Education (Cert. HE).
- 120 credits at Level 4 plus 120 credits at Level 5 are required for the award of Diploma of Higher Education (Dip. HE).
- The award of BEng (Hons) requires achievement in 360 credits, of which 120 are at Level 4, 120 are at level 5, and 120 are at level 6. Where a student does not achieve 360 credits, but achieves 320 credits, then a BEng degree can be awarded.
- The Honours classification follows the standard University Regulations for Bachelors' Degrees with weightings as follows:
  - Level 4 (Stage 1): 10% (from the best 80 credits)
  - Level 5 (Stage 2): 30%
  - Level 6 (Stage 4): 60%

The Final Award Title will be determined by the chosen programme pathway followed:

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<sup>7</sup> <http://www.plymouth.ac.uk/disability>

- MT: “Marine Technology”
- MTC: “Marine Technology with Composites”

### **Student Transfer**

Stage 1 is common to a suite of BEng (Hons) and MEng (Hons) programmes. Students who achieve 120 credits at Stage 1 would normally progress to Stage 2 of their chosen programme but, if they wish, they could transfer to a different programme in the suite with the agreement of the Programme Manager(s).

BEng (Hons) students who achieve 120 credits at Stage 2 with a minimum weighted average grade of 60% normally would be eligible for transfer to Stage 4 of the same named MEng (Hons) programme. Transfer to the MEng (Hons) programme normally would be at the discretion of the Programme Manager(s) and registration would have to be completed by Easter in Stage 4.

### **11. Non-Standard Regulations**

For professional accreditation purposes the following regulations apply:

The pass mark for a module at Levels 4 - 6 is 40%. Where module assessment involves more than one element, a student is also required to achieve a minimum of 30% in each element.

The maximum compensation allowed within each award is 20 credits for Level 4 modules (Stage One) only.

### **12. Transition Arrangements**

As stated previously, the academic year 2020-2021 was the first year of transition towards a new method of delivering the BEng Marine Technology programme. The table below is intended to indicate the similarity of this new revised programme relative to the currently accredited BEng programmes. To retain accreditation, which is valid for the intakes 2017-2021, it is necessary that any change to the programme content (not structure), during a revision such as this, should be less than 25%. Here the programme content remains largely the same in terms module indicative content with only 3 new modules being created. This is well within accreditation retention requirements.

Entrants to the programme in September 2020 will experience the programme as detailed below. For earlier cohorts who commenced the programme prior to Sept'20, transition to this structure is shown in the column New Module Start year. Stage 3, the Industrial Placement year, will continue to operate in its current format.

Where a student is required to achieve the necessary credits on a version of a module no longer delivered, the table below indicates the equivalent replacement module (regarding accredited content and programme learning outcomes) that students will typically be offered in the new structure.

Current Module Code(s)	Credits	Module Title	New Module Code	New Module Start Year	Semester
<b>Stage 1/Level 4 All Pathways</b>					
MECH119 MECH121	20	Engineering Design	ENGR101	2020/21	S1 + S2
None	20	Engineering Practice and Experimental Techniques	ENGR102	2020/21	S1 + S2
MECH118 THER104	20	Engineering Science	ENGR103	2020/21	S1
MATH187	20	Engineering Maths	ENGR104	2020/21	S1
MECH117	20	Engineering Mechanics & Structures	ENGR105	2020/21	S2
MATS122	20	Engineering Materials	ENGR106	2020/21	S2
BPIE115	-	Stage 1 Mechanical Placement Preparation	BPIE115	-	S2

Current Module Code(s)	Credits	Module Title	New Module Code	New Module Start Year	Semester
<b>Stage 2/Level 5 All Pathways</b>					
STRC203	20	Materials & Structural Integrity	MATS235	2021/22	S1 + S2
None	20	Manufacturing Processes	MECH233	2021/22	S1 + S2
HYFM230 THER207	20	Thermo-Fluids	MECH234	2021/22	S1
MARN203	20	Naval Architecture 1	MARN220	2021/22	S2
MECH232 STO208	20	Marine Engineering Design & Commercialisation	MARN221	2021/22	S2
CONT221	20	Engineering Maths & Control	CONT222	2021/22	S1
BPIE215	-	Stage 2 Mechanical Placement Preparation	BPIE215	-	S1 + S2
<b>Stage 4/Level 6 Marine Technology Pathway</b>					
PRME307	40	MT Honours Project (with Research Methods)	<b>PRME307</b>	2021/22	S1 + S2
HYFM322	20	Computer Aided Engineering (FEA/CFD)	MECH341	2021/22	S1
MARN306 MARN340	20	Marine Engineering	<b>MARN341</b>	2021/22	S2
MARN338 MECH340	20	Naval Architecture 2	<b>MARN342</b>	2021/22	S1
CONT317 MARN340	20	Control and Intelligent Systems Design	CONT317	2021/22	S2

