Part A
Course Framework

■ Scope

This **Management Level Course for Marine Deck Officers (Function 1)** covers the mandatory minimum requirement for approved education and training as provided for under Regulation II/2 of the STCW Convention, 1978, as amended for masters and chief mates on ships of 500 gross tonnage or more; and to meet the minimum standard of competence specified in Section A-II/2 of the STCW Code under Function: Navigation at the Management Level.

This course requires a total of **one hundred ten (110)** instructional hours to cover the topics enumerated in Part B – Course Outline.

■ Training Outcomes

To meet the minimum standard of competence to undertake the tasks, duties, and responsibilities at the management level specified under Table A-II/2 (Function 1) in Section A-II/2 of the STCW Code.

Specifically, at the end of the course, the trainee must be able to:

- plan a voyage and conduct navigation;
- determine position and the accuracy of resultant position fix by any means;
- determine and allow for compass errors;
- coordinate search and rescue operations;
- establish watchkeeping arrangements and procedures;
- maintain safe navigation through the use of information from navigation equipment and systems to assist command decision making;
- maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making;
- forecast weather and oceanographic conditions;
- respond to navigational emergencies;
- manoeuvre and handle a ship in all conditions; and
- operate remote controls of propulsion plant and engineering systems and services.

■ Entry Standards

Entry to the course is open to Marine Deck Officers who are holders of a Certificate of Competency (COC) under Regulation II/1 of the STCW Convention, 1978, as amended, and have an approved seagoing service as an Officer in Charge of a Navigation Watch on ships of 500 gross tonnage or more for not less than 12 months.

■ Course Certificate

Upon successful completion of the course, a Certificate of Completion shall be issued certifying a holder's compliance of the mandatory minimum requirements as specified in Regulation II/2 of the STCW Convention, 1978, as amended, and met the minimum standard of competence under Table A-II/2 Function 1 in Section A-II/2 of the STCW Code.

■ Course Intake Limitation

The number of trainees shall not exceed twenty-four (24) per class.

■ Staff Requirements

The course must have an Instructor and Assessor with a valid Certificate of Accreditation as Instructor and Assessor respectively for Function 1 of Management Level Course for Marine Deck Officers issued by the Administration.

Additionally, the Supervisor of training and assessment may be assumed by the training manager, training director or any person designated by the MTI. It shall be required that he/she has full understanding of the training program and the specific objectives for this training course, and has undergone IMO Model Course 6.09 and IMO Model Course 6.10. On the supervision in the conduct of assessment, he/she shall have full understanding of the assessment system, assessment methods and practice, and has undergone IMO Model Course 3.12.

■ Assessment

In determining the achievement of the required competence in Column 1 of Table A-II/2 under the Function: "Navigation at the Management Level", the assigned assessor shall be guided by the Intended Learning Outcomes stipulated in the Course Syllabus and the assessment tasks enumerated in the Assessment Plan.

■ Teaching Facilities and Equipment

For the theoretical aspect of the course, lectures and demonstrations shall be held in a classroom with set of functional audio-visual equipment. The classroom must have an area of at least 42 square meters (sqm) with no side less than 5 meters and no structural obstruction. If the classroom is less than 42 sqm, the number of trainees that can be accommodated will be computed based on the 1.75 sqm area per trainee requirement, provided that no side shall be less than 5 meters.

For the conduct of practical exercises and assessment, the following training facilities and equipment shall be available:

Items	Quantity
Facilities and Equipment	
• Full Mission Bridge Simulator and Mini Bridge Simulator Workstations capable of simulating a realistic environment for the following STCW competences under Table A-II/2: – plan a voyage and conduct navigation; – determine position and the accuracy of resultant position fix by any means; – determine and allow for compass errors; – coordinate search and rescue operations; – establish watchkeeping arrangements and procedures; – maintain safe navigation through the use of information from navigation equipment and systems to assist command decision making; – maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making; – forecast weather and oceanographic conditions; – respond to navigational emergencies; – manoeuvre and handle the ship in all conditions; and – operate remote controls of propulsion plant and engineering systems and services.	1 Full Mission Bridge Simulator and 5 Mini Bridge Simulator Workstations
• Instructor's Console/station capable of controlling the full mission bridge simulator and mini bridge simulator workstations	1 console/station
• Two-Way Handheld Radio	7 pcs
• A briefing/debriefing room equipped with playback system separate from the simulator room	1 room

Notes:

