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# OPERATIONS – SEAFARER CERTIFICATION

## STANDARD OF TRAINING & ASSESSMENT

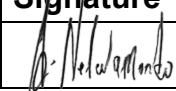
### Master and Chief Mate

### STCW Code Section A-II/2

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## Distribution

Name	Title
All	SAMSA personnel
Training Institutions, Seafarers	External Stakeholders

## Revision History

Version	Effective Date	Summary of Changes
1.0	11/10/2021	Initial publication

## Document Review


# ***Master and Chief Mate***

## **Applicable international standards**

1. This standard has been developed to meet the requirements of Masters and Chief Mates as contained in Regulation II/2 and Section A-II/2 of the STCW Code.
2. Persons who complete the Master and Chief Mate education and training programme successfully may be eligible to apply for a level 3 assessment at SAMSA towards a certificate of competency as:
  - 2.1. Chief Mate
  - 2.2. Chief Mate (<3000 GT)
  - 2.3. Master
  - 2.4. Master (<3000 GT)
3. Persons applying for a Certificate of Competency shall meet the requirements set out in the relevant application form

## **Standard of competence (Objectives of the Training)**

4. The education and training for Master and Chief Mate is for all officers on merchant seagoing vessels with propulsion power  $\geq 500$  GT. The objectives and outcomes of the training should be that candidates can fulfil the following functions:
  - 4.1. Navigation at the Management level
    - 4.1.1. Plan a voyage and conduct navigation
    - 4.1.2. Determine position and the accuracy of resultant position fix by any means
    - 4.1.3. Determine and allow for compass errors
    - 4.1.4. Coordinate search and rescue operations

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- 4.1.5. Establish watchkeeping arrangements and procedures
- 4.1.6. Maintain safe navigation through the use of information from navigation equipment and systems to assist command decision making
- 4.1.7. Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making
- 4.1.8. Forecast weather and oceanographic conditions
- 4.1.9. Respond to navigational emergencies
- 4.1.10. Manoeuvre and handle a ship in all conditions
- 4.1.11. Operate remote controls of propulsion plant and engineering systems and services
- 4.2. Cargo Handling and stowage at the management level
  - 4.2.1. Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes
  - 4.2.2. Assess reported defects and damage to cargo spaces, hatch covers and ballast tanks and take appropriate action
  - 4.2.3. Carriage of dangerous goods
- 4.3. Controlling the operation of the ship and care for persons on board at the management level
  - 4.3.1. Control trim, stability and stress
  - 4.3.2. Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and the protection of the marine environment
  - 4.3.3. Maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems

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4.3.4. Develop emergency and damage control plans and handle emergency situations

4.3.5. Use of leadership and managerial skill

4.3.6. Organize and manage the provision of medical care on board

## **Pre-requisites for entry into the course**

5. Candidates, before being accepted into this course, shall have completed the academic requirements for certification as Officer in charge of a navigational watch.

6. Where the institution has applied for accreditation for these requirements combined with those of the Officer in Charge of Navigational Watch, it shall be clear in the programme that candidates may not complete the elements covered in this STA unless they have completed the appropriate requirements for Officer in Charge of Navigational Watch.

## **Education, Training & Assessment of candidates**

7. The education and training of the seafarer must follow a systematic and logical sequence with respect to the minimum subject matter which is to be covered. The subject matter can be found in the table: *“Specification of minimum standard of competence for Master and Chief Mate on ships of 500 GT or more”*.

8. An institution applying to be accredited for this course shall:

8.1. Divide the functions set out in the Standard of Training tables into subjects.

8.2. Demonstrate how all the functional areas are covered using a logical format.

8.3. Ensure that academic subjects that cover elements under the functions of Navigation and Controlling the Operation of the Ship and Care for persons onboard (only elements of 4.3.1 above, Ship Stability & Construction), the final pass mark shall not be less than 60% and for all other subjects, the final pass mark shall not be less than 50%. Reference should be made to the *“Specification of minimum standard of competence for Master and Chief Mate on ships of 500 GT or more”* tables. Should

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any of these elements under the above functions be covered in a separate subject, the entire subject will have a minimum pass requirement of 60%.