<b>Stage 4/Level 6 Marine Technology with Composites Pathway (for AY2020/2021 entrants only)</b>					
PRME307	40	MTC Honours Project (with Research Methods)	<b>PRME307</b>	2021/22	S1 + S2
MARN338	20	Naval Architecture 2	<b>MARN342</b>	2021/22	S1
MATS347	20	Composites Design and Manufacture	MATS347	2021/22	S1
MARN306 MARN340	20	Marine Engineering	<b>MARN341</b>	2021/22	S2
MATS348	20	Composites Engineering	MATS348	2021/22	S2

The schedule of the changes to all Mechanical and Marine Engineering degrees is given below:

<b>Academic Year</b>	<b>BEng Mechanical with Composites Degree</b>	<b>BEng Mechanical with Composites Pathway</b>	<b>MEng Mechanical with Composites Degree</b>	<b>MEng Mechanical with Composites Pathway</b>	<b>BEng Marine Technology with Composites Pathway</b>	<b>MEng Marine Technology with Composites Pathway</b>
21-22	Stage 4 available	Stage 4 not available	Stage 4 & 5 available	Stage 4 & 5 not available	Stage 4 not available	Stage 4 & 5 not available
<b>Accreditation Visit from Accrediting Bodies</b>						
22-23	Stage 4 for entrants prior to AY20-21	Stage 4 available for AY20-21 entrants.	Stage 4 & 5 for entrants prior to AY20-21	Stage 4 available for AY20-21 entrants. Stage 5 not available.	Stage 4 available for AY20-21 entrants.	Stage 4 available for AY20-21 entrants.
23-24	All entrants prior to AY20-21 should have graduated.	Should be sole Mech with Composites route.	Stage 5 for entrants prior to AY20-21	Stage 5 available for AY20-21 entrants.	Ongoing programme	Stage 5 available for AY20-21 entrants.
24-25	Only running for exceptional cases.	Main Mech with Composites route.	Only running for exceptional cases.	Main Mech with Composites route.	Ongoing programme	Ongoing programme

Appendices

1. Programme Specification Mapping (UG) – core/elective modules

Table A.1 BEng (Hons) Marine Technology (for AY 20/21 Intakes)

