Master's degree in Nautical and Maritime Transport Management

Section A-II/2. Specification of minimum standard of competence for masters and chief mates on ships of 500 gross tonnage or more

Function: Navigation at the management level

Competence	Knowledge,understanding and proficiency	Subject
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.: .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	280714 Navigation Safety Management and Planning Q3
2. Determine position and the accuracy of resultant position fix by any means	2.1 Position determination in all conditions: .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	280714 Navigation Safety Management and Planning Q3

3. Determine and allow for compass errors	3.1 Ability to determine and allow for errors of the magnetic and gyro-compasses 3.2 Knowledge of the principles of magnetic and gyro-compasses 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	280626 Routes & Compasses GNTM Q6
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	280703 Mangament of Maritime Safety and Pollution Prevention Q1
5. Establish watchkeeping arrangements and procedures	5.1 Thorough knowledge of content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended 5.2 Thorough knowledge of the content, application and intent of the Principles to be observed in keeping a navigational watch	280708 Bridge Procedures Q2
6. Maintain safe navigation through the use of information from navigation equipment and systems to assist command decision making Note: Training and assessment in the use of ARPA is not required for those who serve exclusively on ships not fitted with ARPA. This limitation shall be reflected in the endorsement issued to the seafarer concerned	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	280708 Bridge Procedures Q2

7. Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making Note: Training and assessment in the use of ECDIS is not required for those who serve exclusively on ships not fitted with ECDIS. This limitation shall be reflected in the endorsement issued to the seafarer concerned	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 .5 create and maintain route plan files in accordance with established procedures .6 use ECDIS log-book 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	280714 Navigation Safety Management and Planning Q3
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 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	280629- Nautical Meteorology and Oceanography Q7 GNTM 280714 Navigation Safety Management and Planning Q3

9. Respond to navigational emergencies	9.1 Precautions when beaching a ship 9.2 Action to be taken if grounding is imminent, and after grounding 9.3 Refloating 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	280703 - Management of Maritime Safety and Pollution Prevention Q1 280619 - Ship Theory and Naval Construction Q5 GNTM

10. Manoeuvre and handle a ship in all conditions	10.1 Manoeuvring and handling a ship in all conditions, including: .1 manoeuvres when approaching pilot stations and embarking or disembarking pilots, with due regard to weather, tide, headreach and stopping distances .2 handling ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response .3 application of constantrate-of-turn techniques .4 manoeuvring in shallow water, including the reduction in under-keel clearance caused by squat, rolling and pitching .5 interaction between passing ships and between own ship and nearby banks (canal effect) .6 berthing and unberthing under various conditions of wind, tide and current with and without tugs .7 ship and tug interaction .8 use of propulsion and manoeuvring systems .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 .10 dragging anchor; clearing fouled anchors .11 dry-docking, both with and without damage .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 .13 precautions in manoeuvring to launch rescue boats or survival craft in bad weather .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	280715 Advanced Ship's Manoeuvring Q3
11. Operate remote controls of propulsion plant and engineering systems and services	11.1 Operating principles of marine power plants 11.2 Ships' auxiliary machinery 11.3 General knowledge of marine engineering terms	280710 Propulsion and auxiliary systems Q2

Function: Cargo handling and stowage at the management level

Competence	Knowledge,understanding and proficiency	Subject
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 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 limitsStowage and securing of cargoes on board ships, including cargo-handling gear and securing and lashing equipment 12.4 Loading and unloading operations, with special regard to the transport of cargoes identified in the Code of Safe Practice for Cargo Stowage and Securing 12.5 General knowledge of tankers and tanker operations 12.6 Knowledge of the operational and design limitations of bulk carriers 12.7 Ability to use all available shipboard data related to loading, care and unloading of bulk cargoes 12.8 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 12.9 Ability to explain the basic principles for establishing effective communications and improving working relationship between ship and terminal personnel	280709 IMDG and stowage Q2

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 13.2 Ability to explain how to avoid the detrimental effects on bulk carriers of corrosion, fatigue and inadequate cargo handling	280716 Ship dynamics Q3
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 Carriage of dangerous, hazardous and harmful cargoes; precautions during loading and unloading and care during the voyage	280709 IMDG and stowage Q2

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

Competence	Knowledge,understanding and proficiency	Subject
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 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	280619 - Ship Theory and Naval Construction Q5 GNTM
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 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 .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	280700 - Standards for Ship Inspection and Documentation Q1

17. Maintain safety and security of the ship's crew and passengers and the operational condition of lifesaving, firefighting and other safety systems	17.1 Thorough knowledge of life-saving appliance regulations (International Convention for the Safety of Life at Sea) 17.2 Organization of fire drills and abandon ship drills 17.3 Maintenance of operational condition of life-saving, fire-fighting 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	280703 Mangament of Maritime Safety and Pollution Prevention Q1
18. Develop emergency and damage control plans and handle emergency situations	18.1 Preparation of contingency plans for response to emergencies 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	280704 Management of Integrated Systems. Safety, Environment and Quality Q1

19. Use of leadership and managerial skill	19.1 Knowledge of shipboard personnel management and training 19.2 A knowledge of related international maritime conventions and recommendations, and national legislation 19.3 Ability to apply task and workload management, including: .1 planning and co-ordination .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	280707 Leadership and management of Maritime Industries Q1
20. Organize and manage the provision of medical care on board	20.1 A thorough knowledge * of the use and contents of the following publications: .1 International Medical Guide for Ships or equivalent national publications .2 medical section of the International Code of Signals. .3 Medical First Aid Guide for Use in Accidents Involving Dangerous Goods	280708 Bridge Procedures Q2