



# Programme Specification

## MEE-2024: BEng Marine Electrical and Electronic Engineering

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B&FC Bachelor of Engineering with Honours awarded by Blackpool And The Fylde College (FHEQ Level 6)

Programme Status: Draft | Version: 1

## Introduction

This programme specification provides a summary of the main features of the BEng Marine Electrical and Electronic 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

When undertaken as part of a Degree Apprenticeship additional information is available in the following resources:

- The Programme Delivery Plan
- The End Point Assessment Guide
- B&FC Mentor Guide
- B&FC Apprenticeship Strategy

## Key Programme Information

<b>Programme Code</b>	MEE-2024
<b>Programme Title</b>	BEng Marine Electrical and Electronic Engineering
<b>Teaching Institution</b>	Blackpool and The Fylde College
<b>Professional, Statutory and Regulatory Body (PSRB) Accreditation</b>	None
<b>UCAS Code</b>	TBC
<b>Language of Study</b>	English
<b>Version</b>	1
<b>Approval Status</b>	Draft
<b>Approval Date</b>	Not yet approved
<b>JACS Code</b>	Other: Other
<b>Programme Leader</b>	Biju Mathew

## Programme Awards

<b>Award</b>	<b>Award Type</b>	<b>Level</b>	<b>Awarding Body</b>
B&FC Bachelor of Engineering with Honours	Honours Degree (360 credits)	Level 6	Blackpool And The Fylde College

## Programme Overview

Commercial shipping is responsible for conveying almost all the goods we use on a day-to-day basis – from your computer to your car (and the fuel it runs on). This programme will give you an entry point to the maritime industry, providing essential knowledge, skills and behaviours that will make you competitive in the most globalised industry there is. BEng Degree Marine Electrical and Electronics Engineering is part of a suite of degree programmes for the maritime industry that will provide you with the knowledge, skills and behaviours needed for a career in commercial shipping. Approved by the Maritime and Coastguard Agency (MCA) and the Merchant Navy Training Board (MNTB), this three-year programme combines academic education with vocational training and 8 months' industrial placement on board ships, leading to the award of Electro Technical Officer (ETO) Certificate of Competency (CoC). 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 6 degree academic qualification which integrates academic and work placement (sea phase) 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, firefighting, 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 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 achieving the ETO CoC, then you must have a sponsorship in place prior to enrolling onto the programme.

Phase 1 (college phase) 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 Electrical and Electronics 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 (second college phase) 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 will also be conducting workshop skills throughout phase 3 developing your maintenance and fault finding practice.

Throughout phases 2 and 4 you will engage in 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.

In the final college phase you will progress from level 5 to level 6. At Level 6 you will explore the maritime industry from a holistic perspective, creating effective maritime industry managers for the future. This level is designed to develop the necessary knowledge and skills that will prepare graduates for number of current and future career opportunities, both at sea and ashore. It enables maritime professionals to develop a career in the shore-based maritime sector or have a professional degree to support their career at sea.

To enhance the industry links, you will be offered free student membership through the Institute of Marine Engineers, Science and Technology (IMarEST) and as such this is promoted during induction with guidance to how this membership can be used to enhance the programme in specific areas.

## Admission Criteria

- 60 UCAS points at A/AS level, including at least two STEM subjects
- GCSE Mathematics (level 5 or above), Science and English Language (level 4 or above), or equivalent letter grades
- If English is not your first language, an IELTS score of 5.5 or equivalent, achieved within the two years prior to applying for the programme
- Other qualifications that are equivalent to the above (normally, the programme team will

review evidence supplied by mature, non-standard applicants regarding their ability to undertake the programme)

- The award of credits via Recognition of Prior Experiential Learning (RPEL) will be assessed on an individual basis
- We will also consider your application if you have a Level 3 Diploma in Shipping and Maritime Operations with a letter of recommendation on your aptitude for studying at degree level.

You will need to pass an industry-standard medical examination (ENG1) in order to complete a placement at sea; it is strongly advised that you complete this prior to enrolment on the programme.

