



# Programme Specification

## MEN-2021: Marine Engineering

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LU Foundation Degree in Engineering awarded by Lancaster University (FHEQ Level 5)

Programme Status: Approved | Version: 1

## Introduction

This programme specification provides a summary of the main features of the Marine Engineering programme and includes the learning outcomes that you as a student are expected to have achieved on successful completion of the programme.

Further detailed information related to this programme and the College can be found in the following resources:

- Programme Handbook
- B&FC Admissions Policy
- Work based and placement learning handbook (for foundation degrees)
- Student guide to assessment and feedback

## Key Programme Information

<b>Programme Code</b>	MEN-2021
<b>Programme Title</b>	Marine Engineering
<b>Teaching Institution</b>	Blackpool and The Fylde College
<b>Professional, Statutory and Regulatory Body (PSRB) Accreditation</b>	Institute of Marine Engineering, Science and Technology (IMarEST)
<b>UCAS Code</b>	
<b>Language of Study</b>	English
<b>Version</b>	1
<b>Approval Status</b>	Approved
<b>Approval Date</b>	15 March 2021
<b>JACS Code</b>	Other: Other
<b>Programme Leader</b>	James Ford

## Programme Awards

<b>Award</b>	<b>Award Type</b>	<b>Level</b>	<b>Awarding Body</b>
LU Foundation Degree in Engineering	Foundation Degree (240 credits)	Level 5	Lancaster University

## Programme Overview

The Foundation Degree in Marine Engineering develops the skills and underpinning knowledge needed for a rewarding career in the international maritime industry. Within world-class learning facilities, we offer an employer-focused programme of study fully aligned to the requirements of both the Maritime and Coastguard Agencies (MCA) and the Merchant Navy Training Board (MNTB). This will support your eligibility for a career as a Marine Engineering Officer. This programme is only available to students sponsored by a shipping company or cadet training provider due to the work-based learning modules, which should be completed on board ship.

This programme is aligned to support your progression through knowledge acquisition at operational level and onto managerial level, as directed by the Standard of Training, Certification and Watch keeping (STCW) 1978, as amended 2012. This is achieved by meeting the requirements of the Maritime and Coastguard Agencies (MCA) and approved by the Merchant Navy Training Board (MNTB). In addition to this programme providing a level 5 Foundation Degree academic qualification which integrates academic and work-based learning through close collaboration between employers and Blackpool and the Fylde College, you will also undertake a cadet training programme that runs alongside the academic award. You will

cover topics such as STCW basic training and workshop training skills, alongside courses in first aid, fire fighting, high voltage scenarios, and rescue boat experiences.

The programme is delivered across 3 years and broken down into five phases: phase 1, 3 and 5 will be delivered at College whilst phases 2 and 4 will be spent undertaking Work Based Learning at sea. Industrial experience will normally be achieved through sea time when sponsored by a shipping or training company, meeting the MCA requirements. However, other maritime related industries may meet the requirements of the programme. If you intend to utilise this programme for reduced sea time requirements, then you must have a sponsorship in place prior to enrolling onto the programme, which will be done on your behalf by a sponsoring shipping company.

Phase 1 will support your development into the industry from your previous studies, providing you with the skills to study autonomously and to develop your knowledge of the Marine Engineering discipline. In addition you may also conduct vocational training involving several safety training courses designed to provide you with the basic training for seafarers, and workshop skills where you will train in hand skills and essential maintenance practices.

Phase 3 will enhance both the skills and knowledge developed at phase 1 and will engage in the experiences gained in industry in phase 2. You will progress from level 4 to level 5 which will see the development of your academic skills where modules are progressively engaging in subject areas across levels 4 and 5, facing and overcoming a range of problems related to the subject areas. You may also be conducting workshop skills throughout phase 3 developing your welding, turning, maintenance and fault finding practice, which will further enhance and support the Foundation Degree in the form of practice research. During the progression you will undertake level 5 studies but will not undergo level 5 assessments until successful progression of level 5 which will be achieved through an award board.

