



भारत सरकार / GOVERNMENT OF INDIA
पत्तन, पोत परिवहन और जलमार्ग मंत्रालय
MINISTRY OF PORTS, SHIPPING AND WATERWAYS
समुद्रीय प्रशासन महानिदेशालय, मुंबई
DIRECTORATE GENERAL OF MARITIME ADMINISTRATION, MUMBAI

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August 15, 2026

DGMA EAC Branch Circular No.49 of 2026

Subject: Preparatory courses for MEO and ETO grade of CoC examinations, reg.

References:

- MS Notice No.6 of 2000
- MS Notice No.13 of 2007
- STCW Circular No. 8 of 2012
- STCW Circular No. 9 of 2012
- DGS [EAC] Circular No. 02 of 2022
- Training Circular No. 3 of 2019

Part A

I. Background

- The Directorate General of Maritime Administration (DGMA) presently prescribes structured preparatory courses to assist candidates in preparing for the Certificate of Competency examinations for the grades of Chief Engineer Officer and Second Engineer Officer (Motor/Steam), conducted through approved Maritime Training Institutes (MTIs).
- The existing syllabus for these preparatory courses was last comprehensively revised some years ago and has, since then, been updated only in a piecemeal manner. In the intervening period, there have been significant developments in ship technology, statutory requirements, and international training standards, that are not adequately reflected in the current course content.

II. STCW Requirements

Regulation I/6 of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended, requires that the training and assessment of seafarers be structured in accordance with the provisions of the Convention and the STCW Code.

Further, Regulation I/11 of the Convention requires certificate holders to demonstrate continued professional competence. Regulation III/1 prescribes the minimum standards of competence for Officers in Charge of an Engineering Watch, Regulation III/2 specifies the standards for Chief Engineer Officers and Second Engineer Officers, and Regulation III/6 prescribes the minimum standards of competence for Electro-Technical Officers.

Sections A-I/6, A-III/1, A-III/2 and A-III/6 of the STCW Code require candidates to acquire the prescribed knowledge, understanding and proficiency, and to demonstrate the competencies specified therein, prior to the issuance of the relevant Certificate of Competency.

III. Revision of the Syllabus for existing preparatory courses & assess the need for preparatory course for MEO Class IV and the ETO grade of examinations.

The Directorate General of Maritime Administration (DGMA), in exercise of the powers conferred under the Merchant Shipping Act, 2025 as amended, constituted a Technical Committee comprising representatives from the DGMA, domain experts from various industry organizations and professional bodies and approved Maritime Training Institutes (MTIs) to undertake the following:

- (a) revisit the need for preparatory courses for different grade(s) of Engg./ETO CoC examinations;
- (b) review existing training framework and course syllabi for Marine Engineer Officers and Electro-Technical Officers.

1. Review of preparatory course syllabus for Chief Engineer Officers [MEO Class I] and Second Engineer Officers [MEO Class II] on ships powered by main propulsion machinery of 3000 kW and above.

The Technical Committee has reviewed the feedback received from examiners, MTIs, ship owners/managers, recently qualified officers, and has identified the following factors that necessitate a revision of the preparatory course syllabus for the MEO Class I and MEO Class II grades:

- Amendments to the STCW Convention and Code, and updated IMO Model Courses, which require closer alignment of shore-based preparatory training with current competence tables.
- Widespread adoption of electronically controlled, dual-fuel, and hybrid propulsion systems, requiring updated technical content on engine management systems, automation, and control engineering.
- Growing use of alternative and low-carbon fuels (LNG, methanol, ammonia, biofuels) and the associated safety, bunkering, and operational procedures.
- Statutory and environmental developments, including MARPOL Annex VI updates, EEXI and CII requirements, and their implications for engine room operations and record-keeping.
- Increasing shipboard digitalization, cyber-security exposure, and condition-based/predictive maintenance practices.
- Observed trends in examination performance, including subject-wise pass percentages, indicating specific areas of candidate weakness that the current syllabus does not adequately address.
- The need to strengthen engine room resource management, leadership, and human element components in line with modern competency-based assessment.

The Committee proposed substantial revision to the preparatory course syllabus for the Chief Engineer Officer and Second Engineer Officer grades to include updated technical modules, revised course duration as detailed in the Revised Syllabus attached as Annexure's to this Circular.