## Career Options and Progression Opportunities

The BEng in Marine Electrical and Electronics Engineering programme will provide you with the skills and knowledge required for a career within the maritime industry as an Electro-Technical Officer. Upon successful completion of the programme, you could consider a number of other roles across the maritime industry. Whether you wish to remain at sea, or come ashore, this programme provides you with the knowledge and skills required to move into managerial roles across the sector, such as marine surveyor, technical superintendent, marine project manager, port manager, plant operator, logistics manager, a career in shipping insurance or as a maritime administrator.

Although the programme is designed to develop future-focused skills, these are equally applicable in a range of existing managerial positions across a range of shore side sectors such as: maritime business services as training manager or crewing managers; maritime regulatory authorities as marine surveyors, roles with the International Maritime Organisation or Maritime and Coastguard Agency; maritime education and training with various roles across maritime colleges or universities; ship management as fleet managers or an engineering superintendent; or ports and harbours as a harbour master. Successful students may also wish to continue their studies by undertaking a relevant postgraduate degree at another university institution, leading to even greater career opportunities. Studies for a Master or research qualification can take you either into higher positions within the industry, managerial or otherwise, into the research profession, or to teaching careers in further and higher education.

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 role and job titles within each sector as there are a variety of roles and job titles within each. All profiles within the map have been provided by individuals across the maritime industry using their own experiences of being at sea and their roles ashore. Each individual seafarer has a unique career story, therefore the map and profiles inspire them to explore different roles at sea and in the wider maritime industry that could play a part in their future.  
<http://casandbeyond.org/career-development/career-map/>

## Programme Aims

- To develop students with general and specialist maritime knowledge and technical skills
- To develop students with analytical, critical and problem solving skills
- To prepare students to interact safely and effectively in compliance with legislation in the context of the maritime industry
- To prepare students to manage people by developing leadership, communication and

interpersonal skills

-To provide a programme of study with employability skills for professionals in the maritime industry to enable them to use technical principles and knowledge in their work environment with confidence

## **Programme Learning Outcomes**

### **Level 6**

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

1. Demonstrate general and specialist maritime knowledge and technical skills
2. Exercise analytical, critical and problem-solving skills
3. Assess ethical issues faced by/in the maritime industry relating to legislative and contractual compliance and application of sustainability goals
4. Apply digital skills appropriate for operating in an increasingly data-driven maritime industry
5. Lead and manage people by using effective communication and interpersonal skills
6. Interpret legislation relevant to the maritime industry and evaluate safe working practices in workplace situations
7. Apply concepts and principles to the operation of sustainable marine electrical, electronic, propulsion systems
8. Apply specialist knowledge and skills to complex engineering scenarios accounting for emerging and future technology

## Programme Structure

Module	Level	Credits	%	Category	Description	Length/Word Count	Grading Method
<b>Stage 1</b>							
MAR421: Engineering Mathematics (Mandatory)	4	20	100%	Written Exam: Formal Written Examination	2.5 hours written exam	150	Percentage Grade
MAR422: Marine Engineering Operations (Mandatory)	4	20	-	Practical: Practical Skills Assessment	Safe Working Practices	0	Pass/Fail
			100%	Coursework: Assignment	Written assignment understanding and application of various aspects related to engineering systems and safety practices on board commercial vessels.	2500	Letter Grade
MAR424: Academic and Digital Skills (Mandatory)	4	20	100%	Coursework: Case Study	Data and Computing Case Study	4000	Letter Grade
MAR425: Maritime Safety & Emergency Response (Mandatory)	4	20	100%	Coursework: Assignment	Safety and Emergencies	2000	Letter Grade
			-	Practical: Practical Skills Assessment	Practical skills assessment to evaluate students' proficiency in safely handling oil and chemical cargoes on board ships	0	Pass/Fail
MEE421 : Electrical and Electronic Principles (Mandatory)	4	20	25%	Coursework: Report	This 1500-word assignment to analyse simple electronic circuits	1500	Letter Grade
			75%	Written Exam: Formal Written Examination	This closed-book examination analysing AC & DC circuits under supervised conditions	150	Percentage Grade
MEE422: Electrical Power and Distribution System (Mandatory)	4	20	100%	Written Exam: Formal Written Examination	The closed-book examination analysing electrical system under supervised condition.	150	Percentage Grade
			-	Coursework: Report	Workshop report	1500	Pass/Fail
<b>Stage 3</b>							
MAR521: Maritime Leadership and Law (Mandatory)	5	20	-	Practical: Presentation	Oral Questioning on HELM	10	Pass/Fail