Throughout phases 2 and 4 you will engage in Work Based Learning (WBL) through industrial experience in a maritime related environment, typically on board vessels. Your studies will develop your abilities to analyse, evaluate and reflect on Operational and Managerial levels in the workplace by applying the skills and knowledge gained during your college phases. Phase 5 will see the submission of your WBL (Management) and allow you to progress onto the vocational training required for industry certification (if sponsored by appropriate company and have achieved requirements).

## **Admission Criteria**

To enrol on the foundation degree you need a minimum of 48 points under the new UCAS tariff system. This must include subjects relevant to Engineering or Mathematics. A GCSE Mathematics Grade B or higher is also required.

Students that have completed a Level 3 Diploma in Shipping and Maritime Operations (Engineering) as part of a direct entry programme are also eligible to enrol onto the Foundation Degree Marine Engineering.

In order to complete this programme and gain a certificate of competency you will require the backing of a shipping company or training provider. This is to ensure you are able to accrue the necessary seetime for the purposes of certification.

## **Career Options and Progression Opportunities**

Successful cadets may be awarded the Engineer Officer of the Watch Unlimited Certificate of Competency, upon successful completion of the full cadetship, and normally will be able to take position of a fourth or third or engineer officer on board of a vessel. A typical salary for this

position is £25-35k per annum. After gaining the required sea-going service and completing the appropriate additional training programmes and external exams, they will be able to qualify for a Marine Engineering Management Level Certificate of Competency.

The Foundation Degree Marine Engineering will give successful candidates full academic exemptions for STCW95 Reg III/2 Management Level Engineer Unlimited Engineering Certification when a 50% overall pass mark is achieved. Students choosing to undertake the Foundation Degree Marine Engineering will find the path to Chief Engineer much smoother and will only be required to undertake the relevant industrial exams and short courses.

A variety of positions are also available in the maritime and engineering industries ashore, including ship management, fleet operation, ship broking, marine insurance, finance, ship repair and shipbuilding, equipment manufacturing, port operations, maritime education and training, surveying and inspecting as well as maritime administration. Within engineering, career opportunities exist in but are not limited to power generation, heavy engineering, production engineering and mechanical engineering.

Should you wish to continue in education, the successful completion of your Foundation Degree means you are eligible to enrol onto the BSc(Hons) Maritime Operations Management degree programme offered by B&FC and awarded by Lancaster University. This level 6 qualification, currently in development and subject to validation, will see you undertake a number of engineering specific modules and a common modules. This programme will initially be delivered via a block and blend approach. This will give you the flexibility to study for 2 terms on Campus and then complete your dissertation whilst you are at sea, ensuring that it has a relevant work-based approach. You will be supported during this period via online materials and email contact with your supervisor.

In support of seafarers' career development, the MNTB has created an interactive career map which provides an outline of some of the career opportunities that are available at sea and ashore. These opportunities are not exclusive or exhaustive within each sector as there are a variety of roles and job titles within each. This resource is developed through the MNTB and will be updated with more profiles and roles as they develop.

<http://casandbeyond.org/career-development/career-map/>

## **Programme Aims**

### Foundation Degree

- To develop students with general and specialist engineering knowledge and technical skills. Students will apply marine engineering principles to different situations on board ships, contribute to continuous improvement of systems and keep currency with developments in the industry.
- To provide students with the opportunities to develop and practice problem solving skills, analytical skills and techniques to interact safely and effectively in compliance with legislation in the marine engineering environment.
- To develop effective leadership, communication and interpersonal skills which can be built upon within the work environment.
- To develop students with the knowledge, skills and vocational practices of professional operational management and apply these to the planning, scheduling, resourcing and quality management and improvements required to meet the demands of the marine engineering industry.
- To offer students with an integrated technical and academic programme which develops the academic and digital competencies and skills to support lifelong learning and career progression

within the marine engineering industry at sea and ashore.