2. Review of Preparatory Course requirement for Officer on Engineering Watch (MEO Class IV) & Electro-Technical Officer (ETO) CoC Examinations

The Technical Committee, after the detailed review, has submitted the following observations:

1. The candidates, especially those at the entry-level viz. MEO Class IV and ETO often struggle with initial Certificate of Competency (CoC) exams due to inadequate practical training quality, gaps in onboard vessel exposure, and lack of mentorship after completing their pre-sea courses. These candidates, after completing the minimum mandatory sea service, appear for the Certificate of Competency examinations without adequate academic revision, structured preparation, or post-sea-service technical orientation. Rote learning fails candidates during oral assessments conducted, when deep fundamental comprehension is tested
2. The Committee observed that a significant number of candidates require considerable time and multiple attempts to successfully complete the examinations, achieve the necessary level of competency, before a CoC can be awarded in accordance to the STCW Convention and Code and the Merchant Shipping (STCW) Rules, 2014, as amended.
3. The Committee recognized the need to strengthen the existing training framework to effectively bridge the gap between practical shipboard experience and the knowledge, understanding, proficiency, and competencies prescribed under the STCW Convention and the STCW Code.
4. The non-mandatory preparatory courses and the E-learning modules have not been successful in effectively stemming the failing standards of the entry level CoC examination candidate. The Committee emphasized the need for a comprehensive revision to incorporate the latest amendments to the STCW Convention and the STCW Code, the technological advancements, emerging innovations, digitalisation, automation, environmental sustainability, the human element, cyber risk management, and other developments in international maritime standards and industry best practices.

The DGMA has accepted the Committee's recommendation for introduction of mandatory preparatory courses for candidates appearing for the MEO Class-IV and Electro-Technical Officer (ETO) Certificate of Competency examinations. The revised framework is intended to strengthen candidates' technical knowledge, professional competence, and examination preparedness, thereby enhancing compliance with the STCW Convention and improving the quality of certificated marine engineering officers.

Part B

IV. Introduction of MEO Class-IV Preparatory Course

Recognizing, the need to have a structured learning programme for the candidates who after completion of the pre-sea training, have undergone the mandatory shipboard training and are eligible to appear for the Certificate of Competency as Officer in charge of an Engineering watch [MEO Class IV], the Directorate General of Maritime Administration, as recommended by the technical committee, hereby introduces a one-month Preparatory Course for the MEO Class-IV, Certificate of Competency Examination candidates.

The Preparatory Course shall be mandatory for the following categories of candidates:

- a) all candidates applying for eligibility assessment or intending to appear for the MEO Class-IV Certificate of Competency written and/or oral examination for the first time on or after 01 January 2027; and
- b) candidates who have not appeared for either written or oral examinations for any of the functions of the MEO Class-IV grade examination, in the calendar year 2026, and intend to appear written or oral examination on or after 01 January 2027.

Successful completion of the Preparatory Course shall be a pre-requisite for eligibility to appear in the MEO Class-IV Certificate of Competency examination for the above categories of candidates.

The detailed course framework and syllabus of the Preparatory Course are enclosed as **Annexure-I** to this Circular.

V. Revision of Preparatory Courses for Chief Engineer Officer [MEO Class I] and Second Engineer Officer [MEO Class II] on ships powered by main propulsion machinery of 3000 kW and above.

The Technical Committee had undertaken a comprehensive review of the existing preparatory course syllabi for the MEO Class-II and MEO Class-I Certificate of Competency examinations.

The revised syllabi have been aligned with the competency requirements prescribed under Regulation III/2 of the STCW Convention, Section A-III/2 of the STCW Code, and the associated Tables of Competence, taking into account the latest technological advancements, digitalization, automation, environmental sustainability, the human element, cyber risk management, and other developments in international maritime standards and industry best practices.

