



Detailed Syllabus

- 1. PLAN A VOYAGE AND CONDUCT NAVIGATION (5.0 hrs)**
- .1 With the aid of diagrams explain in detail how to make a voyage plan and conduct navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account;
- a) areas of restricted/confined/pilotage waters
 - b) expected meteorological conditions
 - c) encountering or navigating in ice
 - d) encountering restricted visibility
 - e) traffic separation schemes en-route
 - f) vessel traffic service (VTS) areas
 - g) areas of extensive tidal effects
 - h) navigational hazards and no go areas
 - i) making landfall
 - j) accuracy of position fixing required in critical areas
 - k) expected traffic density
 - l) ensuring adequate fuel, water and provisions
 - m) ensuring the safety of the personnel, property and the environment
 - n) ship reporting requirements in vessel traffic service (VTS) and other reporting areas
 - o) vessel condition, draught, trim and handling characteristics
- .2 Briefly explain how to monitor the progress of the voyage. (0.5 hrs)
- 2. COORDINATE SEARCH AND RESCUE (0.5 hrs)**
- .1 A thorough knowledge of and ability to apply the procedures contained in the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual
- a) Knowledge of and ability to apply the procedures contained in the IAMSAR Manual
 - i. With the aid of diagrams explain the different turns provided in the IAMSAR Manual in case of a man over board
 - ii. With the aid of diagrams explain the various search and rescue patterns
 - iii. Describe the procedure of SAR operation
 - iv. State the duties of an OSC
 - v. State the information to be provided to the SAR Mission Co-ordinator
 - b) Knowledge of helicopter rescue operations
 - i. Explain how to prepare the vessel for a helicopter rescue operation
 - ii. Describe how to manoeuvre a vessel when carrying out a helicopter rescue operation



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3. ESTABLISH WATCHKEEPING ARRANGEMENTS AND PROCEDURES

- .1 Thorough knowledge of content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended **(1.0 hrs)**
 - a) Demonstrates ability to identify various light and shapes according to COLREGS
 - b) Demonstrates ability to take appropriate actions in various situations according to COLREGS

- .2 Demonstrates a thorough knowledge of IALA buoyage system **(0.25 hrs)**

- .3 Thorough knowledge of the content, application and intent of the Principles to be observed in keeping a navigational watch **(0.5 hrs)**
 - a) Demonstrates ability to understand principles to be observed in keeping a navigational watch

4. BRIDGE RESOURCE MANAGEMENT, LEADERSHIP & TEAMWORK

(1.5 hrs)

- .1 Briefly describe the following with regard to Bridge Resource Management:
 - a) BRM Concept
 - b) Error Chain Analysis, Risk Assessment and Management, Situational Awareness
 - c) Leadership, Bridge Organization and Teamwork
 - d) Effective Communications, Challenge and Response
 - e) Judgment and Decision-Making
 - f) Emergency Situation Preparedness, Crisis and Crowd Management

- .2 Leadership & teamwork
 - a) Briefly describe the following with regards to Knowledge of shipboard personnel management and training:
 - i. Organization of crew, authority structure and responsibilities
 - ii. Cultural awareness, inherent traits, attitudes and behaviours, cross-cultural communication
 - iii. Leadership and team working
 - iv. Training, structured shipboard training programme

 - b) Briefly describe the following with regards to ability to apply task and workload management:
 - i. Planning and co-ordination
 - ii. Personnel assignment



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- iii. Human limitations
- iv. Time and resource constraints
- v. Prioritization
- vi. Management (leadership) styles

- c) Briefly describe the following with regard to knowledge and ability to apply decision-making techniques:
- i. Decision making and problem solving techniques
 - ii. Emergency management

5. FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS

- .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 **(0.5 hrs)**

Predict the weather conditions with the aid of weather charts.

- .2 Knowledge of the characteristics of various weather systems, including tropical revolving storms and avoidance of storm centres and the dangerous quadrants **(1.0 hrs)**

- a) List down the approaching signs of a TRS and state the avoiding actions to be taken when you are in the dangerous quadrant in the northern hemisphere.
- b) State the guiding principles relating to the safety of navigation in the vicinity of ice.