BEng (Hons) Marine Technology	ILOs	Mechanics and Structures	Engineering Design	Engineering Science	Engineering Materials	Engineering Practice and Experimental Techniques	Engineering Mathematics	Stage 1 Mechanical Placement Preparation	ILOs Achieved	Mechanical Engineering Design & Commercialisation	Engineering Materials and Structural Integrity	Manufacturing Processes	Thermo-Fluids	Naval Architecture 1	Engineering Mathematics and Control	Stage 2 Mechanical Placement Preparation	ILOs Achieved	Engineering Honours Project	Computer Aided Engineering	Marine Engineering	Naval Architecture 2	Control and Intelligent Systems Design	Stage 3 Mechanical Engineering Related Placement	ILOs Achieved
Award Learning Outcomes contributed to	Prog	ENGR105	ENGR101	ENGR103	ENGR106	ENGR102	ENGR104	BPIE115	Level 4	MECH235	MAT5235	MECH233	MECH234	MARN220	CONT222	BPIE215	Level 5	PRME307	MECH341	MARN341	MARN342	CONT317	BPIE335	Level 6
Credits		20	20	20	20	20	20	0		20	20	20	20	20	20	0		40	20	20	20	20	0	
Core / Elective		C	C	C	C	C	C	C		C	C	C	C	C	C	C		C	C	C	C	C	C	
<b>8.1 Knowledge &amp; Understanding</b>																								
	SM1b	X		X	X	X			SM1b	X	X	X	X				SM1b		X	X				SM1b
	SM2b	X		X			X		SM2b	X	X		X	X	X		SM2b	X	X	X				SM2b
	SM3b	X	X		X				SM3b		X			X	X		SM3b	X		X	X			SM3b
<b>8.2 Cognitive and Intellectual Skills</b>																								
	EA1b	X	X	X	X	X			EA1b	X	X	X	X	X			EA1b		X	X		X		EA1b
	EA2	X			X		X		EA2	X	X	X	X				EA2		X	X	X	X		EA2
	EA3b	X		X		X	X		EA3b	X	X	X	X	X	X		EA3b	X	X	X	X	X		EA3b
	EA4b		X						EA4b						X		EA4b			X	X	X		EA4b
<b>8.3 Key and Transferable Skills</b>																								
	D1		X						D1	X							D1					X		D1
	D2		X						D2	X	X	X	X				D2	X		X	X			D2
	D3b		X						D3b	X			X	X			D3b		X		X			D3b
	D4		X						D4	X	X						D4			X	X			D4
	D5		X		X				D5	X							D5	X		X				D5
	D6		X		X				D6	X							D6	X	X	X				D6
<b>8.4 Employment Related Skills</b>																								
	EL1		X						EL1								EL1	X		X				EL1
	EL2		X						EL2	X							EL2			X				EL2
	EL3				X				EL3	X							EL3			X				EL3
	EL4		X						EL4	X							EL4			X				EL4
	EL5								EL5	X							EL5			X	X			EL5
	EL6								EL6	X							EL6	X						EL6
<b>8.5 Practical Skills</b>																								
	P1			X	X				P1								P1	X		X		X		P1
	P2	X			X	X			P2		X	X			X		P2	X						P2
	P3		X			X			P3		X	X					P3	X						P3
	P4				X	X			P4	X							P4	X						P4
	P5								P5	X							P5			X				P5
	P6		X			X			P6								P6			X				P6
	P7								P7	X							P7				X			P7
	P8		X						P8	X				X			P8	X	X					P8
	P11		X			X			P11	X							P11			X				P11
<b>Additional General Skills</b>																								
	G1		X						G1	X		X			X		G1	X	X			X		G1
	G2					X		X	G2								G2	X					X	G2
	G3								G3	X							G3	X						G3
	G4		X			X			G4	X							G4	X		X				G4
Compensation Y/N		Y	Y	Y	Y	Y	Y			N	N	N	N	N	N			N	N	N	N	N		



Table A.2 BEng (Hons) Marine Technology with Composites (for AY 20/21 Intakes)

