



**MCAST**

**MQF/EQF Level 4**

**MS4-01-21**

**Advanced Diploma in Deck Operations**

**Course Specification**

## **Course Description**

This Advanced Diploma programme is designed to prepare candidates for a career in the maritime sector. This programme also prepares such candidates to qualify for a Certificate of Competence as an Officer In Charge of a Navigational Watch on ocean-going merchant vessels. The course consists of a number of maritime related subjects such as Navigation, Meteorology, Signals, Ship Knowledge and Stability, Cargo Operations, International Regulations, and a high level of physical fitness training and leadership training in which all candidates are expected to participate. Officer Cadets are expected to wear a merchant marine uniform whilst undergoing training both ashore and on board ships. Officer Cadets attending the course will be assisted in finding a sponsor for the practical training period at sea during the third phase of training on the course. The programme eventually includes a compulsory 12-month sea placement after the first two years of the course.

## **Programme Learning Outcomes**

**At the end of the programme the student is able to**

- 1. Explain and undertake navigation at the operational level.*
- 2. Discuss Cargo Handling and stowage at the operational level.*
- 3. Demonstrate the safe operation of the ship and care for persons on board at the operational level.*
- 4. Demonstrate professional recognised navigation and ship operations skills.*

## **Entry Requirements**

4 SEC/O-Level passes/SSC&P (Level 3) passes:

- Compulsory: Physics, Mathematics and English Language;
- Preferred: Geography and a foreign language;

**or** MCAST Diploma in Deck Operations;

Medical Test, Physical Aptitude Test and Interview

Guidance Note: Students must have reached the age of 18 years during their second academic year.

**Academic qualification leading to a Regulated Profession**

- 1.) Advanced Diploma : None
- 2.) OIC Navigational Watch : Merchant Shipping Directorate of Transport Malta

**Key Information**

Awarding Body - MCAST

Accreditation Status - Accredited via MCAST's Self Accreditation Process (MCAST holds Self-Accrediting Status as per 1st schedule of Legal Notice 296/2012)

Type of Programme: Qualification

MQF Level	Examples of Qualifications	'Qualification' Minimum Credits Required	'Award' Credits Required
Level 8	Doctoral Degree Third Cycle Bologna Process	NA	NA
Level 7	Masters Second Cycle Bologna Process Post-Graduate Diploma Post-Graduate Certificate	90-120 60 30	Less than 30
Level 6	Bachelor <sup>25</sup> /Bachelor (Hons.) <sup>24</sup> First Cycle Bologna Process	180-240	Less than 180
Level 5	Short Cycle Qualification Undergraduate Higher Diploma Undergraduate Diploma Undergraduate Certificate VET Level 5 Programme <sup>25</sup>	120 90 60 30 60-120	Less than 60
Level 4	Pre-Tertiary Certificate VET Level 4 Programme <sup>26</sup> MATSEC Certificate	30 120 NA	Less than 120
Level 3	VET Level 3 Programme <sup>27</sup> General and Subject Certificate	60 NA	Less than 60
Level 2	VET Level 2 Programme <sup>28</sup> General and Subject Certificate	60 NA	Less than 60
Level 1	VET Level 1 Programme <sup>29</sup> General and Subject Certificate	40 NA	Less than 40
Introductory Level A	Preparatory Programme	30	Less than 30
Introductory Level B	Pre-entry Basic Skills Course	30	Less than 30

**Table 1: Minimum number of credits for 'Qualifications' and parameters for 'Awards'**

Fig.1: p56, Ministry for Education and Employment & National Commission for Further and Higher Education Malta (2016). *Referencing Report, 4<sup>th</sup> Edition*. NCFHE.

Total number of Hours: 3000

Mode of attendance: Full Time

Duration: 2 Years

Target audience for MCAST full-time courses is 16 to 65+

Target group: Students exiting compulsory education

The official language of instruction at MCAST is English. All notes and textbooks are in English (except for language courses which will be in the respective language being instructed). International candidates will be requested to meet English language certification requirements for access to the course.

This course will be offered at

MCAST has four campuses as follows:

**MCAST Main Campus**

Triq Kordin, Paola, Malta

All courses except for the Institute for the Creative Arts, Centre of Agriculture, Aquatics and Animal Sciences are offered here.

**Institute for the Creative Arts**

Mosta Campus

Misraħ Ghonoq Targa Gap,

Mosta

**Institute of Applied Sciences,**

**Centre of Agriculture, Aquatics and Animal Sciences,**

Luqa Road, Qormi

**Gozo Campus**

J.F. De Chambray Street

MCAST, Għajnsielem

Gozo

*Teaching, Learning and Assessment*

The programmes offered are vocational in nature and entail both theoretical lectures delivered in classes as well as practical elements that are delivered in laboratories, workshops, salons, simulators as the module requirements dictate.

Each module or unit entails a number of in person and/or online contact learning hours that are delivered by the lecturer or tutor directly (See also section 'Total Learning Hours').