- .3 Knowledge of ocean current systems **(0.25 hrs)**

- a) Mark the positions and directions of the major surface currents of the world in the map given below along with their names.





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6. RESPOND TO NAVIGATIONAL EMERGENCIES (1.0 hrs)

- .1 State the precautions to be taken when beaching a ship
- .2 State the action to be taken if grounding is imminent, and after grounding
- .3 State the actions to be taken when refloating a grounded ship with and without assistance
- .4 State the actions to be taken if collision is imminent and following a collision or impairment of the watertight integrity of the hull by any cause
- .5 Briefly describe how the assessment of damage to be carried out along with control measures & list down the contents of a damage stability booklet
- .6 Describe the emergency steering procedure
- .7 Explain the emergency towing procedure and list down the contents of an Emergency towing plan

7. MANOEUVRE AND HANDLE A SHIP IN ALL CONDITIONS

- .1 Demonstrates ability to understand to manoeuvre and handle a ship in all conditions, including:
 - a) manoeuvres when approaching pilot stations and embarking or disembarking pilots, with due regard to weather, tide, head reach and stopping distances **(0.5 hrs)**
 - b) handling ship in rivers, estuaries and restricted waters, having regard to the effects of current, wind and restricted water on helm response **(0.5 hrs)**
 - c) manoeuvring in shallow water, including the reduction in under-keel clearance caused by squat, rolling and pitching **(0.5 hrs)**
 - d) interaction between passing ships and between own ship and nearby banks (canal effect) **(0.5 hrs)**
 - e) berthing and un-berthing under various conditions of wind, tide and current with and without tugs **(0.5 hrs)**
 - f) ship and tug interaction **(0.5 hrs)**
 - g) Procedures for anchoring in deep water and in shallow water **(0.25 hrs)**
 - h) Dragging anchor **(0.25 hrs)**
 - i) 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 **(1.0 hrs)**
 - j) precautions in manoeuvring to launch rescue boats or survival craft in bad weather **(0.5 hrs)**
 - k) methods of taking on board survivors from rescue boats and survival craft **(0.5 hrs)**
 - l) dry-docking, both with and without damage **(0.5 hrs)**



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8. PLAN AND ENSURE SAFE LOADING STOWAGE, SECURING, CARE DURING THE VOYAGE AND UNLOADING OF CARGOES

- .1 Knowledge of and ability to apply relevant international regulations, codes and standards concerning the safe handling, stowage, securing and transport of cargoes **(1.0 hrs)**
 - a) Checks the compliance with the load line rules of a vessel's given loaded condition.
 - b) Loads a vessel in compliance with the Minimum Freeboard Requirements of the Load Line Regulations

- .2 Stowage and securing of cargoes on board ships, including cargo-handling gear and securing and lashing equipment **(1.0 hrs)**
 - a) State the various lashing methods of timber deck cargoes as describe in the timber Code and state the timber stability criteria
 - b) By referring to a cargo securing manual, make a cargo securing plan for a given condition of a container vessel
 - c) Make two maintenance plans for deck cranes and derricks
 - d) Make a maintenance plan for hatch covers

- .3 Loading and unloading operations, with special regard to the transport of cargoes identified in the Code of Safe Practice for Cargo Stowage and Securing **(1.0 hrs)**
 - a) Briefly describes the procedures and safety precautions to be observed while Loading, Stowage, Securing and Discharge of Heavy Weights
 - b) Demonstrate ability to refer a cargo securing manual for securing of general cargo and apply thumb rules on lashing of cargoes

- .4 General knowledge of tankers and tanker operations **(2.0 hrs)**
 - a) Briefly describes the contents and application of the International Safety Guide for Oil Tankers and Terminals (ISGOTT)
 - b) Briefly describes the loading and unloading procedure of oil, onboard an oil Tanker and state, under what conditions, oil cargo residues may be discharged into sea in accordance with the MARPOL Convention
 - c) Briefly describes the loading and unloading procedure of noxious liquid substances on a chemical tanker
 - d) Briefly describes the loading and unloading procedure of gas cargoes onboard a gas tanker
 - e) Briefly describes the Common Structural Rules (CSR) of tankers