BEng (Hons) Marine Technology (with Composites)	ILOs	Mechanics and Structures	Engineering Design	Engineering Science	Engineering Materials	Engineering Practice and Experimental Techniques	Engineering Mathematics	Stage 1 Mechanical Placement Preparation	ILOs Achieved	Mechanical Engineering Design & Commercialisation	Engineering Materials and Structural Integrity	Manufacturing Processes	Thermo-Fluids	Naval Architecture 1	Engineering Mathematics and Control	Stage 2 Mechanical Placement Preparation	ILOs Achieved	Engineering Honours Project	Composites Engineering	Marine Engineering	Naval Architecture 2	Composites Design and Manufacture	Stage 3 Mechanical Engineering Related Placement	ILOs Achieved
Award Learning Outcomes contributed to	Prog	ENGR105	ENGR101	ENGR103	ENGR106	ENGR102	ENGR104	BPIE115	Level 4	MECH235	MATS235	MECH233	MECH234	MARN220	CONT222	BPIE215	Level 5	PRME307	MATS348	MARN341	MARN342	MATS347	BPIE335	Level 6
Credits		20	20	20	20	20	20	0		20	20	20	20	20	20	0		40	20	20	20	20	0	
Core / Elective		C	C	C	C	C	C	C		C	C	C	C	C	C	C		C	C	C	C	C	C	
<b>8.1 Knowledge &amp; Understanding</b>																								
	SM1b	X		X	X	X			SM1b	X	X	X	X				SM1b			X			X	SM1b
	SM2b	X		X			X		SM2b	X	X		X	X	X		SM2b	X	X	X			X	SM2b
	SM3b	X	X		X				SM3b		X			X	X		SM3b	X		X	X			SM3b
<b>8.2 Cognitive and Intellectual Skills</b>																								
	EA1b	X	X	X	X	X			EA1b	X	X	X	X	X			EA1b		X	X			X	EA1b
	EA2	X			X		X		EA2	X	X	X	X				EA2			X	X			EA2
	EA3b	X		X		X	X		EA3b	X	X	X	X	X	X		EA3b	X	X	X	X	X		EA3b
	EA4b		X						EA4b						X		EA4b			X	X			EA4b
<b>8.3 Key and Transferable Skills</b>																								
	D1		X						D1	X							D1		X			X		D1
	D2		X						D2	X	X	X	X				D2	X	X	X	X	X		D2
	D3b		X						D3b	X			X	X			D3b				X			D3b
	D4		X						D4	X	X						D4		X	X	X			D4
	D5		X		X				D5	X							D5	X		X				D5
	D6		X		X				D6	X							D6	X	X	X				D6
<b>8.4 Employment Related Skills</b>																								
	EL1		X						EL1								EL1	X		X				EL1
	EL2		X						EL2	X							EL2		X	X				EL2
	EL3				X				EL3	X							EL3		X	X				EL3
	EL4		X						EL4	X							EL4		X	X				EL4
	EL5								EL5	X							EL5		X	X	X	X		EL5
	EL6								EL6	X							EL6	X				X		EL6
<b>8.5 Practical Skills</b>																								
	P1			X	X				P1								P1	X	X	X				P1
	P2	X			X	X			P2		X	X			X		P2	X	X			X		P2
	P3		X			X			P3		X	X					P3	X				X		P3
	P4				X	X			P4	X							P4	X	X					P4
	P5								P5	X							P5		X	X				P5
	P6		X			X			P6								P6			X		X		P6
	P7								P7	X							P7				X	X		P7
	P8		X						P8	X				X			P8	X						P8
	P11		X			X			P11	X							P11		X	X		X		P11
<b>Additional General Skills</b>																								
	G1		X						G1	X		X			X		G1	X	X		X	X		G1
	G2					X		X	G2								G2	X	X			X	X	G2
	G3								G3	X							G3	X						G3
	G4		X			X			G4	X							G4	X	X	X				G4

Table A.3 BEng (Hons) Marine Technology (for Intakes prior to AY 20/21)

Output Standards Matrix: BEng / MEng Marine Technology																															
Programme Title:	Stage 1				Stage 2				Stage 4			Stage 5 (MEng only)																			
BEng / MEng Marine Technology	Module numbers (where the output criteria statements are addressed)																														
	MECH119	MECH118	ASMFT1	MATH187	MECH121	PP	MATS122	MECH117	BIIE115	THER104	BIIE215	HYFM230	STO208	MECH232	STRC203	THER207	CONT221	MARN203	PRME307	MARN306	MARN338	MARN303	MECH340	HYFM322	MECH532	MECH533	MAR528	PRCE513	MECH534	MECH544	
<b>General Learning Outcomes</b> (see EABI/ACC2 - Appendix A for more details)																															
<b>Knowledge and Understanding</b>																															
KU1																															
KU2																															
KU3																															
<b>Intellectual Abilities</b>																															
IA1																															
IA2																															
IA3																															
<b>Practical skills</b>																															
PS1																															
<b>General transferable skills</b>																															
GT1																															
<b>Specific Learning Outcomes</b> (see EABI/ACC2 - Appendix B for more details)																															
<b>Underpinning Science &amp; Mathematics</b>																															
US1																															
US1m																															
US2																															
US2m																															
US3																															
US3m																															
US4m																															
<b>Engineering Analysis</b>																															
E1																															
E1m																															
E2																															
E2m																															
E3																															
E3m																															
E4																															
<b>Design</b>																															
D1																															
D1m																															
D2																															
D3																															
D4																															
D4m																															
D5																															
D6																															
<b>Economic, social &amp; environmental context</b>																															
S1																															
S1m																															
S2																															
S2m																															
S3																															
S4																															
S5																															
<b>Engineering Practice</b>																															
P1																															
P1m																															
P2																															
P2m																															
P3																															
P4																															
P5																															
P6																															
P7																															
P8																															
P8m																															
NA and ME Specialist Modules																															