Access to all resources is provided to all registered students. These include study resources in paper or electronic format through the Library and Resource Centre as well as tools, software, equipment and machinery that are provided by the respective institutes depending on the requirements of the course or module.

Students may however be required to provide consumable material for use during practical sessions and projects unless these are explicitly provided by the College.

All Units of study are assessed throughout the academic year through continuous assessment using a variety of assessment tools. Coursework tasks are exclusively based on the Learning Outcomes and Grading Criteria as prescribed in the course specification. The Learning Outcomes and Grading Criteria are communicated to the Student via the coursework documentation.

The method of assessment shall reflect the Level, credit points (ECTS) and the schedule of time-tabled/non-timetabled hours of learning of each study unit. A variety of assessment instruments, not solely Time Constrained Assignments/Exams, are used to gather and interpret evidence of Student competence toward pre-established grading criteria that are aligned to the learning outcomes of each unit of the programme of study.

Grading criteria are assessed through a number of tasks, each task being assigned a number of marks. The number of grading criteria is included in the respective Programme Specification.

The distribution of marks and assessment mode depends on the nature and objectives of the unit in question.

Coursework shall normally be completed during the semester in which the Unit is delivered.

Time-constrained assignments may be held between 8 am and 8 pm during the delivery period of a Unit, or at the end of the semester in which the Unit is completed. The dates are notified and published on the Institute notice boards or through other means of communication.

Certain circumstances (such as but not limited to the Covid 19 pandemic) may lead Institutes and Centres to hold teaching and assessment remotely (online) as per MCAST QA Policy and Standard for Online Teaching, Learning and Assessment (Doc 020) available via link <https://www.mcast.edu.mt/college-documents/>

The Programme Regulations referenced below apply. (DOC 004\* available at: link <https://www.mcast.edu.mt/college-documents/>

Total Learning Hours

The total learning hours required for each unit or module are determined as follows:

Credits (ECTS)	Indicative contact hours	Total Student workload (hrs)	Self-Learning and Assessment Hours
1	5 - 10 hrs	25 hrs	20-15 hrs*
2	10 - 20 hrs	50 hrs	40-30 hrs*
3	15 - 30 hrs	75 hrs	60-45 hrs*
4	20 - 40 hrs	100 hrs	80-60 hrs*
6	30 - 60 hrs	150 Hrs	120-90 hrs*
9	45 - 90 hrs	225 hrs	180-135 hrs*
12	60 - 120 hrs	300 hrs	240-180 hrs*

\* The 'Self-Learning and Assessment Hours' amount to the difference between the contact hours and total student workload.

Grading system

All MCAST programmes adopt a learner centred approach through the focus on Learning Outcomes. The assessment of MCAST programmes is criterion-referenced and thus assessors are required to assess learners' evidence against a pre-determined set of Learning Outcomes and assessment criteria.

For a student to be deemed to have successfully passed a unit, a minimum of 50% (grade D) must be achieved. In case of part time programmes, the student must achieve a minimum of 45% to successfully pass the unit.

All units are individually graded as follows:

A\* (90-100)

A (80-89)

B (70-79)

C (60-69)

D (50-59)

Unsatisfactory work is graded as 'U'.

Work-based learning units are graded on a Pass/Fail basis only.

Detailed information regarding the grading system may be found in the following document: DOC 004\* available at: link <https://www.mcast.edu.mt/college-documents/>

### Intake Dates

- MCAST opens calls for application once a year between July and August of each year for prospective applicants residing in MALTA.
- Applications to full-time courses from international students not residing in MALTA are accepted between April and Mid-August.
- For exact dates re calls for applications please follow this link <https://www.mcast.edu.mt/online-applications-2/>

### Course Fees

MCAST course are free for Maltese and EU candidates. International candidates coming from outside the EU need to pay fees for the respective course. Course fees are set on a per-level and course duration basis. For access to course fee structure and payment methods please visit <https://www.mcast.edu.mt/fee-payments-for-non-eu-candidates/>.

### Method of Application

Applications to full-time courses are received online via the College Management Information System. Candidates can log in using Maltese Electronic ID (eID) or European eIDAS (electronic identification and trust services) to access the system directly and create an account as the identity is verified electronically via these secure services.

Non-EU candidates need to request account creation through an online form by providing proof of identification and basic data. Once the identity is verified and the account is created the candidate may proceed with the online application according to the same instructions applicable to all other candidates.

Non-EU candidates require a study visa in order to travel to Malta and join the course applied for. For further information re study-visa please access <https://www.identitymalta.com/unit/central-visa-unit/>.

