



Programme Specification

MEN-AD-2022: Marine Engineering

SQA Advanced Diploma awarded by Scottish Qualifications Authority (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

Programme Code	MEN-AD-2022
Programme Title	Marine Engineering
Teaching Institution	Blackpool and The Fylde College
Professional, Statutory and Regulatory Body (PSRB) Accreditation	None
UCAS Code	
Language of Study	English
Version	1
Approval Status	Approved
Approval Date	09 September 2022
JACS Code	Other: Other
Programme Leader	Andrew Diamond

Programme Awards

Award	Award Type	Level	Awarding Body
SQA Advanced Diploma	Advanced Diploma	Level 5	Scottish Qualifications Authority

Programme Overview

Blackpool and The Fylde College remains committed to providing a highly responsive curriculum that is employment and future-focused and will enable you to develop the essential knowledge and skills that will prepare you for future success in work and life.

The Advanced Diploma (AD) Marine 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 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 Engineering and will provide you with the academic exemptions for STCW95 Reg III/2 Chief Engineer Unlimited Engineering Certification.

This programme is aligned to support your progression through knowledge acquisition at the appropriate level and onto managerial level, as directed by the Standard of Training, Certification and Watch keeping (STCW) 1978, as amended. This is achieved by meeting the requirements of the Maritime and Coastguard Agency (MCA) and approved by the Merchant Navy Training Board (MNTB). In addition to this programme providing an academic qualification, you may also undertake vocational training that runs alongside the academic

award. Topics covered are STCW basic training, workshop training skills, first aid, firefighting, high voltage scenarios, and rescue boat experiences.

You can study as a fulltime student on campus or via the Blended Learning route where communication and resources are available online, however assessments and practical will need to be carried out on campus.

To enhance links to industry, free student membership is available for all cadets 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

When looking to enrol on the AD top-up programme, you will be required to have completed an Advanced Certificate (AC) in Marine Engineering or alternatively, hold an MCA recognised Engineering Officer Of the Watch (EOOW) Certificate of Competency (CoC) which is comparable to the 96 credits of the AC award. In this case, the College will undertake a Recognition of Prior Learning (RPL) exercise, which is the process for recognising previous learning that has taken place in informal, formal or non-formal contexts: for example, in the workplace and through life experiences. Once recognised through this process, prior learning can be used to gain credit or exemption for qualifications. This process can also be used to recognise any additional units you have undertaken, of supporting documentation is provided. The same conditions apply to all blended learning students for admission on to the course.

Career Options and Progression Opportunities

This programme offers a route to certification and also provides you with the knowledge, understanding and proficiency (KUP) required for an operational position in the maritime industry. Alongside the Advanced Diploma programme you must also achieve the identified amount of sea service requirements in order to qualify for a Certificate of Competency; this is provided by the shipping companies who ensure you achieve the appropriate amount of sea time on board vessels engaged in shipping operations. The benefit of such a requirement is that you graduate with the AD award and experience specific to the field in which the programme is aimed.

The programme has been designed to prepare you for a career at sea with ultimate progression routes to management roles. On successful completion of the programme you will have acquired the appropriate skills and knowledge to progress in many directions within the maritime sector or related industries.

A career at sea does not always mean working on the water; other areas of employment include a shore based job with a shipping company that manages and controls all aspects of their own ship's operations, or on behalf of other ship owners. In some cases these roles may require individuals to have seagoing experience. Ship management roles include:

- Fleet operations, Fleet Director, Fleet Manager, Fleet Assistant Staff
- Fleet personnel, Personnel manager, Training manager, Training officer
- General operations, Operations Manager, Safety officer.
- Marine operations, Marine superintendent, Marine technical assistant
- Engineering operations, engineering superintendent.

Opportunities exist outside of maritime based employment also. There is currently a worldwide shortage of skilled engineers in many other fields. This programme is designed to provide

students with attributes such as management and leadership and other graduate skills required by many employers. This programme will provide you with a suite of transferable skills to support future progression possibly outside of the Shipping Industry:

- Design engineers
- Mechanical engineer
- Offshore and petroleum engineering
- Project management
- Sales and technical support engineers

If you wish to further your wishing to further your studies, you will be able to progress onto the Lancaster University validated B&FC BSc (Hons) Maritime Operations Management (Marine Engineering).

Programme Aims

General aims of the qualification:

- Develop the ability to analyse and plan tasks commonly encountered in the workplace.
- Develop approaches to problem solving and critical thinking.
- Develop an evaluative and reflective approach to work and studies.
- Develop the ability to plan and organise studies.
- Develop skills for employability and progression to higher qualifications.
- To enable the learner to consolidate knowledge and skills to enhance career progression.
- To develop Core Skills required by employers
- To develop skills which are capable of being transferred to any employment.
- Progression within the SCQF framework.