## **Programme Learning Outcomes**

### **Level 5**

Upon successful completion of this level, students will be able to:

1. Apply mathematics to analyse and model engineering systems
2. Appraise shipboard operations in compliance with industry legislation, regulatory frameworks and standards
3. Evaluate processes, procedures and practices of shipboard management and leadership
4. Critically analyse information from a variety of sources to support personal and professional development
5. Use specialist software and simulation equipment related to the maritime industry
6. Analyse engineering systems and discuss their scientific and theoretical principles
7. Apply problem solving techniques to develop solutions to problems
8. Investigate the selection of materials and manufacturing processes
9. Plan, execute and report on laboratory experiments
10. Communicate in a variety of forms and contexts to a range of audiences

## Programme Structure

Module	Level	Credits	%	Category	Description	Length/Word Count	Grading Method
<b>Stage 1</b>							
MEN406: Academic and Work Based Learning (Mandatory)	4	20	20%	Coursework: Portfolio / e-Portfolio	n/a	1000	Letter Grade
			80%	Coursework: Report	n/a	3000	Letter Grade
MEN407: Marine Engineering Operations (Mandatory)	4	20	50%	Coursework: Assignment	n/a	2500	Letter Grade
			50%	Practical: Presentation	n/a	15	Letter Grade
MEN408: Engineering Mathematics (Mandatory)	4	20	100%	Written Exam: Formal Written Examination	n/a	180	Percentage Grade
<b>Stage 2</b>							
MEN406: Academic and Work Based Learning (Mandatory)	4	20	20%	Coursework: Portfolio / e-Portfolio	n/a	1000	Letter Grade
			80%	Coursework: Report	n/a	3000	Letter Grade
<b>Stage 3</b>							
MEN4010: Maritime Law and Management (Mandatory)	4	20	50%	Coursework: Report	Write a report on a chosen area of law	2000	Letter Grade
			50%	Coursework: Assignment	Academic poster based around sustainable business practices and principles of safety management	1000	Letter Grade
MEN4011: Electrical and Instrumentation Principles (Mandatory)	4	20	50%	Written Exam: Formal Written Examination	Electrical and electronic circuits	120	Letter Grade
			50%	Practical: Exercise	Assembly and testing of control systems	2500	Letter Grade
MEN409: Naval Architecture (Mandatory)	4	20	50%	Coursework: Assignment	Report analysing ship design and construction	2500	Letter Grade
			50%	Written Exam: Formal Written Examination	Stability examination	150	Letter Grade
<b>Stage 4</b>							
MEN5011: Engineering Mechanics (Mandatory)	5	20	100%	Written Exam: Formal Written Examination	n/a	180	Percentage Grade
MEN507: Engine Room Leadership (Mandatory)	5	20	50%	Coursework: Assignment	n/a	2500	Letter Grade
			50%	Practical: Practical Skills Assessment	Engine room exercise followed by reflective write up	1000	Letter Grade

MEN508: Marine Engineering Technology (Mandatory)	5	20	25%	Coursework: Report	Investigation of Pneumatic & Hydraulic Systems	1500	Letter Grade
			75%	Coursework: Assignment	Examine propulsion and auxiliary systems	3500	Letter Grade
<b>Stage 5</b>							
MEN5010: Electro-Technology (Mandatory)	5	20	25%	Coursework: Assignment	n/a	2000	Letter Grade
			75%	Written Exam: Formal Written Examination	Closed book examination	150	Letter Grade
MEN507: Engine Room Leadership (Mandatory)	5	20	50%	Coursework: Assignment	n/a	2500	Letter Grade
			50%	Practical: Practical Skills Assessment	Engine room exercise followed by reflective write up	1000	Letter Grade
MEN509: Engineering Thermodynamics (Mandatory)	5	20	100%	Written Exam: Formal Written Examination	n/a	180	Percentage Grade
<b>Stage 6</b>							
MEN5012: Work Based Learning (Managerial) (Mandatory)	5	20	100%	Coursework: Report	n/a	4500	Letter Grade
<b>Stage 7</b>							
MEN5012: Work Based Learning (Managerial) (Mandatory)	5	20	100%	Coursework: Report	n/a	4500	Letter Grade

## Study Workload

While each module carries 80 indicative contact hours you will be expected carry out an additional 120 hours self study for each of the modules. This will provide you with the opportunity to reflect on the module and further deepen your knowledge in the subject area. Your college timetable will allow time for self study which is to be utilised effectively, making the most of the college resources.