For access to instructions on how to apply online please visit <https://www.mcast.edu.mt/online-applications-2/>

Contact details for requesting further information about future learning opportunities:

### MCAST Career Guidance

Tel: 2398 7135/6

Email: [career.guidance@mcast.edu.mt](mailto:career.guidance@mcast.edu.mt)

## **Current Approved Programme Structure**

<b>Unit Code</b>	<b>Unit Title</b>	<b>ECTS</b>	<b>Year</b>	<b>Semester</b>
CDKSK-406-2001	English	6	1	1 & 2
ETMME-406-2101	Mathematics	6	1	1 & 2
ETMME-406-2102	Applied Science	6	1	1 & 2
ETMME-406-2103	Meteorology	6	1	1 & 2
ETMME-406-2104	Celestial Navigation 1	6	1	1 & 2
ETMME-402-2118	Instrumentation	2	1	2
ETMME-406-2105	Collision Regulations 1	6	1	1 & 2
ETMME-403-2106	General Ship Knowledge 1	3	1	1 & 2
ETMME-403-2107	Stability Part 1	3	1	1 & 2
ETMME-404-2108	Legislation	4	1	1 & 2
ETMME-406-2109	Coastal Navigation 1	6	1	1 & 2
ETMME-403-2111	Navigation (Bridge Simulator) 1	3	1	1 & 2
ETMME-403-2112	Radio Communications (GMDSS Simulator) 1	3	1	1 & 2
ETMME-410-2113	Celestial Navigation 2	10	2	1 & 2
ETMME-405-2114	Collision Regulations 2	5	2	1 & 2
ETMME-406-2115	General Ship Knowledge 2	6	2	1 & 2
ETMME-406-2116	Stability Part 2	6	2	1 & 2
ETMME-412-2117	Coastal Navigation 2	12	2	1 & 2
ETMME-405-2119	Cargo and Operations	5	2	1 & 2
ETMME-403-2121	Navigation (Bridge Simulator) 2	3	2	1 & 2



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ETMME-403-2122	Radio Communications (GMDSS Simulator) 2	3	2	1 & 2
ETMME-404-2110	Efficient Deck Hand	4	2	2
CDKSK-404-1915	Employability and Entrepreneurial Skills	4	2	1
CDKSK-402-2104	Community Social Responsibility	2	2	1 & 2
<b>Total ECTS</b>		<b>120</b>	<b>/</b>	

## CDKSK-406-2001: English

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### Unit Description

The main objective of this unit is to prepare students to use the English language to understand, analyse, organise and communicate specific technical knowledge by inferring meaning from, and using, embedded information, being able to evaluate information critically and communicate through different types of texts, as required by various but often specific technical contexts within the selected field of study.

The emphasis is on the processes needed to transition from use of the English language in General Education to that required for access to Higher Education.

In particular, L4 Key Skills English is targeted at learners who have completed Foundation College programmes (Levels 1 to 3) and seek to further their studies at Technical or Degree level.

In this respect, this unit recognises the necessity to meet two linguistic demands at this threshold level; strengthening students' linguistic competences to be able to communicate more specifically within their vocational area and stream and to prepare them for more rigorous academic thinking, research and writing as necessitated by degree courses.

Being introduced at this level are core and elective unit outcomes. Reading and writing outcomes are core components in this syllabus while listening and speaking are elective components. Every L4 programme must deliver the two core outcomes and any one of the two elective learning outcomes. The elective criteria to be assessed cannot be selected from and across both outcomes.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Read technical texts effectively to improve knowledge of the subject area;*
2. *Understand information presented orally in the form of recordings, or talks, discussions, seminars, interviews or presentations;*
3. *Demonstrate own understanding of the subject matter via oral presentation, mock interviews or similar oral delivery;*

4. *Write a research paper or technical report demonstrating cohesion, structure and appropriate style.*

## ETMME-406-2101: Mathematics

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### Unit Description

The unit is based on the Mathematics in Appendix 1 of the Model Course 7.03 for learners aspiring to become Officers in Charge of Navigational Watch. It covers the mathematics which is deemed necessary to obtain in depth knowledge required under various competencies of section A-II/1 and section A-II/2 of the STCW Code for a watchkeeping officer and for a master or chief mate on ships of 500 gross tonnage or more.

The topics covered are standard algebraic manipulations, graphs, proportion, variation and interpolation, geometry, trigonometry, mensuration, arcs, vectors, circle, ellipse and hyperbola and finally basic logarithms.

To reach this goal, the unit is divided into six learning outcomes which are related to algebraic manipulation, trigonometric functions, mensuration and statistical data. Through these different areas, learners will be able to develop the effective skills for information processing, reasoning, evaluation creative thinking and enquiry, all of which are fundamental skills for the problem-solving process. This will prepare learners in applying and evaluating a range of strategies to solve real-life problems which they will meet on board ships. The content in this unit enables learners to synthesise and evaluate real-life situations. Through this unit the learner will also learn to present and communicate results and conclusions effectively.