1. *Simulator equipment shall be compliant with the performance standards as specified in Section A-I/12 Paragraph 1 and must be capable of simulating as specified under Section B-I/12 Paragraphs 1 to 70 and 72.*
2. *The required number of workstations including the full mission bridge is sufficient for the maximum intake of 24 trainees following the prescribed workstation-to-trainee ratio of 1 full mission bridge simulator : 4 trainees and 1 mini bridge simulator workstations : 4 trainees*.
3. *Required equipment to be used by the instructor during the demonstration is already included in the specified quantity*.
4. *All equipment must be labeled with MTI's name*.
5. *In addition to the required training equipment, the following must be available and permanently marked **"FOR EMERGENCY PURPOSES ONLY"** and must be placed in an accessible area:*
   - *First aid kit;*
   - *Stretcher;*
   - *Resuscitation kit with oxygen; and*
   - *Suction unit.*

■ Teaching Aids (A)

A1 Visual Presentations

A2 Learning Tools

- Admiralty Charts and Publications
- Chart/Diagram on Navigational Equipment Link to Master Gyro
- Compass Error Book
- Manoeuvring Poster
- Pilot Chart
- Ship Routeing Chart
- Ship's Manoeuvring Characteristics
- Squat Table
- Synoptic Chart
- Tide tables
- Weather Diagram
- Weather Report
- Sample established Radiocommunication for Search and Rescue
- Sample Watchkeeping Arrangements
- Sample Ocean Currents
- Sample Case Study on Beaching

A3 Training videos related to the topics

Note: When using videos and images from external sources, the MTI shall ensure that these are obtained from reliable sources, deliver accurate information, are of high-resolution quality, adhere to educational or industry

standards, and in accordance with the approved criteria established by the Accreditation Division. Appropriate references/acknowledgements shall be indicated in the presentation slides.

A4 Sample Manuals

- Bridge Procedure Guide
- Bridge Simulator Manufacturer's/Operator's Manual
- Bridge Watchkeeping: A Practical Guide
- ECDIS Operating Manual
- Emergency Towing Arrangement Manual
- GPS Manual
- Guide to Port Entry
- Master Gyro-compass Operating Manual
- Pilot Book
- Radar/ARPA Operating Manual
- Safety Management System (SMS) Manual
- Ship Contingency Plan/Emergency Response System

A5 Sample Bridge Checklists

- Bridge Familiarization Checklist
- Arrival/Departure Checklist
- Anchoring Checklist
- Berthing/Unberthing Checklist
- Heavy Weather Checklist

A6 Exercise Sheets

A6.1 Evaluate the planned route

A6.2 Apply the approved reports

A6.3 Determine the most appropriate ship's position-fixing method to the prevailing circumstances and conditions

A6.4 Apply the true course/direction of own ship and frequently check magnetic and gyro compass errors in the prevailing circumstances and conditions

A6.5 Apply the search and rescue operation coordination procedure of IAMSAR

A6.6 Analyze the operational aspects of the Radar/ARPA and other navigational systems and Analyze the possible system errors that might occur while using the Radar/ARPA and other navigational systems

A6.7 Perform the blind pilotage

A6.8 Perform the safe navigation to avoid a close encounter or collision with another vessel and Use all the navigational data derived from navigational equipment for conducting safe navigation

A6.9 Create and maintain the system configuration and backup files, log files, and route plan files and Use the ECDIS log-book and track history functions for inspection of system functions, alarm settings and user responses

A6.10 Perform the ECDIS playback functionality

A6.11 Forecast likely weather conditions for a determined period based on all available information
A6.12 Validate the calculated tidal condition of a secondary port with the use of tide tables
A6.13 Use the appropriate nautical publications on tides and currents when passing through ocean routes
A6.14 Manoeuvre the ship to embark and disembark pilots in various conditions of loading (loaded and ballast) and weather
A6.15 Manoeuvre the ship in rivers, estuaries and restricted water in various conditions of loading (loaded and ballast) and weather
A6.16 Manoeuvre the ship using constant-rate-of-turn techniques under various conditions of loading (loaded and ballast) and weather
A6.17 Manoeuvre the ship in shallow water including the reduction in under-keel clearance caused by squat, rolling and pitching under various conditions of loading (loaded and ballast) and weather
A6.18 Manoeuvre the ship when passing close to other ships and nearby banks, considering canal effect
A6.19 Perform the berthing and unberthing of the ship, with and without tugs, under various conditions of loading (loaded and ballast) and weather
A6.20 Analyze the risks and dangers related to ship and tug interaction and Perform the ship handling as per ship‘s manoeuvring and engine characteristics
A6.21 Perform the ship handling using available propulsion and manoeuvring systems under various conditions of loading (loaded and ballast) and weather
A6.22 Perform the ship anchoring and Perform the actions to be taken when dragging anchor
A6.23 Manoeuvre the ship when approaching a shipyard for dry-docking with and without damage
A6.24 Manage and handle the ship in heavy weather, including assisting a ship or aircraft in distress, towing operations, lessening drift and use of oil
A6.25 Perform the ship handling with respect to manoeuvring and propulsion characteristics of own ship
A6.26 Perform the safe manoeuvre in and near, Traffic Separation Schemes (TSS)
A6.27 Evaluate the appropriate actions when beaching a ship
A6.28 Assess the extent of damage when a ship is grounded and decide appropriate measures and Evaluate the appropriate actions/measures to prevent further damage to the ship
A6.29 Apply the action to be taken if collision is imminent and after the collision or impairment of the watertight integrity of the hull and to mitigate risks to personnel, vessel stability, and the marine environment