## 2. ILS1005 Module Record



UNIVERSITY OF  
**PLYMOUTH**  
International College

### DMD ILSC1005 standard

#### Module Interactive Learning Skills and Communication Code [ILSC1005]

**Level 4**

Version	Current Version	1.19	February 2019
	Prior Version/s	1.18	November 2018
		2.1	June 2018

This Definitive Module Document (DMD) is designed for all prospective, enrolled students, academic staff and potential employers. It provides a concise summary of the main features of the module and the Specific Learning Outcomes (LOs) that a typical student might reasonably expect to achieve and demonstrate if he/she takes full advantage of the learning opportunities. Detailed information regarding the content and assessment criteria of this module should be considered alongside the appropriate Programme Specifications (PSs).

<b>Module Name</b>	<b>Interactive Learning Skills and Communication (ILSC) Level 4 Standard</b>
<b>Module Code</b>	<b>[ILSC1005]</b>
Module Duration (per semester)	Thirteen (13) weeks
Contact Hours (per semester)	60
Directed Study Hours (per semester)	-
Self-directed Study Hours (per semester)	140
Notional Hours (per module)	200
Teaching Rotation	Semesters 01, 03
Teaching Body	University of Plymouth International College
Articulating Institution	University of Plymouth
Articulating Faculty's	Faculty of Business; Faculty of Science and Engineering; Faculty of Art, Design and Architecture, Faculty of Medicine and Dentistry; Faculty of Health and Human Sciences
University Campus	
Pathway (on which this module is offered)	All
Credit Points	20
Pathway Stage	Stage 2
Stage NQF Level	4
Language of Delivery	English
Language of Assessment	English
E-Learning	IT software packages (Word, PowerPoint, Excel), internet access; College Portal; Moodle; University Student Portal; University Library Databases
Moderation	See CPR 9
Standard Progression Criteria	Summary: minimum overall pass mark of 40% See CPR QS9.
Failure to Progress	[Summary: Please refer to CPR QS9- Assessment Regulations.

Aims

## MAIN AIMS

This module aims to help students to develop their Academic English, Study Skills, Research, Critical Reasoning skills in order to be successful undergraduate students; a subsidiary aim of this module is to ensure that students develop the skills, dispositions and ability to function independently and take responsibility for their personal, academic and professional development.

The module is benchmarked to the Common European Framework of Reference for Language Learning. Assignments for each of the four skills of academic reading, writing, speaking and listening are included in order to confirm that students meet the appropriate exit threshold in English language proficiency.

### Topics

- Development of language skills through text analysis, written composition, summary writing, critique-writing and paraphrasing
- Development of effective academic communication skills for oral presentations, seminar and group discussions and debates
- Development of critical reasoning skills and techniques in learning how to express opinions, defend arguments and assess problems in academic discourse and contexts
- Development of communication skills that allow students to engage in critical reflection of their own and of peers' work
- Development of research skills for undergraduate study including information retrieval, source gathering and analysis, understanding referencing techniques, formulating research questions and structuring research presentations, proposals and other academic output
- Development academic listening skills through exposure to a range of university-level
- Introduction and development of academic note-taking and summary strategies and skills for listening to lectures
- Developing of interpersonal skills for successful groupwork
- Development of independent study and effective time-management skills
- Development of techniques and technological expertise in the collation, interpretation and presentation of data in oral and written formats

### Specific Learning Outcomes

A	<p style="text-align: center;"><b>Knowledge and Understanding</b> <i>Upon completion of this module students will be able to:</i></p>
1	Present ideas, arguments and information with clarity and accuracy both orally and in written form using appropriate academic register and conventions to peers and academic staff
2	Critically engage with academic reading and listening material relevant to the students' discipline
3	Write clear, accurate and detailed text, including responding appropriately to tutor feedback, in an appropriate academic format
4	Carry out research, present information and communicate effectively in academic seminars, presentations, debates and reviews on topics related to the student's discipline of study
5	Locate, access, critically evaluate & apply information from multiple sources for disciplinary and professional research, argumentation and consultancy purposes and communicate this in speaking and writing using an appropriate academic style
6	Select appropriate source material and methods of research which demonstrate an awareness of ethical issues and the ability to evaluate a variety of information sources and make informed choices within the student's specialist area
7	Develop lines of argument; and make sound judgements in accordance with basic theories and concepts and using a range of evaluative techniques and information sources