On successful completion of the unit the learners will be equipped with mathematical thinking skills which enables learners to be aware of and understand their thought process and to reassess and identify areas for development. Learners learn to evaluate, reflect about their strategies, understand and verify results when solving problems. These skills will equip learners with mathematical skills, to further their studies and for work on board ships.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Perform interpolations, algebraic manipulations and the plotting of data to interpret ship officers' tables.*
2. *Use trigonometrical functions of angles whilst applying coordinate geometry to complete chartwork and radar plotting.*

3. *Recognise mensuration, spherical triangles, circles, ellipses, and hyperbolae.*
4. *Solve problems relating to forces, moments, stresses, strains, shear forces and bending moments using the appropriate diagrams of forces and calculations.*
5. *Solve problems relating to distance, velocity, acceleration, circular motion and rotation, machines, work, energy, power and fluids.*
6. *Manipulate data using logarithms.*

## **ETMME-406-2102: Applied Science**

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### **Unit Description**

The unit is based on the Physical Science in Appendix 1 of the Model Course 7.03 for students aspiring to become Officers in Charge of Navigational Watch. It covers the the Physical Science which is deemed necessary to obtain in depth knowledge required under various competencies of section A-II/1 and section A-II/2 of the STCW Code for a watchkeeping officer and for a master or chief mate on ships of 500 gross tonnage or more.

This unit starts with the topic of heat, which includes temperature, solids, liquids and gases, heat transmission, change of state, vapours and refrigeration.

The second topic is waves sound and light.

Third topic is Magnetism and electricity, starting with safety, electrical principles, the electrical circuit, work energy and power in an electrical circuit, electromagnetic induction, capacitors, electric generators and motors, alternating current and voltage, distribution and protective devices, electrochemistry, instruments, Lenz's law and transformers.

The fourth topic is electromagnetism which is based on Faraday's law and includes the concept of electromagnetic radiation, propagation, polarization and wavelength/frequency relationship, ground and sky waves.

The fifth topic is basic chemistry for fire fighting.

The topic relating to mass, weight and force, distance velocity and acceleration, circular motion and rotation, statics, work, energy and power, machines, density, fluids, principles of Archimedes and flotation are included in the Mathematics module.

## Learning Outcomes

On completion of this unit the learner will be able to:

1. *Perform calculations related to heat transfer, properties of gases.*
2. *Discuss general physics topics related to light and sound.*
3. *Perform calculations related to magnetism and electricity.*
4. *Describe electromagnetism, electromagnetic devices and their applications.*
5. *Outline basic chemistry.*

## ETMME-406-2103: Meteorology

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### Unit Description

This unit outlines the direct relationship between weather and its resultant phenomena and the importance of safe marine navigation. The learners will have the opportunity to learn in detail about the different meteorological components, particularly those which can have an adverse impact on the maritime industry, namely Tropical Revolving Storms (TRS)/tropical cyclones, depressions, and thunderstorms just to mention a few. Prior to this however, the learners will be introduced to several weather-related topics whereby technical key terms and definitions widely-used by meteorologists will be explained in detail as well as demonstrated in class to improve the understanding of all learners. Such topics consist of the study of the atmosphere and its physical components/sub-layers; clouds and their classification (as per World Meteorological Organization (WMO) instructions); Earth's heat energy distribution in relation to its positioning, tilt, and seasons; the origin and movement of air masses; global atmospheric circulation and winds; positioning of global pressure zones and their respective climatic regimes; and also the relation between wind and the generation of sea waves. As part of the unit, learners will train and practice hands-on how to carry-out basic weather observations by making use of both meteorological instruments available, as well as by applying the theoretical knowledge discussed and delivered. By the end of this unit, the learners are expected to have a solid background in meteorology, being capable to demonstrate and explain reasons causing or contributing to the resultant state of the sky. Ultimately, the learners will be able to identify any offshore weather-related risks beforehand by analysing synoptic weather charts, applying maritime forecasts, and via radar imagery interpretation during or near inclement weather.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Recognise the basics of the atmosphere and its physical conditions.*
2. *Measure meteorological properties by using various instruments.*
3. *Interpret the weather by studying the atmospheric conditions.*
4. *Manage weather forecasting and recording for shipping.*





## ETMME-406-2104: Celestial Navigation 1

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### Unit Description

The syllabus of the Celestial Navigation Unit covers the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978 as amended chapter II, section A-II/1 and the IMO Model Course 7.03 Officer in Charge of a Navigational Watch 2014 Edition.

It is divided into two units: Celestial Navigation 1 in the first year and Celestial Navigation 2 in the second year.

At the of this unit (Celestial Navigation 1), the learners will acquire various skills like: understanding the solar system and the celestial bodies useful for navigation; calculating the Hour Angle; using the marine sextant, identifying its errors and correcting them; using the chronometer, identifying its error and correcting it to obtain the time of observation; calculating the course and distance between two positions either by performing the relevant calculations or by using the Nautical Tables; using various types of compasses and obtaining the compass error by using the celestial bodies and understanding the contents and use of the Nautical Almanac and Norie's table.