9. To be considered a successful candidate in this course, the candidate shall have demonstrated their competence in accordance with column 3 of the competency table below. The assessment to assess such competence may consist of written assessment of theory together with a practical demonstration of competence where a candidate's conceptual understanding of the subject matter evaluated through the approach they take in applying it practically. These assessments methods may be divided into:

9.1. **Formative assessment** is assessment designed to feed into further learning and is very important for the learning process. A range of formal, non-formal, and informal formative assessment procedures are used to focus teaching and learning to improve candidate's success. Formative assessment may be used as part of a formal (final) assessment on this course.

9.2. **Practical Assessment** may be described as an assessment made by the assessor when observing the manipulation of objects to determine the competency of a candidate on a specific skill.

9.3. **Summative assessment** is conducted at the end of sections of learning or whole learning programmes, to evaluate learning related to a specific qualification, part-qualification, or professional designation. Summative assessment of learning usually has as its aim the evaluation and/or the certification of learning that has already taken place, and the extent to which this learning has been successful. There must be a formal Summative Assessment at the end of the course.

## Duration of the course

10. The duration of the course shall not be less than a single academic year.

## Maximum number candidates per course

11. The number of candidates per course will be reflected in the course accreditation and will be according to the reasonable classroom capacity of the institution, taking into

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consideration compliance with local safety regulations relating to capacity, as well as the ability to ensure proper and effective education for the candidates.

12. Practical exercises shall comprise of a ratio of one lecturer per 12 candidates with one additional facilitator.

## **Persons Conducting the Training and Assessment**

13. For this programme, the lecturers for the programme shall meet the following requirements

<b>Qualifications</b>	<b>Number</b>	<b>Experience</b>
Certificate of Competency as Chief Mate (including Chief Mate < 3000 GT)	1	12 months sea service whilst holding a Certificate of Competency as Chief Mate

14. The institution, in complying with the requirements of paragraph 13 above, shall ensure that provisions are made to ensure continuity of the programme in the absence of the required approved staff members. This shall be accomplished by having pre-approved persons as backup on the certificate of accreditation.

15. All lecturers shall undergo appropriate training for or hold a qualification in Education. Upon employment of a new lecture who does not meet this requirement, an individual development plan shall be developed to provide for such training (SAMSA will require to see this plan when approving a lecturer).

16. Alternate or equivalent qualifications may be accepted in lieu of the above with the concurrence of the relevant Senior Examiner and Chief Examiner.

## **Institution's library**

17. The Institution shall have, in addition to the course content and the library requirement for Officer of the Watch, the latest editions of following reference material in hard copy or electronic format - Where reference material is electronic, means shall be provided for candidates to access such material.

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17.1. The South African Maritime Safety Authority Act, 1998, as amended, and all the Acts administered by SAMSA under the schedule therein, and a select of Regulations related thereto.

17.2. The latest copies of the relevant International Conventions (such as SOLAS, STCW, MARPOL and MLC).

17.3. The latest relevant publications from IMO related organisations (e.g.: International Telecommunications Union, International Labour Organisation).

17.4. The latest of any relevant codes or publications which emanate from those conventions.

17.5. Appropriate textbooks, relevant for use in teaching various subject matter

17.6. Appropriate course material for various subjects shall be available for each student for the following:

17.6.1. Navigation

17.6.2. Chartwork

17.6.3. Ship Stability

17.6.4. Ship Construction

17.6.5. Meteorology

17.6.6. Maritime Law

18. Consideration should be given to non-prescribed supplementary textbooks for use in the library which may be of relevance and useful to students.

19. Supplementary notes generated by the designated subject facilitator may be appropriate for use.

## **Equipment required for training**

20. The following equipment shall be used where applicable in training:

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- 20.1. Parallel Rulers (600mm)
- 20.2. Technical Compass
- 20.3. Marine Dividers (Brass)
- 20.4. Training Charts (Original – not copied)
- 20.5. 2B Pencils
- 20.6. Nautical Tables
- 20.7. Nautical Almanac

## Requirements from training institutions

21. To be accredited for this programme, the institution must also be accredited for the Officer in Charge of a Navigational Watch programme.
22. When developing or reviewing training material for Masters and Chief Mates, this Standard shall be included in the front pages of the training material. The course material shall include a contents page<sup>1</sup>.
23. Any institution intending to deliver training as required by this standard shall be registered with the Department of Higher Education and the programme should, so far as is practicable, be approved by the appropriate Quality Council under the Higher Education Act. SAMSA will approve the institution and the programme which may not be registered as set in this paragraph. However, such institution shall commence with the registration process immediately after accreditation. Reaccreditations on or after 31 December 2021 shall be accompanied by the proof of registration or progress status regarding such registration.