The DGMA has accepted the recommendations of the Committee and the preparatory course duration has been altered as under:

Name of the Course	Existing Duration	Revised Duration	Effective Date
MEO Class-II Preparatory Course	Four Months	Three Months	01 January 2027
MEO Class-I Preparatory Course	Two Months	No Change (Two Months)	01 January 2027

Accordingly, the following shall apply:

1. The revised MEO Class-II Preparatory Course duration of three months shall be applicable to all batches commencing on or after 01 January 2027.
2. Candidates admitted to the MEO Class-II Preparatory Course prior to 01 January 2027 shall continue under the existing four-month course duration and syllabus.
3. All Maritime Training Institutes (MTIs) approved by the Directorate General of Shipping and conducting MEO Class-I and MEO Class-II Preparatory Courses shall adopt the revised syllabi with effect from 01 January 2027.

4. MTIs shall revise their curriculum, lesson plans, teaching schedule, training material, and internal assessment methodology to ensure compliance with the revised syllabus and course duration.
5. The revised course frameworks and syllabi for the MEO Class-II and MEO Class-I Preparatory Courses are enclosed as **Annexure-II** and **Annexure-III**, respectively.

VI. Introduction of Electro-Technical Officer (ETO) Preparatory Course

The Technical Committee reviewed the existing training framework for Electro-Technical Officers prescribed under Regulation III/6 of the STCW Convention, the Merchant Shipping (Standards of Training, Certification and Watchkeeping for Seafarers) Rules, 2014 and the applicable Orders/Circulars/Notices issued by the DGMA. The Committee observed that ETO candidates generally do not undergo any structured academic revision or technical orientation after completion of the mandatory shipboard training.

The Committee further observed that the absence of a structured preparatory course has adversely affected the performance of candidates in the Electro-Technical Officer (ETO) Certificate of Competency written and oral examinations.

Accordingly, the Directorate General of Maritime Administration hereby introduces a one-month Preparatory Course for the Electro-Technical Officer (ETO) Certificate of Competency Examination.

The implementation schedule of the mandatory preparatory course for the ETO candidates shall be applicable as under:

- a) all candidates applying for assessment or appearing for the Electro-Technical Officer (ETO) Certificate of Competency written and/or oral examination for the first time on or after 01 January 2027; and
- b) candidates who have not appeared for either written or oral examinations of the Electro-Technical Officer (ETO) Certificate of Competency examination after completion of Eligibility assessment, in the last calendar year 2026, and intend to appear for the examination on or after 01 January 2027.

Successful completion of the Preparatory Course shall be a prerequisite for eligibility to appear in the Electro-Technical Officer (ETO) Certificate of Competency examination for the above categories of candidates.

The detailed course framework and syllabus of the Preparatory Course are enclosed as **Annexure-IV** to this Circular.

VII. Approval of Preparatory courses for MEO Class-IV and ETO grade

The Training Branch of the Directorate General of Maritime Administration shall issue separate Course Approval Guidelines governing, *inter alia*:

- infrastructure requirements;
- faculty qualifications and requirements;
- course duration and training hours;
- assessment and evaluation methodology;
- attendance requirements;

- quality assurance standards; and
- other criteria for the grant and continuation of course approval.

Maritime Training Institutes (MTIs) approved by the Directorate General of Maritime Administration for conducting MEO Preparatory Courses and intending to conduct the MEO Class-IV and Electro-Technical Officer (ETO) Preparatory Courses, may make the necessary arrangements to obtain approval for the respective courses and commence training from 01 November 2026, thereby enabling eligible candidates to comply with the mandatory preparatory course requirements applicable from 01 January 2027.

VIII. The candidates are required to attend the preparatory courses as mentioned above mandatorily. The e-learning module for the MEO Class IV candidates shall not be mandatory, but all CoC exam candidates are encouraged to avail the e-learning facility offered by the DGMA for enhancing their knowledge, self-assess and track their progress. The candidates who are onboard can continue to learn, update their knowledge at their convenience through e-learning facility.

This Circular is issued with the approval of the Competent Authority.