Finally, the learners will develop their understanding of the reasoning behind the processes, thus allowing them to successfully apply their underpinning knowledge at sea.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Outline the solar system and celestial bodies useful for navigation.*
2. *Solve the Hour Angle (HA) problems.*
3. *Deduce the errors of the sextant.*
4. *Evaluate the accuracy of gyro compass and magnetic compass using celestial objects.*
5. *Determine the course and distance between two positions by the parallel or plane sailing method.*

## ETMME-403-2106: General Ship Knowledge 1

Unit Level (MQF/EQF): 4

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 75

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### Unit Description

This is the first of two units about General Ship knowledge and focuses on the structure of a ship. This unit will expose Learners to the basic knowledge regarding ship dimensions and form. Content will include ship dimension and form, ship stresses, hull structure and fittings, rudders and propellers, load lines and draught marks and information about bow and stern regions.

Learners will be able to make sketches of an elevation and plan views of various ship types such as a general cargo ship, crude oil carrier and bulker showing the arrangement and illustrate a general knowledge of the primary structural members and indicate the proper names for the various parts to include holds, engine-room, peak tanks, doublebottom tanks, hatchway, tween deck and position of bulkheads, cofferdams, pump-room, cargo tanks, slop tank and permanent ballast tanks.

Upon completion of this unit the trainees should have knowledge of the principal structural members of a ship and the proper names of the various parts. Their knowledge should be such that they are capable of intelligent observation during the ordinary course of their work and could make adequate reports describing the location and nature of faults or minor damage discovered.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Describe the functions of major structural components of hull and superstructure.*
2. *Outline the function of major ship's fittings.*
3. *Explain the conditions of assignment of load lines, their maintenance and use.*
4. *Describe the function of different types of propellers and rudders.*

## ETMME-403-2107: Stability Part 1

Unit Level (MQF/EQF): 4

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 75

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### Unit Description

The syllabus of the Stability Unit covers the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978 as amended chapter II, section A-II/1 and the IMO Model Course 7.03 Officer in Charge of a Navigational Watch 2014 Edition. It is divided into two units: Stability Part 1 in the first year and Stability Part 2 in the second year.

The learners will acquire various skills such as: understanding the laws governing flotation; using the form coefficients to compare the ship's underwater form to that of regular shapes having the same major dimensions; understanding the terms Centre of Gravity (G) and Centre of Buoyancy (B); understanding the importance of the ship's hydrostatic data including Tonnes per Centimetre Immersion (TPC), Longitudinal Centre of Gravity (LCG), Vertical Centre of Gravity (VCG), Moment to Change Trim one Centimetre (MCTC), Longitudinal Centre of Buoyancy (LCB), Longitudinal Centre of Flotation (LCF), KB, KML, KMT and how these are used in stability calculations; recognizing the Load Lines assigned to a ship corresponding to ocean areas or zones, to comply with the International Convention on Load Lines, 1966; understanding the 'Curve of Statical Stability' or 'GZ Curve' as a way of representing the stability of a ship in a graphical format; understanding the three Conditions of Stability (stable, neutral, unstable); dealing with the angle of loll as a potentially dangerous condition; calculating the KM values; understanding the free surface effect, the effect of slack tanks on transverse statical stability, and the dangers of excessive free surface; solving the list and suspended weights problems and applying the principles of transverse stability to solve the trim problems and to find the final draughts.

Finally, the learners will develop their understanding of the reasoning behind the processes, thus allowing them to successfully apply their underpinning knowledge at sea.

## Learning Outcomes

On completion of this unit the learner will be able to:

1. *Outline the basic principles of hydrostatics and load line calculations.*
2. *Explain the Centre of Gravity (G) and Centre of Buoyancy (B).*
3. *Outline the principles of the transverse statical stability.*
4. *Calculate the list using the principles of transverse stability.*
5. *Calculate the trim using the principles of transverse stability.*

## **ETMME-406-2109: Coastal Navigation 1**

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### **Unit Description**

The syllabus of the Coastal Navigation Unit covers the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978 as amended chapter II, section A-II/1 and the IMO Model Course 7.03 Officer in Charge of a Navigational Watch 2014 Edition.

It is divided into two units: Coastal Navigation 1 in the first year and Coastal Navigation 2 in the second year.

At the end of this unit (Coastal Navigation 1), the learners will acquire various skills like: using charts and publications carried onboard, maintaining and keeping them up to date; understanding a basic knowledge of chart projections, the properties of the chart and its limitations; demonstrating a general knowledge about electronic charts (detailed knowledge will be given in ECDIS course); identifying the chart scale and datum; interpreting charted symbols and abbreviations on Admiralty charts; using charted objects suitable for obtaining the ship's fix position; using different methods including bearings, ranges, horizontal angles, vertical angles and running fix to determine ship's position; applying the tidal stream and wind leeway to plot the course to steer, course and speed made good; using the International Association of Lighthouse Authorities (IALA) Maritime Buoyage System, Regions "A" and "B" and appreciate their importance for safe navigation; finding the course and distance between initial and final positions using Parallel, plane or Mercator sailing; using terrestrial objects and other various methods to evaluate the accuracy of gyro/magnetic compass.