<sup>1</sup> The IMO Model Course 7.01 may be used in the formulation of the course. Where the institution has followed the Model Course, such presentation shall be assess to meet both the requirements set in this STA as well as the appropriate model course. Course duration shall be equal to that on the model course plus the additional time necessary to cover additional requirement as added to the competence tables

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24. All equipment used shall conform to any relevant performance standards applicable. The standards shall be referenced from the SOLAS Convention and the associated Codes, Resolutions and Circulars, recognised guides etc. of the IMO, and textbooks.

25. For accreditation, the institution must demonstrate that they have the facilities, tools and equipment which enable them to perform all necessary activities for the course, as a minimum shall have:

25.1. A classroom, hall, boardroom (or equivalent) of sufficient capacity where the theoretical, simulated and practical elements of the course can be safely and effectively presented and practiced.

25.2. Education facilities and classrooms shall be fully compliant with local safety regulations relating to health and safety, fire regulations, including maximum classroom capacities, and be of an acceptable standard.

25.3. When making use of audio-visual material or media, the appropriate equipment should be available and be fit for use.

25.4. Education facilities must be equipped with the following:

25.4.1. Separate ablution facilities for male and female candidates.

25.4.2. Appropriate rest area.

26. When applying for accreditation, the following must be supplied as a minimum:

26.1. Proof that facilitators/instructors and/or assessors meet the requirements as defined above.

26.2. Copies of any training material given to or used by candidates attending the course meeting the requirements of this standard. Where texts books are used, copies shall be provided to SAMSA for accreditation and references to the competence table be made.

26.3. Timetable - showing time spent, and a lesson plan on each section of the training to demonstrate all the subject matter covered, meeting the minimum

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duration of the course as already stipulated above. The timetable should also stipulate how each section of the training shall be presented, i.e. lecture with slide presentation, educational video, practical demonstration, etc.

26.4. Copies of slide presentations, list of videos and practical demonstrations are to be available for perusal by the relevant SAMSA Examiner accrediting the training.

26.5. A matrix or document cross referencing subject matter required to be covered by this STA.

26.6. All documents presented as required by this section shall form part of the Quality Management System (QMS) of the institution. Changes and amendments shall be appropriately recorded, electronic media to include date stamps. All changes/updates and amendment's to be submitted to SAMSA when made.

## **Savings and Transitional arrangements**

27. The new Training Standards shall come into force on 11 October 2021.

28. Lecturers who have been previously approved for this course but do not meet the above requirements, may be permitted to carry on presenting the course, provided that there is an upskill plan in place - which shall be presented to SAMSA during the next re-accreditation and approved by Senior Examiner Deck.

29. Existing accreditations shall continue to be valid for the period of the accreditation – however, institutions are required to ensure that they take such steps as deemed necessary to become fully compliant with the revised requirements on or before 31 March 2023.

30. Any ad hoc audit of institutions affected which takes place after the initial six month period, may also include a verification that the institution is taking such steps as required to comply with this STA.

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# Specification of minimum standard of competence for Master and Chief Mate on ships of 500 GT or more

## Function: Navigation at the Management level

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
1. Plan a voyage and conduct navigation	1.1. Voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account, e.g.:	Examination and assessment of evidence obtained from one or more of the following: .1 approved in service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training  using: chart catalogues, charts, nautical publications and ship particulars	The equipment, charts and nautical publications required for the voyage are enumerated and appropriate to the safe conduct of the voyage  The reasons for the planned route are supported by facts and statistical data obtained from relevant sources and publications  Positions, courses, distances and time calculations are correct within accepted accuracy standards for navigational equipment  All potential navigational hazards are accurately identified
	.1 restricted waters		
	.2 meteorological conditions		
	.3 ice		
	.4 restricted visibility		
	.5 traffic separation schemes		
	.6 vessel traffic service (VTS) areas		
	.7 areas of extensive tidal effects		
1.2. Routeing in accordance with the General Provisions on Ships' Routeing			
1.3. Reporting in accordance with the General principles for Ship Reporting Systems and with VTS procedures			
2. Determine position and the accuracy of resultant position fix by any means	2.1. Position determination in all conditions:	Examination and assessment of evidence obtained from one or more of the following: .1 approved in service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training using: .1 charts, nautical almanac, plotting sheets, chronometer, sextant and a calculator .2 charts, nautical publications and navigational instruments (azimuth mirror, sextant, log, sounding equipment, compass) and manufacturers' manuals	The primary method chosen for fixing the ship's position is the most appropriate to the prevailing circumstances and conditions  The fix obtained by celestial observations is within accepted accuracy levels  The fix obtained by terrestrial observations is within accepted accuracy levels  The accuracy of the resulting fix is properly assessed
	.1 by celestial observations		
	.2 by terrestrial observations, including the ability to use appropriate charts, notices to mariners and other publications to assess the accuracy of the resulting position fix		
.3 using modern electronic navigational aids, with specific knowledge of their operating principles, limitations, sources of error, detection of misrepresentation of information and methods of correction to obtain accurate position fixing			