(Praveen Nair)
Dy.Chief Surveyor cum Sr.DDG(Tech)
DGMA

To

1. The Principal Officers, Mercantile Marine Department, Mumbai/Kolkata/Chennai/Kandla/Kochi.
2. The Surveyor-in-Charge, Mercantile Marine Department, Goa/Jamnagar/Port Blair/Visakhapatnam/Tuticorin/Noida/Haldia/Paradip/Mangalore
3. Indian National Shipowner's Association (INSA), Mumbai.
4. Indian Coastal Conference Shipping Association (ICCSA), Mumbai
5. Institute of Marine Engineers (India)
6. The Chief Surveyor with the Govt.of India
7. Engineering Wing
8. Training Branch
9. Hindi cell
10. Computer cell

Syllabus for MEO Class IV Preparatory Course

Duration: One month (4 weeks, 20 working days, 120 contact hours)

The Marine Engineer Officer (MEO) Class-IV Preparatory Course shall be designed to prepare candidates for the Written and Oral Examinations leading to the award of the Marine Engineer Officer Class-II Certificate of Competency (CoC) in accordance with the requirements of Regulation III/1 and the relevant provisions of the STCW Convention, 1978, as amended, including the associated sections of the STCW Code.

The course shall be conducted as a fully offline programme over a duration of twelve (4) weeks, comprising 20 working days and 120 contact hours.

The course shall comprise the following syllabus:

Marine Engineering Knowledge – General (Function 4: Marine Engineering at the Operational-Level):

Detailed study of marine boilers, covering the different types of boilers used on board ships and their applications, constructional features, boiler mountings and accessories, combustion systems and burners, safety devices, and automatic control systems. Boiler feed water arrangements, including feed pumps and deaerators, along with boiler water treatment practices aimed at preventing scale formation, corrosion, and carryover. Steam plant systems, including the principles of operation of marine steam turbines, steam distribution arrangements, and auxiliary steam services. It also covers the operation of condensers, vacuum generation and maintenance and condensate recovery processes essential for efficient steam plant operation. Basic awareness of alternative fuels: methyl/ethyl alcohol, ammonia, hydrogen etc, covering characteristics, hazards, and bunkering precautions.

Knowledge of various auxiliary machinery and systems commonly found on board ships, such as marine pumping systems and pumping arrangements, fuel oil treatment systems including heaters, filters, and service tanks, lubricating oil systems and their monitoring, and fresh water generation systems including evaporators and reverse osmosis plants. The operation and maintenance of shipboard refrigeration and air-conditioning systems. Engineering watchkeeping practices, detailing the duties and responsibilities of the engineering officer in charge of a watch. Procedures for engine room watchkeeping in both manned engine rooms and unattended machinery spaces (UMS), monitoring of machinery parameters and alarm systems, maintenance of engine room logs and reporting procedures, and adherence to safe watchkeeping practices, including proper watch handover procedures to ensure the safe and efficient operation of the ship's machinery.

Marine Engineering Knowledge – Motor (Function-4: Marine Engineering at the Operational Level):

Detailed knowledge of marine diesel engines used for ship propulsion and auxiliary power generation. The principles of operation of two-stroke and four-stroke diesel engines, covering the thermodynamic cycle, combustion process, and operational characteristics. The construction and

working of major engine components are studied in detail, including pistons, cylinder liners, piston rings, crankshafts, camshafts, connecting rods, and bearings, with emphasis on their functions, materials, and maintenance requirements. Fuel injection systems, including conventional fuel pumps and modern common rail injection systems, as well as the operation and role of engine governors and electronic control systems in maintaining engine speed and performance. The working principles and operation of turbochargers, scavenging arrangements, and air supply systems that support efficient combustion and engine performance. The course shall cover engine performance and operational practices, including the interpretation of indicator diagrams and methods of engine performance analysis.

Introduction of engine monitoring systems, key operating parameters, and performance indicators used to assess engine condition and efficiency. Procedures for starting, reversing, maneuvering, and stopping main engines are studied with reference to safe and efficient operation under different operating conditions. Study of engine safety devices, such as alarms, trips, and automatic shutdown systems designed to protect machinery and ensure safe operation. Maintenance and troubleshooting of marine diesel engines, identification and rectification of common engine faults, routine maintenance procedures, and the use of diagnostic techniques to detect abnormalities. The concept and application of engine condition monitoring and preventive maintenance practices are also covered, enabling engineering officers to maintain engine reliability, prevent failures, and ensure efficient operation of ship propulsion machinery.