Finally, learning and teaching approaches may be enhanced by the use of ICT, NVOD, slides and models. Exercises based on the Maltese coast with early exposure to charts and chart instruments are desirable.

## Learning Outcomes

On completion of this unit the learner will be able to:

1. *Examine navigational charts.*
2. *Determine the ship's position by various methods.*
3. *Manipulate the vessel's course and speed to take account of the requirements of the passage plan.*
4. *Find the course and distance between two positions by Parallel, Plane and Mercator sailing.*
5. *Recognize the symbols and abbreviations and their use on a navigational chart.*
6. *Evaluate the accuracy of gyro compass and magnetic compass by terrestrial objects.*

## **ETMME-403-2111: Navigation (Bridge Simulator) 1**

Unit Level (MQF/EQF): 4

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 75

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### **Unit Description**

The syllabus of the Navigation (Bridge simulator) Unit covers the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978 as amended chapter II, section A-II/1 and the IMO Model Course 7.03 Officer in Charge of a Navigational Watch 2014 Edition.

Through practical sessions at the bridge simulator room, the learners will acquire various skills such as: using engines; manual and autopilot steering and procedures of changeover from manual steering to auto pilot and vice versa; keeping a proper lookout and situational awareness; setting up and operating navigational equipment including the radar, Automatic Identification System (AIS), Echosounder, Global Navigation Satellite Systems (GNSS) and Speed log; plotting critical targets manually or by the radar; making detailed interpretation and analysis regarding different situations encountered such as the head-on ships, same speed and course ships, anchoring ships, crossing ships, overtaking ships, ships being overtaken and taking appropriate actions to avoid the close-quarters situations in compliance with the Collision Regulations (COLREGs); obtaining the ship's position by various methods including cross bearings, radar ranges, GNSS and other navigational aids; navigating in various environments and areas including Traffic Separation Scheme, narrow channels and clear and restricted visibility; communicating with Master, bridge team, Engine room, other ships and coastal stations.

### **Learning Outcomes**

**On completion of this unit the learner will be able to:**

- 1. Examine the principles of keeping a safe navigational watch.*
- 2. Comply with International Regulations for Preventing Collisions at Sea.*
- 3. Use navigational equipment.*
- 4. Maintain a safe navigational watch.*



## ETMME-403-2112: Radio Communications (GMDSS Simulator)

### 1

Unit Level (MQF/EQF): 4

Credits: 3

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 75

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#### Unit Description

In this unit learners will learn and practice the Standard Marine Communication Procedure (SMCP). The SMCP includes phrases which have been developed to cover the most important safety related fields of verbal shore-to-ship (and vice versa), ship to ship, on-board and ship to air SAR communications (and Vice versa). The aim is to reduce the problem of language barriers at sea and avoid misunderstandings which can cause accidents. They will also learn about the types of communications equipment, and how to maintain watch on the distress frequencies used in all Sea Areas in the GMDSS system as required by SOLAS Chapter IV.

#### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Apply the requirements of the radio regulations (SOLAS Chapter IV) to be ensured.*
2. *Describe how the availability of radio equipment required by the regulations is to be ensured.*
3. *Transmit and receive various signals and communication messages both internally, with other ships and port authorities.*
4. *Record all incidents connected with the radio communication service which are of importance to the safety of life at sea.*

## ETMME-410-2113: Celestial Navigation 2

Unit Level (MQF/EQF): 4

Credits: 10

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 250

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### Unit Description

The syllabus of the Celestial Navigation Unit covers the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978 as amended chapter II, section A-II/1 and the IMO Model Course 7.03 Officer in Charge of a Navigational Watch 2014 Edition.

It is divided into two units: Celestial Navigation 1 in the first year and Celestial Navigation 2 in the second year.

At the end of this unit (Celestial Navigation 2), the whole syllabus of the celestial navigation will be complete.

The learners will acquire various skills like: using the sextant for taking vertical and horizontal angles; solving the PZX triangle; obtaining the observer's latitude when the celestial body is on the observer's meridian or by Polaris; obtaining the true bearing of a heavenly body on rising or setting, i.e. solves an amplitude problem; finding the ship's position by the intercept and the intercept terminal point method; using the Nautical Almanac to find the Local Mean Time (LMT) and the Equation of Time and calculating initial and final courses and distance by a great circle and composite great circle methods.