Specific aims of the AC qualifications

- Prepare learners for written and oral examinations for Engineer Officer of the Watch.
- Contribute towards developing skills to enable learners to operate a vessel in a safe and effective manner.
- Contribute towards developing skills to enable learners to work with others in safe and effective manner.
- Contribute towards developing skills to deal with emergency situations.
- Develop awareness of current maritime legislation.

Specific aims of the AD qualifications;

- Provide an award that on successful completion will allow learners to progress to a degree in engineering or a related subject discipline area.
- Provide an award that will give academic exemptions for STCW10 Reg III/2 Chief Engineer Unlimited Engineering Certification.
- Develop knowledge and understanding of the external and internal factors that influence the performance of modern marine plant and vessels.
- Develop a range of communication knowledge and skills relevant to the needs of marine engineers.
- Develop a range of project management skills.
- Develop the analysis and synthesis skills necessary to ensure the efficient operation of marine plant.

Programme Learning Outcomes

Level 4

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

1. Equate relevant mathematical solutions and apply to different engineering systems

2. Demonstrate engineering systems and describe the scientific principles and their application
3. Describe the appropriate materials and manufacturing processes used in the marine industry
4. Plan, execute and report on laboratory experiments and workshop practices
5. Use problem solving techniques to resolve potential engineering issues in the marine environment
6. Reflect on the importance and application of marine engineering processes

Level 5

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

7. Proficiently apply a range of engineering theories to practical applications related to the maritime industry
8. Be an effective manager capable of undertaking a number of roles be they on board a merchant vessel or a shore based establishment
9. Critically analyse systems and processes identifying improvements
10. Effectively apply a range of graduate skills to various engineering activities
11. Critically analyse a range of complex engineering systems and devise relevant design solutions
12. Research and synthesise the skills necessary to effectively manage modern marine plant

Programme Structure

Module	Level	Credits	%	Category	Description	Length/Word Count	Grading Method
Stage 1							
HP4846: Engineering Mathematics 1 (Mandatory)	3	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HP4947: Engineering Mathematics 2 (Mandatory)	4	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HR7J47: Project Management for IT (Mandatory)	4	8	30%	Coursework: Assignment	n/a	1000	Percentage Grade
			70%	Coursework: Assignment	n/a	1500	Percentage Grade
HT1R47: Fundamentals of Control Systems and Transducers (Mandatory)	4	8	50%	Coursework: Report	Reflective report based on practical exercise	1500	Percentage Grade
			50%	Written Exam: Formal Written Examination	Exam	120	Percentage Grade
HT7P47: Safety Engineering and the Environment (Mandatory)	4	8	100%	Coursework: Report	Safety Engineering and the environment report	2000	Percentage Grade
HW5A47: Pneumatics and Hydraulic Systems (Mandatory)	4	8	100%	Coursework: Report	Operation, design and fault finding of pneumatic and hydraulic systems	2000	Percentage Grade
HW5C47: Auxiliary Systems (Mandatory)	4	8	100%	Coursework: Report	Marine auxiliary systems and emergency procedures report	2000	Percentage Grade
HW5D47: Marine Legislation and Leadership (Mandatory)	4	8	100%	Coursework: Article	Marine legislation and leadership report	2000	Percentage Grade
HW5E47: Propulsion (Mandatory)	4	8	100%	Coursework: Report	Marine propulsion systems report	2000	Percentage Grade
HW5F47: Thermodynamics (Mandatory)	4	8	100%	Written Exam: Formal Written Examination	Examination	150	Percentage Grade
HW5G47: Stability and Structure of Merchant Ships (Mandatory)	4	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HW5H47: Electro-Technology (Mandatory)	4	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HW5J47: Mechanical Principles (Mandatory)	4	8	100%	Written Exam: Formal Written Examination	Examination	150	Percentage Grade
HW5K47: Graded Unit 1 (Mandatory)	4	8	100%	Written Exam: Formal Written Examination	Examination	180	Percentage Grade