Your time at college will not solely be spent completing academic subjects. You will also have the opportunity to complete the necessary short courses which are an industry requirement and form part of the cadetship. These include courses such as firefighting, medical first aid and proficiency in survival craft and rescue boats.

## Programme Delivery: Learning and Teaching

As a whole, the programme is delivered through a wide range of teaching methodologies to suit every type of student whilst ensuring those most appropriate for each module and learning outcomes are implemented. Aligned outcomes ensure that you are given the opportunity to learn holistically to integrate modules, reflect and support further progression. A key element of all learning is your involvement in and ownership of your learning. It is essential for you, as a student, to engage with your learning to apply your knowledge to best prepare you for your industry. Employers seek graduates who are flexible, innovative, problem solving and who can work co-operatively with good communication and management skills. These attributes will be developed, challenged and refined during the course to enhance your employability.

Module content will be delivered in a variety of ways in order for you to gain deeper understanding of the module content. This may be through face to face lectures, virtual learning, seminars, case studies, academic research and simulation exercises.

You will be provided with the opportunity to work in groups to critically analyse and solve problems and apply knowledge and understanding to a range of tutor and student-defined contexts. This supervised collaborative learning techniques will strengthen your learning, whilst developing your team work skills. Tutors will also encourage and develop your confidence with independent learning with problem solving exercises and reflective practice.

Our Virtual Learning Environment (VLE), Canvas, will provide you with access to all your course materials, assignments, resources, links to the industry, Marine Notices and your support network. You will have unlimited access to Canvas both on and off campus to support your independent study and in-class activity. This variety in online learning resources will also be used out of the classroom to support tutor input to promote your independence as a student.

If you have subject specific issues or would like a focused learning environment to work, clinics are available each evening from Monday to Thursday. Typically there are at least two staff members available each evening providing support for a range of subjects and levels. This is used to provide support where you may be struggling or want to further develop skills and knowledge. This is in addition to the Partners for Success framework where subject lecturers and personal tutors can identify support mechanisms for entire groups or yourself as an individual to support and ensure that you are provided with the best possible opportunities to engage fully with your learning experience and the full life of the college. You will be able to access a wide range of additional enhancements during your studies to support you in your learning and ultimately with your employment prospects. Your tutors are industry experts who will encourage you to apply all of your learning to your own work environments. The team regularly return to the industry and engage in research activities to ensure module content is relevant and pertinent. The College works to provide a supportive ethos and an enabling culture which builds individuals, communities and economic prosperity.



## Programme Delivery: Assessment

Assessment will take place in a variety of ways throughout the duration of your programme. The graded elements of your assessments are generally set towards the conclusion of your module, the nature of which suits the outcomes of the module. For example, if the module is of a practical basis, the way you are assessed will reflect this. You will also be assessed throughout the modules to enable your tutors and yourself to monitor the progress you are making. These assessments may take the form of short answer timed questions, case studies, quizzes, presentations, oral questions or short essay type questions. The feedback from these assessments will also form the potential focus of your revision for your graded assessments and so supporting your preparation.

Some modules, due to industry requirements, will require you to complete a timed examination. Other methods of assessment will include the writing of an assignment on a given topic or case study relevant to the maritime industry. Assessment will also take place in the Full Mission Engine Room Simulator. Working with your peers you will be required to carry out operations in a shipboard environment and in sometimes stressful situations. Your reflection of the activity will enable you to draw conclusions on how the exercise went and any changes you would make in the future. This will provide valuable experience in working in an environment very close to that on-board a typical vessel and allow you to apply the lessons learnt when stepping on-board your vessel during your sea phase.

Following the completion of all assessments, your tutors will provide you with timely verbal and/or short written feedback to support your learning and to direct you to improvements for future assignments/examinations. You are then encouraged to reflect on this feedback to support your development and progress in future assessments.