Finally, the learners will develop their understanding of the reasoning behind the processes, thus allowing them to successfully apply their underpinning knowledge at sea.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Apply the principles and concepts of the celestial sphere to navigation techniques.*
2. *Use correctly the information provided in the Nautical Almanac.*
3. *Determine the latitude of the observer by meridian altitude and Pole Star observations.*
4. *Evaluate the accuracy of gyro and magnetic compasses by Amplitude method.*
5. *Determine the position of a ship by intercept and intercept terminal point.*

6. *Explain great circle sailing including composite and limited latitude great circles.*

## **ETMME-406-2115: General Ship Knowledge 2**

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### **Unit Description**

This is the second of two units about General Ship knowledge and focuses on the structure of a ship including rudder, propellers, load lines and draught marks. This unit will expose learners to the basic knowledge regarding ship dimensions and form. Content will include ship dimension and form, ship stresses, hull structure and fittings, rudders and propellers, load lines and draught marks and information about bow and stern regions.

Learners will be able to make more detailed sketches of an elevation and plan views of various ship types such as a general cargo ship, crude oil carrier and bulker showing the arrangement and illustrate a general knowledge of the primary structural members and indicate the proper names for the various parts to include holds, engine-room, peak tanks, doublebottom tanks, hatchway, tween deck and position of bulkheads, cofferdams, pump-room, cargo tanks, slop tank and permanent ballast tanks.

Upon completion of this unit the learners should have knowledge of the principal structural members of a ship and the proper names of the various parts. Their knowledge should be such that they are capable of intelligent observation during the ordinary course of their work and could make adequate reports describing the location and nature of faults or minor damage discovered. This unit will also prepare learners for the Certificate of Competence (CoC) examinations.

### **Learning Outcomes**

**On completion of this unit the learner will be able to:**

1. *Outline the general arrangement of various types of ships.*
2. *Describe the functions of major structural components of hull and superstructure.*
3. *Analyse the function of major ship's fittings.*
4. *Examine the conditions of assignment of load lines, draught marks, their maintenance and use.*
5. *Analyse the function of different types of propellers and rudders.*



## ETMME-406-2116: Stability Part 2

Unit Level (MQF/EQF): 4

Credits: 6

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 150

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### Unit Description

The syllabus of the Stability Unit covers the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978 as amended chapter II, section A-II/1 and the IMO Model Course 7.03 Officer in Charge of a Navigational Watch 2014 Edition. It is divided into two units: Stability Part 1 in the first year and Stability Part 2 in the second year. At the end of this unit (Stability Part 2), the whole syllabus of the stability will be complete.

The learners will acquire various skills such as: constructing a curve of statical stability and identifying, from the GZ curve, the range of stability, initial GM, max GZ, angle of vanishing stability and angle of deck edge immersion; sketching and using curves of statical stability for varying conditions of stability; dealing with the angle of loll situation; using hydrostatic data, trimming table or curves and KN curves in stability calculations to determine the angle of list, final draught and Free Surface Moment (FSM); complying with International Convention on Load Lines, 1966 and performing calculations relating to the loading of a ship to the appropriate load line mark; dealing with partial loss of intact buoyancy and using the stress tables and stress calculating equipment (loadicator).

Finally, the learners will develop their understanding of the reasoning behind the processes, thus allowing them to successfully apply their underpinning knowledge at sea.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Interpret a Curve of Statical Stability for simple calculations.*
2. *Sketch the Curves of Statical Stability for use in varying conditions of stability.*
3. *Monitor the ship's stability and trim during loading, unloading or moving of weights in the port or during the voyage.*
4. *Determine the Seaworthiness of the Ship.*

## **ETMME-412-2117: Coastal Navigation 2**

Unit Level (MQF/EQF): 4

Credits: 12

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 300

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### **Unit Description**

The syllabus of the Coastal Navigation Unit covers the requirements of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) 1978 as amended chapter II, section A-II/1 and the IMO Model Course 7.03 Officer in Charge of a Navigational Watch 2014 Edition. It is divided into two units: Coastal Navigation 1 in the first year and Coastal Navigation 2 in the second year. At the end of this unit (Coastal Navigation 2), the whole syllabus of the Coastal Navigation will be complete.

The learners will acquire various skills such as making a comprehensive passage plan for the safe conduct of the ship from berth to berth; identify charted objects suitable for position fixing; using the tidal information given on a chart to determine the set and rate of the tidal stream; using traffic lanes and separation zones; obtaining and appraising information from navigational publications; using clearing marks and horizontal and vertical danger angles; using tide tables to obtain the predicted time and height of tide at standard and secondary ports worldwide; working out advanced exercises to obtain ship's position, course and speed made good, Closest Point of Approach (CPA), distance off and abeam bearing; keeping a safe Bridge watch, and gaining knowledge of current national and international regulations and guidelines for bridge watchkeeping procedures; following routine and emergency communication procedures to operate the telegraphs, instruments, Bridge Control Systems and other communication systems; keeping different kinds of logs during ocean passages, coastal and in port navigation, in line with the requirement in the company's Safety Management System (SMS); following the correct procedures for changeover from automatic to manual steering and vice versa and using time zones to calculate the correct ETA at a given ETD in plane, parallel and Mercator sailing problems.