■ IMO References (R)

R1 International Convention on Standards of Training, Certification and Watch

keeping (STCW) for Seafarers 1978, as amended (latest edition). International Maritime Organization.

R2 Convention on the International Regulations for Preventing Collision at Sea, 1972 (COLREGS 1972), as amended (latest edition). International Maritime Organization.

R3 International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) (latest edition). International Maritime Organization.

R4 International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended (latest edition). International Maritime Organization.

R5 International Convention on Maritime Search and Rescue, 1979 (latest edition). International Maritime Organization.

R6 International Ship and Port Facility Security Code (ISPS) (latest edition). International Maritime Organization.

R7 Maritime Labour Convention, 2006 (latest edition). International Maritime Organization.

Note: MTIs may use additional references as deemed necessary to meet the intended learning outcomes.

■ Bibliography (B)

B1 Bole, A. G., Dineley, W. O., & Nicholls, C. E. The Navigation Control Manual. (latest edition). Oxford. Heinemann Professional.

B2 Bowditch, N. *American Practical Navigator An Epitome of Navigation and Nautical Astronomy* (Latest Edition). U.S. Government Printing Office.

B3 Danton, G. *The theory and Practice of Seamanship.* (latest edition). London, Routledge.

B4 ECDIS Ltd, & Witherbys. *ECDIS Procedures Guide* (Latest Edition). Witherby Publishing Group Ltd.

B5 Frost, A. *Practical Navigation for Second Mates* (latest edition). Glasgow, Brown, Son and Ferguson.

B6 Frost, A. *The Principles and Practice of Navigation* (latest edition). Glasgow, Brown, Son and Ferguson.

B7 Great Britain. Meteorological Office. *Meteorology for Mariners* (latest edition). H.M. Stationery Office.

B8 Hensen, H. *Tug Use in Port: A Practical Guide: Including Ports, Port Approaches and Offshore Terminals* (latest edition). STC Publishing.

B9 Hooyer. *The Behaviour and Handling of Ships* (latest edition). Cornell Maritime Press.

B10 International Chamber of Shipping. *Bridge Procedures Guide* (latest edition). Marisec.

B11 Ives, E., & Cornish, M. *Reeds Maritime Meteorology* (latest edition). Bloomsbury Publishing.

B12 MacElrevey, D. H. *Shiphandling for the Mariner* (latest edition). Centreville (Maryland, USA), Cornell Maritime Press.

B13 *Manual on Oil Pollution - Section I: Prevention* (latest edition). International Maritime Organization.

B14 Merrifield, F. G. *Ship Magnetism and the Magnetic Compass: The Commonwealth and International Library of Science, Technology, Engineering and Liberal Studies: Navigation and Nautical Courses* (latest edition). Pergamon.

B15 Meteorological Office. *The Marine Observer's Handbook* (latest edition). The Stationery Office Books.

B16 Rowe, R. W. *The Shiphandler's Guide* (latest edition). The Nautical Institute.

B17 Swift, Capt. A. J. *Bridge Team Management. A Practical Guide* (latest edition). The Nautical Institute.

B18 Taylor, D. A. *Introduction to Marine Engineering* (latest edition). Butterworth-Heinemann.

B19 Tetley, L., & Calcut, D. *Electronic AIDS to Navigation: Position Fixing* (latest edition). Van Nostrand Reinhold.

B20 *The Admiralty Manual of Navigation: Principles of Navigation*. (latest edition). The Nautical Institute.

B21 UK Hydrographic Office. *ADMIRALTY Mariner's Handbook (NP100)* (latest edition). ADMIRALTY.

B22 Young, P., & Kemp, J. F. *Notes on Compass Work* (latest edition). G. Philip.

Note: The MTI may choose books from the above bibliography, or they may use the latest edition of other references provided that their contents will address the required learning outcomes. Electronic publications may be accepted as alternatives to printed copies of the latest editions and must be sourced from authorized publishers.