- .5 Knowledge of the operational and design limitations of bulk carriers **(1.0 hrs)**
 - a) Briefly describes the operational and design limitations of bulk carriers
 - b) Briefly describes the additional Safety Measures for Bulk Carriers as provided in SOLAS Chapter XII
 - c) Briefly describes the Common Structural Rules (CSR) of bulk carriers



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- .6 Ability to use all available shipboard data related to loading, care and unloading of bulk cargoes **(1.0 hrs)**
 - a) Briefly describes how to application of all available shipboard data related to loading, care and unloading of bulk cargoes
 - b) Briefly describes the application and the contents of Code of practice for the safe loading and unloading of bulk carriers (BLU code)
- .7 Demonstrates ability to establish procedures for safe cargo handling in accordance with the provisions of the relevant instruments such as; **(1.5 hrs)**
 - a) IMDG Code
 - b) IMSBC Code
 - c) MARPOL 73/78 Annexes III and V and other relevant information

9. CARRIAGE OF DANGEROUS GOODS

- .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 **(1.0 hrs)**
 - a) International Regulations and Codes
 - i. Demonstrate ability to refer the IGC Code
 - ii. Demonstrates ability to refer the IBC Code
- .2 Describes the safe procedures of Carriage of dangerous, hazardous and harmful cargoes; precautions during loading and unloading and care during the voyage for a selected cargo which is listed in; **(2.0 hrs)**
 - a) Dangerous Goods in Packages (IMDG Code)
 - b) Solid Bulk Cargoes (IMSBC Code)
 - c) International Code for the Safe Carriage of Grain in Bulk (International Grain Code)
- .3 Demonstrates ability to follow emergency procedures and preparedness in accordance with the above Codes

10. CONTROL TRIM, STABILITY AND STRESS

- .1 Understanding of the theories and factors affecting trim and stability and measures necessary to preserve trim and stability **(2.0 hrs)**
 - a) Calculates final draughts, trim and list of vessels for different loading conditions
 - b) Calculates approximate GM by Means of Rolling Period Tests
 - c) Calculates Shear Force, Bending Moments and Torsional Stress for given loaded conditions of box shaped vessels
- .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 **(0.5 hrs)**



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- a) Calculates effect of flooding on Transverse Stability
- b) Calculates effect of Flooding on Trim
- .3 Knowledge of IMO recommendations concerning ship stability **(1.0 hrs)**
 - a) States the stability criteria and weather criterion as provided in the IS Code
 - b) Checks the compliance with grain regulations for a given loaded condition
- .4 Briefly describes how to prepare a vessel for dry docking and safety precautions to be observed **(0.5 hrs)**
- .5 Calculates final fluid GM and draughts by means of pro-forma stability calculations **(1.0 hrs)**

11. MONITOR AND CONTROL COMPLIANCE WITH LEGISLATIVE REQUIREMENTS AND MEASURES TO ENSURE SAFETY OF LIFE AT SEA, SECURITY AND THE PROTECTION OF THE MARINE ENVIRONMENT

- .1 States the certificates and other documents required to be carried on board ships by international conventions, how they may be obtained and their period of validity **(0.5 hrs)**
- .2 Maritime declarations of health and the requirements of the International Health Regulations **(0.5 hrs)**
 - a) States the arrival documents and procedures [International Health Regulations (2005) as amended (IHR)]
- .3 Responsibilities under other international maritime law embodied in international agreements and conventions that impact on the role of management level deck officers **(3.0 hrs)**
 - a) Describes the application and contents of Maritime Labour Convention (MLC 2006)
 - b) Describes the advantages of using LOF for the ship owner and for salvo and lists the elements to be fulfilled for a salvo to claim a salvage reward when no specific contractual agreements are made between the salvo and ship owner
 - c) Cargo
 - i. Briefly describes the procedures for Receiving, and Delivering Cargo
 - ii. Briefly lists down the most commonly used charter parties used and describes the shipowners and charters obligations under each charterparty.
 - iii. Differentiate between Hague/Visby rules and Rotterdam rules
 - d) General Average and Marine Insurance
 - i. Make a sample NOP protest for a suspected cargo damage due to heavy weather and describes the importance of Extending Protest
 - ii. States the procedure of making a letter of protest and list down few examples of making letters of protests
- .4 Describes the procedures of taking a vessel to a port of refuge **(0.5 hrs)**
- .5 Briefly describes the information to be exchange between master and pilot and describes the master/pilot relationship **(0.5 hrs)**