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
		.3 radar, terrestrial electronic position-fixing systems, satellite navigation systems and appropriate nautical charts and publications	The fix obtained by the use of electronic navigational aids is within the accuracy standards of the systems in use. The possible errors affecting the accuracy of the resulting position are stated and methods of minimizing the effects of system errors on the resulting position are properly applied
3. Determine and allow for compass errors	<p>3.1. Ability to determine and allow for errors of the magnetic and gyro-compasses</p> <p>3.2. Knowledge of the principles of magnetic and gyro-compasses</p> <p>3.3. An understanding of systems under the control of the master gyro and a knowledge of the operation and care of the main types of gyro-compass</p>	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>.1 approved in-service experience</p> <p>.2 approved simulator training, where appropriate</p> <p>.3 approved laboratory equipment training using: celestial observations, terrestrial bearings and comparison between magnetic and gyro-compasses</p>	The method and frequency of checks for errors of magnetic and gyro compasses ensures accuracy of information
4. Coordinate search and rescue operations	4.1. A thorough knowledge of and ability to apply the procedures contained in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>.1 approved in-service experience</p> <p>.2 approved simulator training, where appropriate</p> <p>.3 approved laboratory equipment training using: relevant publications, charts, meteorological data, particulars of ships involved, radiocommunication equipment and other available facilities and one or more of the following:</p> <p>.1 approved SAR training course</p> <p>.2 approved simulator training, where appropriate</p> <p>.3 approved laboratory equipment training</p>	The plan for coordinating search and rescue operations is in accordance with international guidelines and standards Radiocommunications are established and correct communication procedures are followed at all stages of the search and rescue operations
5. Establish watchkeeping	5.1. Thorough knowledge of content, application and intent of the International <u>Regulations</u> for Preventing Collisions at Sea, 1972, as amended	<p>Examination and assessment of evidence obtained from one or more of the following:</p> <p>.1 approved in-service experience</p>	Watchkeeping arrangements and procedures are established and maintained in compliance with international regulations and guidelines

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
arrangements and procedures	5.2. Thorough knowledge of the content, application and intent of the Principles to be observed in keeping a navigational watch	.2 approved simulator training, where appropriate	so as to ensure the safety of navigation, protection of the marine environment and safety of the ship and persons on board
6. Maintain safe navigation through the use of information from navigation equipment and systems to assist command decision making	6.1. An appreciation of system errors and thorough understanding of the operational aspects of navigational systems 6.2. Blind pilotage planning 6.3. Evaluation of navigational information derived from all sources, including radar and ARPA, in order to make and implement command decisions for collision avoidance and for directing the safe navigation of the ship 6.4. The interrelationship and optimum use of all navigational data available for conducting navigation	Examination and assessment of evidence obtained from approved ARPA simulator and one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved laboratory equipment training	Information obtained from navigation equipment and systems is correctly interpreted and analysed, taking into account the limitations of the equipment and prevailing circumstances and conditions Action taken to avoid a close encounter or collision with another vessel is in accordance with the International Regulations for Preventing Collisions at Sea, 1972, as amended  <i>Note: the institution applying for this accreditation are required to cover the theory of this Competence. They may apply for accreditation to issue an RADAR &amp; ARPA Management Certificate by meeting the requirement set in <b>STA-01-101d</b></i>
7. Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making	7.1. Management of operational procedures, system files and data, including: ----- .1 manage procurement, licensing and updating of chart data and system software to conform to established procedures ----- .2 system and information updating, including the ability to update ECDIS system version in accordance with vendor's product development ----- .3 create and maintain system configuration and backup files ----- .4 create and maintain log files in accordance with established procedures	Assessment of evidence obtained from one of the following: .1 approved ins in service experience .2 approved training ship experience .3 approved ECDIS simulator training	Operational procedures for using ECDIS are established, applied, and monitored Actions taken to minimize risk to safety of navigation  <i>Note: the institution applying for this accreditation are required to cover the theory of this Competence. They may apply for accreditation to issue an ECDIS Certificate by meeting the requirement set in <b>STA-01-101e</b></i>