HW5N48: Strength of Materials (Mandatory)	5	8	100%	Written Exam: Formal Written Examination	Examination	150	Percentage Grade
Stage 2							
HW5P48: Mechanics (Mandatory)	5	12	100%	Written Exam: Formal Written Examination	Examination	180	Percentage Grade
HW5R48: Applied Mechanics (Mandatory)	5	8	100%	Written Exam: Formal Written Examination	Examination	150	Percentage Grade
HW5T47: Process Control (Mandatory)	4	8	50%	Coursework: Assignment	n/a	1000	Percentage Grade
			50%	Coursework: Assignment	n/a	1000	Percentage Grade
HW5W48: Management (Mandatory)	5	8	100%	Coursework: Report	n/a	2000	Percentage Grade
HW5Y48: Naval Architecture (Mandatory)	5	16	100%	Written Exam: Formal Written Examination	n/a	150	Percentage Grade
HW6148: Applied Thermodynamics (Mandatory)	5	12	100%	Written Exam: Formal Written Examination	Examination	150	Percentage Grade
HW6248: Heat Engine Principles (Mandatory)	5	8	100%	Written Exam: Formal Written Examination	Examination	150	Percentage Grade
HW6348: Electrical Distribution Systems (Mandatory)	5	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HW6448: Electrical Machines (Mandatory)	5	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HW6747: Electrical Power (Mandatory)	4	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HW6848: Ship Construction and Survey (Mandatory)	5	8	100%	Written Exam: Formal Written Examination	Examination	120	Percentage Grade
HW6D48: Graded Unit 2 (Mandatory)	5	16	100%	Practical: Practical Skills Assessment	Project	8000	Percentage Grade

Study Workload

With each indicative contact hour you will be expected carry out an additional 2 hours self study for each of the units. This will provide you with the opportunity to reflect on the unit 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.

You will be expected to undertake typically 24 hours of contact time a week, with the expectation of 48 hours of independent study. Assessments will take place at the end of each term.

Blended Learning programme:

During enrolment to the programme, you will work collaboratively with a member of the blended learning team to produce a study plan for your completion of the programme, which takes into account your individual work rotations and availability. Your teaching and learning will be supported by learning materials which have been created by the Marine Engineering team. There are 15 units to complete at a pace that suits. Three of the units may already have been undertaken if you have already completed an approved Advanced Certificate (HNC) programme prior to enrolment. All this will be identified upon enrolment to the course.

Programme Delivery: Learning and Teaching

Throughout your programme you will learn and be assessed in a range of ways to support the overall aims and outcomes of the programme in order to equip you with the appropriate skills for roles within the maritime industry. Employers will be looking for a range of skills and competencies, including innovation and initiative. They will be keen to employ strong communicators and team players. The programme is designed to promote the development of these qualities alongside core technical competencies and academic engineering knowledge.

Whether you're undertaking this programme full time with scheduled on site sessions, or part time via blended learning, you will be supported through the programme by structured learning, teaching and assessment strategies. Furthermore, all students will continue to have access to all resources on site, and will be offered specific progress support as part of the Partners for success framework.

Units

Each unit has its own teaching, learning and assessment strategy to suit specific aspects of the curriculum. You will progress through the units via a range of learning and assessment styles, and the supportive structure of the programme allows you to build on knowledge developed in earlier units. You will be encouraged to adopt a holistic approach to your studies, allowing you to develop as a professional with a wide range of skills and competencies, and a clear understanding of how all the individual elements of your advanced certificate fit together in a maritime context.

Resources

The resources to support you in your studies include books, e-books and journals, as well as the college's virtual Learning environment (VLE) platform. The LRC provides access to all relevant publications, as identified on the reading lists. You will receive access to maritime specific documents and eBooks with membership to Witherby publications and regs4ships. Additionally, as a maritime cadet you are entitled to free student IMarEST membership and this will allow you

to access international journals and e-books relating to all areas of the programme. Videotel's Networked Video on Demand (NVOD) is used in and out of the classroom to provide access to a repository of information videos designed for training industry professionals. The VLE provides an online platform for programme resources, allowing you to access materials to supplement your classroom based studies 24 hours a day, 7 days a week.

Practical resources are used to reinforce theories and provide an opportunity for research in many of the units across the programme. These include the laboratory where you will build, model and analyse circuits and components as part of the electrical and control units

Simulation of engineering environments and system operations are conducted in the Engine Room Simulator (ERS). The simulator is used in several of the units to provide a basis for application of theories.

All practical resources, including the simulator will be available to all students whether studying on site or via the Blended Learning Route

Independent learning

Effective learning is more likely when you are given, and accept responsibility for your own learning and have some control over the learning context. Each unit has been designed to support small group work structured to facilitate cooperative learning and enable some autonomy. Many units include problem based learning where a group works collaboratively to solve a particular problem, then reflects on the outcomes in order to apply them at sea or in further tasks. You will develop an ability to define problems, identify and acquire the skills and knowledge needed to solve them, and then work through the solution. You will be required to take responsibility for your own and the groups learning.

Academic support

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. All support is available online or in person.

Blended Learning

As far as possible the approach to delivery for fulltime and blended students will align. Where practical work is required time will be set aside within their Individual Learner Plan for a visit on site to facilitate this. Where group work is suggested as an ideal method of delivery and learning the blended learning student will be given opportunities to work with either other blended learning students within a designated group or will be offered the opportunity, if timing allows, to join in with the fulltime students through various VLE platforms.

Programme Delivery: Assessment

Assessments will be set to test your understanding rather than your ability to memorise and reproduce knowledge or processes. This will be an opportunity for you to reflect on your progress throughout the programme and consider your next step of working towards your Certificate of Competency.

