



# Programme Specification

## MEE-2022: Marine Electrical and Electronics Engineering

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B&FC Foundation Degree in Engineering awarded by Blackpool And The Fylde College (FHEQ Level 5)

Programme Status: Approved | Version: 1

## Introduction

This programme specification provides a summary of the main features of the Marine Electrical and Electronics 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>	MEE-2022
<b>Programme Title</b>	Marine Electrical and Electronics Engineering
<b>Teaching Institution</b>	Blackpool and The Fylde College
<b>Professional, Statutory and Regulatory Body (PSRB) Accreditation</b>	None
<b>UCAS Code</b>	
<b>Language of Study</b>	English
<b>Version</b>	1
<b>Approval Status</b>	Approved
<b>Approval Date</b>	11 August 2022
<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 Foundation Degree in Engineering	Foundation Degree (240 credits)	Level 5	Blackpool And The Fylde College

## Programme Overview

The Foundation Degree Marine Electrical and Electronics Engineering programme will provide you with the skills and knowledge required for a career within the maritime industry. The alignment to industry bodies will ensure you meet all the required Foundation Degree outcomes to support a career at sea which, when coupled with additional vocational training, will support your eligibility for a career in the field of Marine Electrical and Electronics Engineering, such as that of an Electro-Technical Officer. 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, 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 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 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 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. T

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).

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

Due to the nature of the programme it is expected that you have work placements in place; this is typically through a sponsoring shipping company although non-sponsored entrants may arrange appropriate alternative work placements to support a Foundation Degree in Marine Electrical and Electronics Engineering. The programme team will provide you with any required further support and guidance in this matter. The shipping companies play a vital role in the application process through their interview and application procedures which may vary dependent on the company. To ensure consistency for application specific to B&FC, guidance is given on what the programme entry requirements are and the final decision for enrolment will always fall to the programme team.

### Entry for Level 4

The minimum entry requirements for the programme are a minimum of 48 UCAS with GCSE grade 6 in Mathematics, English and Science.

Within the 48 points there must be at least one module relating specifically to a mathematics

based subject area. Holders of Level 3 Diploma in Shipping and Maritime Operations or other relevant subjects will also qualify for this route.

## Career Options and Progression Opportunities

### Progression Opportunities

#### **B&FC level 6 top up degree validated by Lancaster University**

If you wish to develop your knowledge in engineering and management, the B&FC level 6 top up degree validated by Lancaster University would be an ideal choice. The BSc (Hons) in Maritime Operations Management fits perfectly with current international and national maritime labour market trends. Latest international and national research convincingly demonstrates the demand for management level qualifications for both employers and employees. In addition, this development will undoubtedly contribute to the prosperity of the region. It offers excellence in curriculum design and innovation by co-creating content with the industry to ensure direct connection with work-based learning. The three pathways link directly to the roles in the sector, namely Nautical Science (Deck Officer), Marine Engineering, and Electro-Technical Officer. It offers a route for you to come ashore to continue in a shore-based shipping career in logistics, marine management or technical support. As a level 6 qualification, this top up also offers the opportunity for you to move into other more generic roles, particularly in management or engineering in a range of other industries, This is possible due to the broad base of graduate attributes developed both through the programme and in the roles at sea.

#### **BEng (Hons) Electrical Engineering programme offered by Sheffield Hallam University**

The BEng (Hons) Electrical Engineering programme offered by Sheffield Hallam University has been also identified as a suitable progression route for you.

## Programme Aims

- To develop students with general and specialist engineering knowledge and technical skills.
- To apply electrical engineering principles to different situations and 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 through simulated 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 develop students with the academic and digital competencies and skills to support lifelong learning and career progression.

## Programme Learning Outcomes

### Level 5

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

1. Implement an analytical and diagnostic approach to problem solving

2. Critically analyse engineering systems and processes and discuss their scientific and theoretical principles
3. Discuss the importance and application of ethical business practices in engineering activities
4. Collaborate and communicate, to support research and learning through the use of digital and other medias
5. Critically evaluate the management techniques and legislation used to solve complex problems
6. Evaluate safe working practices in a range of contexts including workplace situations
7. Interpret legislation relevant to the maritime industry
8. Apply concepts and principles to the operation of marine electrical, electronic, propulsion systems
9. Apply principles and techniques for measuring, data collection, analysis and report writing of engineering experiments and projects
10. Critically evaluate personal performance and the performance of teams