## **Programme Delivery: Work Based and Placement Learning**

Work placement must be agreed prior to enrolment onto the programme; this would typically be with a shipping company through a sponsored cadet programme in order to achieve the required reduced sea time. Alternatively other industrial placement must be in an engineering environment either as agreed by the programme team or the Maritime and Coastguard Agency (MCA) in the cases of cadet programmes.

The Foundation Degree is delivered as a 3 year full time sandwich programme with 5 phases; phases 2 and 4 will give appropriate time to learn in the workplace, apply Foundation Degree theories gained during College phases and conduct analysis and reflection of learning throughout. These phases will typically be referred to as Sea Phases.

Level 4 has been aligned to Operational aspects of the Maritime industries standards (STCW 2010) and the Academic and Work Based Learning module will aim to develop your skills in the application of knowledge to practical situations, and analyse the results. Through this module, the transition from Foundation Degree study to shipboard work is promoted through application, analysis, evaluation and reflection. In addition, the experience gained during your time in work placement will further support studies in phases at both level 4 and level 5.

Level 5 studies have been aligned to the Managerial requirements of STCW building on those subjects and experiences gained at Level 4. The Work Based Learning (Managerial) module will take place during phase 4 and aims to further develop skills in the application of specialist knowledge to practical situations in a management capacity, and critical analysis of the results. Through this module, the transition from Foundation Degree study to professional engagement is again promoted through application, critical analysis, evaluation and professional reflection.

Throughout your work placement phase you will have regular access to support using both identified resources such as books, journals, eBooks and Canvas. In addition you will be able to contact a designated programme team member at College who will aim to support your needs in liaison with other programme team members and respond to you in an appropriate time frame. This will ensure you only encounter one staff member and ensure consistency of communications. For those engaging in work placement on board a vessel through your sponsoring shipping company, you will also have dedicated support on board in the form of a Designated Shipboard Training Officer (DSTO) who will aim to support your education and training needs in conjunction with your Company Training Officer (CTO). In the most part this will be to support the development of your vocational skills and complete your Training Record Book (TRB), however, the engagement in WBL will enhance your vocational awareness and the vocational training will support the experience required for your WBL modules.

## **Programme Delivery: Graduate Skill Development**

### **A commitment to lifelong learning and career development**

The foundation degree in Marine Engineering supports lifelong learning through learning mobility which aims to attain new competences and knowledge as identified by the International Convention on Standard of Training, Certification and Watchkeeping for Seafarers (STCW) on board vessels. The proposed programme is a direct result of the maritime labour market analysis. The modules are designed such that it will give learners knowledge and understanding of current and future technological developments.

### **Collaborative teamwork and leadership skills**

During their sea phase learners works as team, communicating with his team members, taking

leadership roles when needed, managing groups, and working towards a common goal. In the work based learning module learners analyse the objectives and performance of individuals, the roles and responsibilities and performance of teams and they will present a written report and deliver an oral presentation. Prior to both WBL modules you will receive several workshops and seminars to support and develop the skills required to apply yourself, and engage in learning within the work place.

These will include, but not be limited to:

#### **Level 4**

- Project planning and time management
- Application of underpinning knowledge
- Analysis of operations in terms of purpose, process and outcome
- Evaluation of personal performance
- Evaluation of roles and responsibilities
- Reflective writing

#### **Level 5**

- Project planning and time management
- Application of technical language and specialist knowledge
- Critical analysis of operations in terms of purpose, process and outcome
- Critical evaluation of personal performance and performance of team
- Critical evaluation of roles and team structure
- Professional reflection

Throughout your work placement phase you will have regular access to support using both identified resources such as books, journals, eBooks and Canvas. In addition you will be able to contact a designated programme team member at College who will aim to support your needs in liaison with other programme team members and respond to you in an appropriate time frame. This will ensure you only encounter one staff member and ensure consistency of communications. For those engaging in work placement on board a vessel through your sponsoring shipping company, you will also have dedicated support on board in the form of a Designated Shipboard Training Officer (DSTO) who will aim to support your education and training needs in conjunction with your Company Training Officer (CTO). In the most part this will be to support the development of your vocational skills and complete your Training Record Book (TRB), however, the engagement in WBL will enhance your vocational awareness and the vocational training will support the experience required for your WBL modules.