8	Manage the process of independent inquiry including use of feedback to analyse and develop personal capabilities
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<b>B Cognitive (thinking) skills</b>	<b>C Practical Skills</b>
1 Operate autonomously and exercise a degree of personal responsibility appropriate for academic study, taking responsibility for the nature and quality of outputs within the structured and managed environment	1 Build examination techniques and skills
2 Retain and communicate knowledge under exam conditions	

**Teaching and learning strategies and methods used to enable the achievement of learning outcomes:**

This module is part of a planned pedagogic approach taken by Navitas to ensure the students are prepared to achieve and succeed in undergraduate study. It focuses on developing students' appropriate communication skills and key transferable study skills which support all study, and uses lectures, interactive sessions, blended learning, and one-to-one sessions as appropriate to enable candidates to achieve these essential skills, with an emphasis on student-based learning and student engagement and participation. Learning will be assessed both by formative and summative methods.

Each student is expected to undertake a minimum number of hours in individual study per week in order to support and build the skills, knowledge and understanding presented in each lecture and small group tutorial session per week. It is expected that students will increase the number of individual study hours as they approach formal assessment events. The ability for students to expand their learning by creating effective self-directed study patterns is a transferable skill deemed fundamental to further academic success as well as a key time-management tool.

All student are provided with access to a range of on line resources through the student portal. Electronic journals and electronic books are available through the University gateway.

- Lectures = 13 hours
- Seminars = 41 hours
- In-class tests and presentations = 6 hours
- Student Directed and independent Learning = 140 hours

	Number of hours
Scheduled Contact Hours	60
Independent Study Hours	140
Placement study hour	NA
<b>TOTAL OVERALL STUDENT LEARNING HOURS</b>	<b>200</b>

**Elements of Summative Assessment**

The assessment for this module will be conducted at four (4) main points, consisting of one (1) written research project, one (1) oral presentation in defence of a the research report and reflective analysis, one (1) written critique of a research article in the student's discipline and one (1) final closed book in-class test. Each assessment point is a compulsory event and must be attempted.

<b>Assessment</b>					
Type	Duration	Method	Learning Outcome(s)	Notional Schedule	Weighting

<b>Assessment A</b> Coursework	Weeks 1-12	Written Research Project (2,000 words) relating to students' discipline of study	A.1-A.3; A5-A.8; B.1	Due week 12 (formative drafts due at various stages of semester)	30%
<b>Assessment B</b> Coursework	Weeks 10-12	Oral presentation in defence of a research project and reflective analysis of process and performance	A.1, A.4-A.5, A.7-A.8;	Presentation due weeks 9-10; Reflective analysis due week 11	20%
<b>Assessment C</b> Coursework	Weeks 1-6	Written critique of an academic article in the student's discipline	A.1-A.3; A.6-A.8;	Due Week 11	20%
<b>Assessment D</b> Coursework	Weeks 12-13	Closed book examination in each of Listening, Reading and Academic Writing	A.1-A.3.; A.8; B.1; B.2.; C.1	Due 3 x 1 hour in weeks 11,12 or 13	30%

#### Standard Progression Criteria

This module carries a standard minimum progression requirement: pass mark 40%

Grade	Classification	Mark
A	Distinction	70%-100%
B	Merit	60%-69%
C	Credit	50% - 59%
D	Pass	40-49%
F	Fail	Less than 40%

#### Bibliographic Resources

##### Recommended Reading

##### For Students

Bailey, S. (2014). Academic Writing: a Handbook for International Students. 4th ed. London: Routledge

De Chazal, E (2014) English for Academic Purposes Oxford University Press

Denscombe, M. (2010) The Good Research Guide: for Small-scale Research Projects. 4th ed. Maidenhead: Open University Press.

Godfrey, J. (2013) How to Use Your Reading in Your Essays. 2nd ed. Basingstoke: Palgrave Macmillan.

Powell, M. (2011) Presenting in English: how to give successful presentations. Cengage Learning: London.

Schmitt, D. and Schmitt, N. (2011) Focus on Vocabulary 2: Mastering the Academic Word List. UK: Pearson Education