MAR521: Maritime Leadership and Law (Mandatory)	5	20	100%	Coursework: Literature Review	Literature Review of Law	3000	Letter Grade
MEE521: Control and Instrumentation (Mandatory)	5	20	50%	Coursework: Report	Report on assembling or simulating a process control system.	2000	Letter Grade
			50%	Written Exam: Formal Written Examination	This closed-book exam to assesses fundamental engineering principles of instrumentation and control systems.	150	Percentage Grade
MEE522 : Electrical Machines and Drives (Mandatory)	5	20	25%	Coursework: Report	Report on experiments carried on AC generators and Induction motors	1500	Letter Grade
			75%	Written Exam: Formal Written Examination	The closed-book examination to assesses operation and construction of various electrical machines and their drive systems	150	Percentage Grade
MEE523 : Marine Navigation and Propulsion Systems (Mandatory)	5	20	75%	Coursework: Assignment	An assignment to analyse various marine navigational equipments	3000	Letter Grade
			25%	Coursework: Report	Report on operational checks on marine radio and navigational equipment.	1500	Letter Grade
MEE524 : Computer Network and Communication Systems (Mandatory)	5	20	25%	Coursework: Report	Report to appraise the design, construction, and operation of computer networks on board vessels.	1500	Letter Grade
			75%	Written Exam: Formal Written Examination	The closed-book examination to analyse Communication systems	150	Percentage Grade
MEE525 : Analogue and Digital Electronics (Mandatory)	5	20	25%	Coursework: Report	Report on computer-based methods in modelling and analysing electronic circuits	1500	Letter Grade

MEE525 : Analogue and Digital Electronics (Mandatory)	5	20	75%	Written Exam: Formal Written Examination	The closed-book examination to analyse analogue and digital electronic circuits	150	Percentage Grade
<b>Stage 5</b>							
MAR621: Maritime Business and Projects (Mandatory)	6	20	50%	Practical: Timed Assessment	Commercial Law Timed Assessment	2000	Letter Grade
			50%	Practical: Presentation	Finance and Projects	20	Letter Grade
MAR622: Advanced Tanker Operations (Mandatory)	6	20	-	Practical: Practical Skills Assessment	Tanker Courses	0	Pass/Fail
			100%	Coursework: Case Scenario	Justified Load/Discharge Plan	2000	Letter Grade
MAR623: Digital Ship Management (Mandatory)	6	20	25%	Coursework: Project	Applied data science project	1000	Letter Grade
			75%	Coursework: Report	Evaluation of digital technologies in the maritime context	3000	Letter Grade
MAR624: Dissertation (Mandatory)	6	40	80%	Coursework: Dissertation	Dissertation Report	8000	Letter Grade
			20%	Practical: Presentation	Preliminary Research Presentation	20	Letter Grade
MEE621: Marine Embedded Systems (Mandatory)	6	20	50%	Coursework: Report	Report on methods of programming, testing, and debugging in the planning, development, and testing phases of an application.	2000	Letter Grade
			50%	Written Exam: Formal Written Examination	The closed-book examination to evaluate the components of embedded systems and its applications	150	Percentage Grade

## Study Workload

The Bachelor of Engineering (BEng) in Marine Electrical and Electronics Engineering programmes tend to be rigorous and demanding due to the technical nature of the coursework.