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- .6 Lists the major breaches and minor breaches of code of conduct and states the actions to be taken as a master when a minor breach of code of conduct is occurred **(0.5 hrs)**
- .7 Responsibilities under international instruments affecting the safety of the ship, passengers, crew and cargo **(0.5 hrs)**
 - i. Briefly describes how to prepare a vessel for Port state control inspections
- .8 Methods and aids to prevent pollution of the marine environment by ships **(0.5 hrs)**
 - a) Briefly describes the contents of the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969
 - b) Briefly describes the contents of the International Convention on Civil Liability for Oil Pollution Damage, 1969 (CLC 1969)
 - c) Briefly describes the contents of the Bunkers Convention 2001
- .9 National legislation for implementing international agreements and conventions **(1.0 hrs)**
 - a) Demonstrates a knowledge of the latest Sri Lankan Merchant Shipping Notices (MSN)

12. COMPLIANCE WITH THE CHANGES OF INTERNATIONAL AND LOCAL LEGISLATION AND MARINE UPDATES RELEVANT TO SAFETY, SECURITY, POLLUTION PREVENTION & ADMIRALTY LAW

- .1 Amendments to international Conventions, Codes & guide lines (6.0 hrs)**
 - a) States amendments to STCW' 78
 - b) States and describes the amendments to SOLAS
 - c) States and describes the amendments to MARPOL
 - d) With regards to MLC 2006:
 - i. States the reasons for introducing MLC 2006
 - ii. Describes the five titles
 - iii. States the master's responsibilities
 - iv. States the company responsibilities
 - v. Lists the certificates to be carried on board according to the Convention
 - vi. Describes the PSC inspection procedure
 - j) States and describes the amendments to other international Conventions, Codes & guide lines when applicable



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- .2 Amendments to local legislations & latest M notices (2.0 hrs)**
- a) Describes the implementations and amendments introduced through Sri Lankan Merchant Shipping Notices
 - b) Describes the recent implementations and amendments to the Sri Lankan legislation relevant to personal safety, pollution prevention, security and navigational safety in the marine field
- .3 Innovations, updates & changes to marine industry (1.5 hrs)**
- a) Describes the latest innovations, updates & changes relevant to marine industry
 - b) Describes the concept of e-Loran
 - c) Describes the GALILEO satellite system
 - d) Explains the parametric rolling, effects and actions to take to reduce the effects of parametric rolling
- .4 Case studies which includes minimum of three different topics (3.0 hrs)**
- a) Analyse the most recent cases relevant to:
 - i) Navigation, COLREGS & Watchkeeping
 - ii) Pollution
 - iii) Handling of cargoes and stability
 - iv) Fire or explosion
- .5 Piracy & armed robbery updates (1.0 hrs)**
- a) By means of a chart shows the high piracy & armed robbery areas around the world
 - b) Discuss the recent cases involving piracy & armed robbery incidents
 - c) Discuss the latest systems introduced by shipping companies in tackling pirates
 - d) Describes the latest BMP if updated recently
- .6 Updates to Admiralty maritime law (3.0 hrs)**
- a) Carriage of goods by sea – Rotterdam Rules
 - i) States the purpose of introducing Rotterdam Rules
 - ii) Lists the contracts of carriages governed by the Rotterdam Rules
 - iii) States that the electronic bills of lading are functional equivalent to paper bills of lading
 - iv) States that these rules are expected to cover the goods door to door
 - v) Lists the types of cargoes governed
 - vi) Lists the occasions that a ship owner may be exempted from liability if a cargo damage has taken place



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- vii) Explains the procedure of issuing an electronic bill of lading and how it will be negotiated
- viii) Explain the procedure of delivering a cargo against an electronic bill of lading
- b) Describes the recent updates in salvage and LOF
- c) Discuss the recent cases which has over ruled former judicial decisions under Admiralty law