## Programme Structure

Module	Level	Credits	%	Category	Description	Length/Word Count	Grading Method
<b>Stage 1</b>							
MEE407: 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
MEE408: Marine Engineering Operations (Mandatory)	4	20	50%	Coursework: Assignment	n/a	2500	Letter Grade
			50%	Practical: Presentation	n/a	15	Letter Grade
MEE411: Engineering Mathematics (Mandatory)	4	20	100%	Written Exam: Formal Written Examination	n/a	180	Percentage Grade
<b>Stage 2</b>							
MEE407: 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>							
MEE409: Electrical and Electronic Principles (Mandatory)	4	20	25%	Coursework: Report	Report on practical exercise	2000	Letter Grade
			75%	Written Exam: Formal Written Examination	Closed book exam	150	Percentage Grade
MEE410: Electrical Power and Distribution Systems (Mandatory)	4	20	25%	Coursework: Assignment	Written assignment	2000	Letter Grade
			75%	Written Exam: Formal Written Examination	Closed book written exam	150	Percentage Grade
MEE412: 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
<b>Stage 4</b>							
MEE507: Control and Instrumentation (Mandatory)	5	20	25%	Coursework: Report	Report on practical assessment	2000	Letter Grade
			75%	Written Exam: Formal Written Examination	Closed book written exam	150	Percentage Grade
MEE508: Electrical Machines and Drives (Mandatory)	5	20	75%	Written Exam: Formal Written Examination	Closed book assessment	150	Percentage Grade
			25%	Coursework: Report	Report on Practical activity	2000	Letter Grade

MEE509: Analogue and Digital Electronics (Mandatory)	5	20	25%	Coursework: Report	Practical assessment report	2000	Letter Grade
			75%	Written Exam: Formal Written Examination	Closed book exam	150	Percentage Grade
<b>Stage 5</b>							
MEE508: Electrical Machines and Drives (Mandatory)	5	20	75%	Written Exam: Formal Written Examination	Closed book assessment	150	Percentage Grade
			25%	Coursework: Report	Report on Practical activity	2000	Letter Grade
MEE510: Computer Network and Communication Systems (Mandatory)	5	20	25%	Coursework: Report	Report on practical exercise	2000	Percentage Grade
			75%	Written Exam: Formal Written Examination	Closed book exam	150	Percentage Grade
MEE511: Marine Navigation and Propulsion Systems (Mandatory)	5	20	50%	Written Exam: Formal Written Examination	Closed book exam	150	Percentage Grade
			50%	Coursework: Assignment	n/a	2500	Letter Grade
<b>Stage 6</b>							
MEE512: Work Based Learning (Managerial) (Mandatory)	5	20	100%	Coursework: Report	Written report on a work based managerial activity which should demonstrate a range of leadership techniques used.	4500	Letter Grade
<b>Stage 7</b>							
MEE512: Work Based Learning (Managerial) (Mandatory)	5	20	100%	Coursework: Report	Written report on a work based managerial activity which should demonstrate a range of leadership techniques used.	4500	Letter Grade

## Study Workload

The programme is delivered across 5 phases, 3 of which take place at College and 2 of which occur within industry aboard ships. This will provide you with the opportunity to gain theoretical knowledge which can then be applied in practice and also allow you to gain valuable first-hand experience which can then be applied during your theoretical studies. During the undertaking of modules at College, you will be undertaking learning through a combination of lecturers, seminars, group tutorials, workshops, work based and placement learning and independent study.

## **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.

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

As a 5 phase programme 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 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 diesel generators, operating engineering plant and machinery, assisting with engineering operations such as bunkering and fresh water production 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**

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 you the knowledge and understanding of current and future technological



developments.

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

During their sea phase you will work as team, communicating with your team members, taking leadership roles when needed, managing groups, and working towards a common goal. In the Academic and work-based learning module learners analyse the objectives and performance of individuals, the roles and responsibilities and performance of teams and you 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 workplace.

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 Moodle. 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 Work based learning module 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 their specialist area.

### **Global citizenship**

To build your global skills and competency, the programme was developed liaised with international maritime companies likes 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 background. 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 mangers. 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. There is also a provision for you to get borrow laptop for short period from LRC. 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 Electrical & Electronics Engineering isn't for you but still want a career at sea, the Foundation degree in Marine Engineering & Foundation degree in Nautical Science are also delivered at Fleetwood Nautical Campus. Foundation Degree in Marine Engineering programme is a programme develop the skills required to become a certificated shipboard Engineer Officer and the Foundation 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.