#### **Personal and intellectual autonomy**

We support your development of independence in academic and practical skills through the levels of the programme, most prominent in the assignments and projects where you will be responsible for managing your work.

#### **Ethical, social and professional understanding**

Mapping of the programme content to the requirements of a foundation degree set by Merchant Navy Training Board (MNTB) ensures that the module delivery and assessment considers legal, social and ethical issues to enhance learner's professional development. Learners will also need to ensure that the research and findings for Work based learning modules meets ethical guidelines with appropriate safeguarding in place.

#### **Communication, information and digital literacies**

The Academic and Digital Literacies module provides the foundations for developing these skills which are then applied in assessments throughout the programme. This will assist them in

researching; engaging critically with material; utilising digital technologies effectively to support discovery, analysis and dissemination of information; collaboration; and reflection. In modules throughout the programme students will be required to communicate in a range of formats to meet assessment criteria including poster and panel presentations, report writing, digital visualisations, design documents, reflective accounts, and use a range of digital technologies related to their specialist area.

### **Global citizenship**

To build your global skills and competency, the programme was developed liaised with international maritime companies like Princess Cruises, BP, Chiltern Maritime, Shell and V ships. The department have got close links with Kuwait Shipping Companies. The Foundation Degree is delivered by faculty, from electrical engineering department, mechanical engineering department, marine management department and mathematics departments, who have different ethnic and cultural backgrounds. By bringing faculty together from different academic background students explore global markets in marine industry, marine laws, and marine technological developments globally.

### **Research, scholarship and enquiry skills**

Learners in Foundation Degree will be facing a new culture of working in research projects in the marine engineering field. The assignments will be led and managed by you in an area including significant research and development with limited supervision; this will enable you to independently research unfamiliar concepts effectively. This will help to broaden learner's perspective and will enable them to researchers and technologists.

### **Enterprise and entrepreneurial awareness and capabilities**

Blackpool and The Fylde College believes that students should be entrepreneurial in order to understand the global market well and handle business pressures. The Legislation and Leadership module and Work based learning modules outlines the tools, attitudes and knowledge needed for it. The units are designed as per the feedback and inputs from industry. The Work Based Learning Management level module prepares students for role of managers. Students learn the basics of maritime business, learn how to support employees to be more innovators, how to manage interdisciplinary teams, how to communicate effectively and how to think critically, which are the key attributes for a successful entrepreneur.

### **Study Costs: Equipment Requirements**

You are expected to provide your own day-to-day stationary items, e.g. pens, pencils, notebooks, etc. Any specialist stationery items will be specified under the Additional Costs tab of the relevant module profile. Candidates will need calculators as specified by the rubric of individual module and as permitted by the college. The college approved models are Casio FX-570 and Casio FX-85GT Plus. These may be purchased from any source. You will require access to a computer or laptop with internet access. Learning Resources are provided on-site and free for students to use Monday to Friday. Other equipment during your programme will include personal protective equipment for workshops, such as boots, gloves and overalls are provided by the college.

### **Study Costs: Additional Costs**

In some cases, coursework and/or projects may be submitted electronically. Where it is not possible to submit electronically you will be liable for printing costs. There may be opportunities for field trips to conferences, exhibitions or for other interests. This is done through negotiation as new venues/locations/trips must be risk assessed and approved.

## Related Courses

If Marine Engineering isn't for you but still want a career at sea, the Foundation Degree Nautical Science programme also delivered at Fleetwood Nautical Campus may be for you. This is the route for those wanting to become a Deck Officer in charge of the safe navigation and passage of the vessel.

You may also be interested in the Foundation Degree Electrical and Electronic Engineering programme which develops the skills required to become a certificated shipboard Electro-Technical Officer.