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
	.5 create and maintain route plan files in accordance with established procedures		
	.6 use ECDIS logbook and track history functions for inspection of system functions, alarm settings and user responses		
	7.2. Use ECDIS playback functionality for passage review, route planning and review of system functions		
8. Forecast weather and oceanographic conditions	8.1. Ability to understand and interpret a synoptic chart and to forecast area weather, taking into account local weather conditions and information received by weather fax	Examination and assessment of evidence obtained from one or more of the following: .1 approved in service experience .2 approved laboratory equipment training	The likely weather conditions predicted for a determined period are based on all available information Actions taken to maintain safety of navigation minimize any risk to safety of the ship Reasons for intended action are backed by statistical data and observations of the actual weather conditions
	8.2. Knowledge of the characteristics of various weather systems, including tropical revolving storms and avoidance of storm centres and the dangerous quadrants		
	8.3. Knowledge of ocean current systems		
	8.4. Ability to calculate tidal conditions		
	8.5. Use all appropriate nautical publications on tides and currents		
9. Respond to navigational emergencies	9.1. Precautions when beaching a ship	Examination and assessment of evidence obtained from practical instruction, in-service experience and practical drills in emergency procedures	The type and scale of any problem is promptly identified, and decisions and actions minimize the effects of any malfunction of the ship's systems Communications are effective and comply with established procedures Decisions and actions maximize safety of persons on board
	9.2. Action to be taken if grounding is imminent, and after grounding		
	9.3. Re-floating a grounded ship with and without assistance		
	9.4. Action to be taken if collision is imminent and following a collision or impairment of the watertight integrity of the hull by any cause		
	9.5. Assessment of damage control		
	9.6. Emergency steering		
	9.7. Emergency towing arrangements and towing procedure		
	10.1. Manoeuvring and handling a ship in all conditions, including:	Examination and assessment of evidence obtained from one or more of the following:	All decisions concerning berthing and anchoring are based on a proper assessment

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
10. Manoeuvre and handle a ship in all conditions	<p>.1 manoeuvres when approaching pilot stations and embarking or disembarking pilots, with due regard to weather, tide, headreach and stopping distances</p> <p>.2 handling ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response</p> <p>.3 application of constant-rate-of-turn techniques</p> <p>.4 manoeuvring in shallow water, including the reduction in under-keel clearance caused by squat, rolling and pitching</p> <p>.5 interaction between passing ships and between own ship and nearby banks (canal effect)</p> <p>.6 berthing and unberthing under various conditions of wind, tide and current with and without tugs</p> <p>.7 ship and tug interaction</p> <p>.8 use of propulsion and manoeuvring systems</p> <p>.9 choice of anchorage; anchoring with one or two anchors in limited anchorages and factors involved in determining the length of anchor cable to be used</p> <p>.10 dragging anchor; clearing fouled anchors</p> <p>.11 dry-docking, both with and without damage</p> <p>.12 management and handling of ships in heavy weather, including assisting a ship or aircraft in distress; towing operations; means of keeping an unmanageable ship out of trough of the sea, lessening drift and use of oil</p> <p>.13 precautions in manoeuvring to launch rescue boats or survival craft in bad weather</p>	<p>.1 approved in-service experience</p> <p>.2 approved simulator training, where appropriate</p> <p>.3 approved manned scale ship model, where appropriate</p>	<p>of the ship's manoeuvring and engine characteristics and the forces to be expected while berthed alongside or lying at anchor</p> <p>While under way, a full assessment is made of possible effects of shallow and restricted waters, ice, banks, tidal conditions, passing ships and own ship's bow and stern wave so that the ship can be safely manoeuvred under various conditions of loading and weather</p>