The number of total learning hours including both contact hours and independent learning per level is 1200 hrs. Engineering programmes typically include hands-on laboratory work to reinforce theoretical concepts. This can add to the workload as lab reports and experiments may require additional time outside of regular class hours.

Given the specialised nature of marine electrical and electronics engineering, there may be additional training requirements related to maritime regulations, safety protocols, and industry-specific standards.



## **Programme Delivery: Learning and Teaching**

The programme is delivered through a wide range of teaching methodologies to suit every type of student. You will attend seminars, lectures and simulation exercises in order to gain a deeper understanding of the module content. 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. You will have the opportunity to work both independently and with peers in a supervised manner. 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. 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. 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 Practical Workshop and 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 developments.

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

This is a 5-phase programme and you will be required to obtain a total of 8 months sea time during phase 2 and 4. Your sponsoring training provider or shipping company will facilitate this. Your time at sea is an opportunity for you to take your underpinning knowledge of marine electrical engineering and apply it in a shipboard context. On-board ship you can expect to be involved with assisting the day to day running of the engine room. This could include the overhaul of electrical and electronic equipment on ships, operating engineering plant and machinery, and the attendance at daily engineering team meetings. During Phase 1, all students will attend a four-day cadet development course, which aims to build their team-working, communication and leadership skills, as well as improve their situational awareness and decision-making capabilities.

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

The BEng degree in Marine Electrical and Electronics 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 you the knowledge and understanding of current and future technological developments.

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

During lessons you will have opportunities to work as a team, communicating with your team members, taking leadership roles when needed, managing groups and working towards a common goal.

### **Personal and intellectual autonomy**

We support your development of independence in academic and practical skills throughout the programme, most prominently 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 degree set by the MCA ensures that the module delivery and assessment considers legal, social and ethical issues to enhance your professional development. You will also need to ensure that the research and findings for your dissertation module meets ethical guidelines with appropriate safeguarding in place.

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

The programme provides the foundations for developing these skills which are then applied in assessments throughout the programme. This will assist you 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, you 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 your specialist area.

### **Global citizenship**

The programme was developed in consultation with international maritime companies for example, Carnival, Princess Cruises, BP, Chiltern Maritime, Shell and V-Ships. As a global industry, by its very nature, the maritime industry inherently promotes the concept of global citizenship as you will work alongside seafarers from around the world who may hold very different cultural values and expectations from your own. Even within the UK, the pool of candidates is far more cross-sectional across the strata of class backgrounds than many other industries.

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

This programme will help you in developing skills required for engagement with technical and academic literature as well as data gathering and analysis skills that will help you to become a part of the global scholarly community, should you wish to pursue scholarship at a higher level.

## **Study Costs: Equipment Requirements**

B&FC provide access to key reading materials and other resources as a part of the programme costs. You are expected to provide stationery as well as a scientific calculator.

You are strongly advised to have a laptop or equivalent device that you can bring to college as part of your studies as many classes will incorporate technology throughout the learning process. There are limited quantities of laptops available for short-term loan from the LRC if you are not in position to bring your own device to college.

## **Study Costs: Additional Costs**

Incorporated within the programme are a number of short courses that provide you with certification that form part of your application for an Officer of the Watch Certificate of Competency. Uniform and general personal protective equipment, such as safety shoes and boiler suits are required for some of the associated short courses. Sponsors also typically fund all associated short courses that form part of your eligibility for your Certificate of Competency.

If you require MCA final attempts, these bear a fee that might or might not be borne by your sponsor.

## **Related Courses**

If the BEng in Marine Electrical & Electronics Engineering isn't for you but you still want a career at sea, the BEng degree in Marine Engineering & the BSc Degree in Nautical Science are also delivered at Fleetwood Nautical Campus. The BEng Degree in Marine Engineering is a programme to develop the skills required to become a certified shipboard Engineer Officer and the BSc degree in Nautical Science is the route for those wanting to become a Marine Deck Officer in charge of the safe navigation and passage of the vessel.