Assessments have been developed to measure your successful completion of all elements of the programme, and as you progress between units you will complete assessments to demonstrate your achievement of the learning outcomes stated in the unit specifications. Formative and final assessments provide a wide ranging indication of your progress and development, and include traditional examinations and coursework submissions as well as practical exercises. The main proportion of the units you undertake will be summatively assessed by examination, as this methodology is recognised by industry bodies. By completing these examinations, you will be exempt from the academic subjects when studying towards your Certificate of Competency. In addition to examinations, you will also undertake practical exercises followed by a reflective report on your experiences during practical activities, with physical or online projects. Coursework will also form a proportion of your summative assessment across the programme, providing you opportunities to undertake independent research and develop wider graduate skills.

Please note, in order to pass each unit you are required to achieve a pass in each assessment for each unit, where there is more than one assessment.

PROGRAMME DELIVERY: BLENDED LEARNING

Blended Learning (Learning and Teaching)

Following enrolment to a set of units, your teaching and learning will be supported by learning materials which have been created by the programme team. These resources provide an outline of each unit, a recommended reading list and provide details of the unit syllabus and learning outcomes. Interactive resources are utilised on our Virtual Learning Environment (VLE) including, but not limited to, Marine Notices, Power Points, useful web links to industry publications, Excel spreadsheets, video tutorials, clinics, and e-books.

You will submit work using the VLE, both formative and summative assessments, where appropriate.

Any practical activities can be supported with on-site attendance, as identified in your Individual Learner Plan or during subsequent progression meetings. Practical activities are not mandatory, but further enhance your learning experience. These activities are often a reflection of industrial activities, and can therefore be undertaken in an industrial setting.

Blended Learning (Assessment)

Formative assessment will take place as your work through the unit material provided by the blended learning team. It will take the form of formative assessments on the VLE, offering feedback as you go, aligned to the subject area. You will be required to successfully pass these assessments before being able to attend College for any on site summative assessments. This will measure your knowledge and understanding of the unit. You will receive extensive feedback and be required to pass these before undertaking the unit summative assessment by attending Fleetwood Nautical Campus for closed book assessments.

Summative assessments are predominantly examination based which are time constrained and closed book and conducted on College premises, however you will also undertake some coursework exercise such as project work and essays. You do not need to attend college for coursework assignments but you must adhere to the submission time frame. Examinations are conducted by B&FC directly under invigilated conditions conforming to MCA written exam conditions. Summative exams also consist of additional papers termed as Graded papers. The Graded Units consist of examinations only and do not feature any delivery hours as taught / delivered units, but rather rely on you to undertake independent learning.

Programme Delivery: Work Based and Placement Learning

There is no work placement included in this course. You will however likely progress to industry settings on completion, and prior to your next career steps. This will include activities such as shipboard inductions, familiarisation with marine operations and will the undertaking of tasks forming part of your continuous professional development.

Programme Delivery: Graduate Skill Development

A commitment to lifelong learning and career development

The programme 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 units are designed such that it will give learners knowledge and understanding of current and future technological developments.

Collaborative teamwork and leadership skills

One of the core skills of the programme is the ability to work with others. You will develop teamwork and leadership skills by negotiating working methods, modifying your behaviour, and motivating yourself and others to progress towards a common goal. A specific aim of the programme is also focuses on developing skills to enable you to work with others in a safe and effective manner.

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 coursework where you will be responsible for managing your work.

Ethical, social and professional understanding

Mapping of the programme content to the requirements of the training framework set by Merchant Navy Training Board (MNTB) ensures that the unit delivery and assessment considers legal, social and ethical issues to enhance learner's professional development.

Communication, information and digital literacies

Communication is another core skills embedded into the programme. You will be expected to read, understand and evaluate a complex document which either: contains a set of facts and an analysis of them, or a sustained argument. It will be a substantial and detailed text with complex sentences, specialist words, and concepts that may be unfamiliar to you. It is likely to have more than one purpose. This will assist you in engaging critically with material; utilising digital technologies effectively to support discovery, analysis and dissemination of information; collaboration; and reflection. In units 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 has got close links with Kuwait Shipping Companies specifically KOTC and we are continually looking to create links with other global shipping companies. The programme 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 backgrounds students explore global markets in marine industry, marine laws, and marine technological developments globally.

Research, scholarship and enquiry skills

Students will be facing a new culture of working in research projects in the marine engineering field. The coursework 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.

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 unit profile. Candidates will need calculators as specified by the rubric of individual unit 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. You will be required to purchase Thermodynamic property tables. 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 Nautical Science programmes 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 Electrical and Electronic Engineering programmes which develops the skills required to become a certificated shipboard Electro-Technical Officer.