Finally, the learners will understand the reasoning behind the processes, thus allowing them to successfully apply their underpinning knowledge at sea.

## Learning Outcomes

On completion of this unit the learner will be able to:

1. *Develop a comprehensive passage plan for the safe conduct of the ship from berth to berth.*
2. *Extract information from navigational charts and tidal publications to calculate times and heights of tides worldwide.*
3. *Use the navigational charts to solve advanced Chartwork exercises.*
4. *Outline safe watchkeeping procedures.*
5. *Solve sailings problems by using plane, parallel and Mercator sailing methods and time zones.*

## ETMME-405-2119: Cargo and Operations

Unit Level (MQF/EQF): 4

Credits: 5

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 125

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### Unit Description

The syllabus content is based on the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention). This module will prepare the learner in basic knowledge of cargo operations and securing and the related hazards.

The teaching will cover various aspects of cargo operations on various types of vessels, including tankers. This will prepare the learner to have the knowledge required in the safe handling of cargoes and related equipment on board a vessel. It will give the learner basic knowledge of the various types of cargoes handled and the securing requirements for the different cargoes and vessels. Learners will also be able to identify the safety hazards that may occur during tanker cargo operations and the related tank cleaning hazards.

For the learner to achieve full competence as an Officer In Charge of a Navigational Watch under the STCW Convention, the learner has to pass the Transport Malta written examinations and go to sea for at least 12 months. Following which s/he will be eligible to sit for the Transport Malta Oral examination and once successful in both the written and oral exams, will be issued with a Certificate of Competency to serve as an Officer in Charge of a Navigational Watch (OIC - NAV) on board vessels of 3000 GT and over.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Describe cargo operations and securing on board a ship before going to sea.*
2. *Apply the principles and knowledge of safe handling and securing of cargoes on board.*
3. *Outline loading of dangerous goods and petroleum tanker operations.*
4. *Recognise the safety aspect when entering enclosed spaces.*
5. *Apply formulae and calculations to obtain volumes and weights of cargoes.*
6. *Outline ballasting operations and damage reports.*



## CDKSK-404-1915: Employability and Entrepreneurial Skills

Unit Level (MQF/EQF): 4

Credits: 4

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 100

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### Unit Description

This unit complements the vocational and key skill units at Level 4 and provides an opportunity for learners to enhance their employability and entrepreneurial skills.

Quite often, learners tend to focus most on technical skills and competences required in a certain trade which enable them to access employment. On the other hand, employers expect employees to be appropriately skilled to follow instructions, take initiative, work effectively in a team, take a lead when necessary and more. In view of this the unit starts with an introduction to the 4<sup>th</sup> industrial revolution and proceeds to the transversal skills necessary to find employment, retain employment and advance at the place of work. Learners will be able to highlight their strengths and identify the areas that require improvement.

The rest of the unit focuses on entrepreneurial skills, a skill which is one of the most important transversal skills identified by UNESCO. Learners are introduced to methods which can be used to generate new and innovative business ideas and methods which help them evaluate ideas and choose the most feasible. Furthermore, learners will cover the various stages of product and/or service development, including market analysis, processes, pricing strategy, promotion and resources required.

Learners will work in a small team and by the end of the unit they will have the opportunity to develop a business idea which is commercially viable. Furthermore, they will present the idea to prospective investors/stakeholders.

### Learning Outcomes

On completion of this unit the learner will be able to:

1. *Understand the employability skills required for Industry 4.0*
2. *Use idea generation techniques to come up with ideas and evaluate chosen ideas*
3. *Understand the various stages of product and/or service development*
4. *Work in a team to develop a business idea which is commercially viable*

## CDKSK-402-2104: Community Social Responsibility

Unit Level (MQF/EQF): 4

Credits: 2

Delivery Mode: Fully Face-to-Face Learning

Total Learning Hours: 50

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### Unit Description

This unit focuses on Community Social Responsibility and provides an opportunity for learners to better understand themselves and the others and to establish goals in life. Community social responsibility enables learners to understand their strengths and areas for improvement and prepares them for life, employment and to become active citizens in society.

Moving away from traditional delivery of other units, learners will be empowered to take ownership of their learning process. Hence, community social responsibility will be delivered through a combination of workshops, small-group sessions with mentors and various opportunities to reflect.

The set of sessions will tackle community social responsibility skills and will mostly focus on the self, the ability to work independently and important values in life. The second set of sessions will address interpersonal skills and will focus on working with others, dealing with diversity and conflicts. Furthermore, at the end of the sessions, the learners will be introduced to the importance of active citizenship in life.

### Learning Outcomes

**On completion of this unit the learner will be able to:**

- 1. Identify personal goals through self-reflection.*
- 2. Evaluate how collaboration with others can be more effective.*
- 3. Explain the importance of giving and receiving feedback.*
- 4. Contribute actively to make a difference in society.*

*For further information, please contact us on [information@mcast.edu.mt](mailto:information@mcast.edu.mt)*