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
	.14 methods of taking on board survivors from rescue boats and survival craft		
	.15 ability to determine the manoeuvring and propulsion characteristics of common types of ships, with special reference to stopping distances and turning circles at various draughts and speeds		
	.16 importance of navigating at reduced speed to avoid damage caused by own ship's bow wave and stern wave		
	.17 practical measures to be taken when navigating in or near ice or in conditions of ice accumulation on board		
	.18 use of, and manoeuvring in and near, traffic separation schemes and in vessel traffic service (VTS) areas		
11. Operate remote controls of propulsion plant and engineering systems and services	11.1. Operating principles of marine power plants	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate	Plant, auxiliary machinery and equipment is operated in accordance with technical specifications and within safe operating limits at all times
	11.2. Ships' auxiliary machinery		
	11.3. General knowledge of marine engineering terms		

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**Function: Cargo handling and stowage at the management level**

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
12. Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes	12.1. Knowledge of and ability to apply relevant international regulations, codes and standards concerning the safe handling, stowage, securing and transport of cargoes	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate using: stability, trim and stress tables, diagrams and stress calculating equipment	The frequency and extent of cargo condition monitoring is appropriate to its nature and prevailing conditions Unacceptable or unforeseen variations in the condition or specification of the cargo are promptly recognized and remedial action is immediately taken and designed to safeguard the safety of the ship and those on board Cargo operations are planned and executed in accordance with established procedures and legislative requirements Stowage and securing of cargoes ensures that stability and stress conditions remain within safe limits at all times during the voyage
	12.2. Knowledge of the effect on trim and stability of cargoes and cargo operations		
	12.3. Use of stability and trim diagrams and stress calculating- equipment, including automatic data-based (ADB) equipment, and knowledge of loading cargoes and ballasting in order to keep hull stress within acceptable limits		
	12.4. Stowage and securing of cargoes on board ships, including cargo handling gear and securing and lashing equipment		
	12.5. Loading and unloading operations, with special regard to the transport of cargoes identified in the Code of Safe Practice for Cargo Stowage and Securing		
	12.6. General knowledge of tankers and tanker operations		
	12.7. Knowledge of the operational and design limitations of bulk carriers		
	12.8. Ability to use all available shipboard data related to loading, care and unloading of bulk cargoes		
	12.9. Ability to establish procedures for safe cargo handling in accordance with the provisions of the relevant instruments such as IMDG Code, IMSBC Code, MARPOL 73/78 Annexes III and V and other relevant information		
	12.10. Ability to explain the basic principles for establishing effective communications and improving working relationship between ship and terminal personnel		

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
13. Assess reported defects and damage to cargo spaces, hatch covers and ballast tanks and take appropriate action	13.1. Knowledge of the limitations on strength of the vital constructional parts of a standard bulk carrier and ability to interpret given figures for bending moments and shear forces	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate using: stability, trim and stress tables, diagrams and stress calculating equipment	Evaluations are based on accepted principles, well-founded arguments and correctly carried out. The decisions taken are acceptable, taking into consideration the safety of the ship and the prevailing conditions
	13.2. Ability to explain how to avoid the detrimental effects on bulk carriers of corrosion, fatigue and inadequate cargo handling		
14. Carriage of dangerous goods	14.1. International regulations, standards, codes and recommendations on the carriage of dangerous cargoes, including the International Maritime Dangerous Goods (IMDG) Code and the International Maritime Solid Bulk Cargoes (IMSBC) Code	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved simulator training, where appropriate .3 approved specialist training	Planned distribution of cargo is based on reliable information and is in accordance with established guidelines and legislative requirements Information on dangers, hazards and special requirements is recorded in a format suitable for easy reference in the event of an incident
	14.2. Carriage of dangerous, hazardous and harmful cargoes; precautions during loading and unloading and care during the voyage		

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**Function: Controlling the operation of the ship and care for persons on board at the management level**

Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
15. Control trim, stability and stress	15.1. Understanding of fundamental principles of ship construction and the theories and factors affecting trim and stability and measures necessary to preserve trim and stability	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Stability and stress conditions are maintained within safe limits at all times
	15.2. Knowledge of the effect on trim and stability of a ship in the event of damage to and consequent flooding of a compartment and countermeasures to be taken		
	15.3. Knowledge of IMO recommendations concerning ship stability		
16. Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea, security and the protection of the marine environment	16.1. Knowledge of international maritime law embodied in international agreements and conventions	Examination and assessment of evidence obtained from one or more of the following: .1 approved in-service experience .2 approved training ship experience .3 approved simulator training, where appropriate	Procedures for monitoring operations and maintenance comply with legislative requirements Potential non-compliance is promptly and fully identified Planned renewal and extension of certificates ensures continued validity of surveyed items and equipment
	16.2. Regard shall be paid especially to the following subjects:		
	.1 certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and their period of validity		
	.2 responsibilities under the relevant requirements of the International Convention on Load Lines, 1966, as amended		
	.3 responsibilities under the relevant requirements of the International Convention for the Safety of Life at Sea, 1974, as amended		
.4 responsibilities under the International Convention for the Prevention of Pollution from Ships, as amended			

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
	.5 maritime declarations of health and the requirements of the International Health Regulations		
	.6 responsibilities under international instruments affecting the safety of the ship, passengers, crew and cargo		
	.7 methods and aids to prevent pollution of the marine environment by ships		
	.8 national legislation for implementing international agreements and conventions		
17. Maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems	17.1. Thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea)	Examination and assessment of evidence obtained from practical instruction and approved in-service training and experience	Procedures for monitoring fire detection and safety systems ensure that all alarms are detected promptly and acted upon in accordance with established emergency procedures
	17.2. Organization of fire drills and abandon ship drills		
	17.3. Maintenance of operational condition of life-saving, firefighting and other safety systems		
	17.4. Actions to be taken to protect and safeguard all persons on board in emergencies		
	17.5. Actions to limit damage and salve the ship following a fire, explosion, collision or grounding		
18. Develop emergency and damage control plans and handle emergency situations	18.1. Preparation of contingency plans for response to emergencies	Examination and assessment of evidence obtained from approved in-service training and experience	Emergency procedures are in accordance with the established plans for emergency situations
	18.2. Ship construction, including damage control		
	18.3. Methods and aids for fire prevention, detection and extinction		
	18.4. Functions and use of life-saving appliances		
19. Use of leadership and managerial skill	19.1. Knowledge of shipboard personnel management and training	Assessment of evidence obtained from one or more of the following: .1 approved training	The crew are allocated duties and informed of expected standards of work and behaviour in a manner appropriate to the individuals concerned
	19.2. A knowledge of related international maritime conventions and recommendations, and national legislation		

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
	19.3. Ability to apply task and workload management, including: ----- .1 planning and coordination ----- .2 personnel assignment ----- .3 time and resource constraints ----- .4 prioritization ----- 19.4. Knowledge and ability to apply effective resource management: ----- .1 allocation, assignment, and prioritization of resources ----- .2 effective communication on board and ashore ----- .3 decisions reflect consideration of team experiences ----- .4 assertiveness and leadership, including motivation ----- .5 obtaining and maintaining situation awareness ----- 19.5. Knowledge and ability to apply decision-making techniques: ----- .1 situation and risk assessment ----- .2 identify and generate options ----- .3 selecting course of action ----- .4 evaluation of outcome effectiveness ----- 19.6. Development, implementation, and oversight of standard operating procedures	.2 approved in-service experience .3 approved simulator training	Training objectives and activities are based on assessment of current competence and capabilities and operational requirements Operations are demonstrated to be in accordance with applicable rules Operations are planned and resources are allocated as needed in correct priority to perform necessary tasks Communication is clearly and unambiguously given and received Effective leadership behaviours are demonstrated Necessary team member(s) share accurate understanding of current and predicted vessel state and operational status and external environment Decisions are most effective for the situation Operations are demonstrated to be effective and in accordance with applicable rules
	20.1. A thorough knowledge of the use and contents of the following publications: -----		

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Column 1	Column 2	Column 3	Column 4
Competence	Knowledge, understanding and proficiency	Methods for demonstrating competence	Criteria for evaluating competence
20. Organize and manage the provision of medical care on board	.1 International Medical Guide for Ships or equivalent national publications	Examination and assessment of evidence obtained from approved training	Actions taken and procedures followed correctly apply and make full use of advice available
	.2 medical section of the International Code of Signals		
	.3 Medical First Aid Guide for Use in Accidents Involving Dangerous Goods		



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