Marine Engineering Knowledge (Steam) – (Function-4: Marine Engineering at the Operational Level): Principles of steam generation, thermodynamics, heat transfer and the Rankine cycle; construction, operation, maintenance and performance of marine boilers, including water-tube and fire-tube boilers, superheaters, economisers, air preheaters, boiler mountings, safety devices and automatic combustion control systems; construction, operation and maintenance of steam turbines, reduction gearing, condensers, feed-water and condensate systems, deaerators, feed pumps, circulating pumps, lubrication systems and associated auxiliary machinery; boiler water treatment, feed-water chemistry, corrosion prevention, scale control and boiler blow-down procedures; fuel oil systems, combustion equipment, burner management, boiler efficiency and energy conservation; operating procedures, watchkeeping, start-up and shut-down procedures, fault diagnosis, preventive maintenance and emergency operation of steam propulsion plants; safety precautions, statutory requirements, pressure vessels, safety valves and high-pressure steam systems; and environmental protection measures, including pollution prevention and compliance.

Marine Electro-Technology (Function-5: Electrical, Electronic and Control Engineering at the Operational Level):

Fundamentals of basic electrical engineering, including essential electrical principles such as voltage, current, resistance, power, and energy, along with the application of Ohm's law and Kirchhoff's laws in electrical circuits. Characteristics and applications of AC and DC electrical circuits, forming the foundation for understanding shipboard electrical systems.

Study of electrical machines commonly used on board ships, focusing on the construction, working principles, and operation of generators and alternators, as well as AC and DC motors used for driving various shipboard machinery and auxiliaries. Motor control systems and starting arrangements, including different starting methods and protective features. Maintenance, inspection, and fault diagnosis of electrical machines to ensure reliable and safe operation.

Shipboard electrical power low and high voltage systems, including the generation and distribution of electrical power on ships. Design and operation of main and emergency switchboards, electrical distribution networks, and essential protection systems such as circuit breakers, relays, and other electrical safety devices. The operation and maintenance of emergency generators, emergency power supply systems, battery installations, and uninterruptible power supply to ensure continuity of essential services during power failures.

Fundamentals of electronic components and circuits, such as diodes, transistors, and basic electronic assemblies. The functioning and application of sensors, transducers, and measuring instruments used for monitoring machinery parameters are also studied. Engine control and monitoring systems, as well as automation systems, including the use of programmable logic controllers (PLC) in shipboard machinery control and integrated automation systems, which play a vital role in improving efficiency, safety, and reliability in modern marine engineering operations. Cyber-risk awareness - basic cyber hygiene, vulnerabilities in automation and engine control systems.

Marine Engineering Practice (Function-6: Maintenance and Repair at the Operational Level):

Safe and effective use of various hand tools and precision measuring instruments such as micrometers, vernier calipers, dial gauges, and feeler gauges. Operation and applications of common machine tools, including lathes, drilling machines, milling machines, and grinding machines, along with basic fitting and machining techniques used for fabrication, repair, and maintenance of shipboard components.

Study of metals, alloys, and composite materials commonly used on board ships, their mechanical and chemical properties, and their suitability for different marine environments. Study of heat treatment processes, such as annealing, normalizing, hardening, and tempering, and their applications in improving the strength, durability, and performance of engineering materials.

Welding and thermal cutting techniques used in shipboard repairs and fabrication, principles and practices of gas welding and arc welding, as well as various thermal cutting methods. Welding defects, methods of inspection and quality control, and the necessary safety precautions to be observed during welding and cutting operations.

Use of Planned Maintenance Systems (PMS), techniques of condition monitoring and fault diagnosis, and systematic overhauling procedures for major marine machinery and equipment. The study of lubrication systems and basic tribology principles, enabling engineering officers to ensure proper lubrication, reduce wear and friction, and maintain the reliability and efficiency of shipboard machinery.

Ship Construction and Stability (Function-3: Controlling the Operation of the Ship and Care for Persons on Board (Operation Level)):

Ship construction, structural strength, and stability including the different types of ships and their structural arrangements, and the general layout of a vessel's hull and internal structure. Study of hull construction methods, including various framing systems such as longitudinal and transverse framing, as well as the design and function of major structural components including decks, bulkheads, double bottom tanks, and other supporting members. Overview of the materials used

in ship construction, with emphasis on their strength, durability, and suitability for marine environments.

The concept of longitudinal strength and the ability of the hull structure to withstand various loads encountered at sea. Study of shear forces and bending moments acting along the hull girder, as well as the structural stresses that arise due to different loading conditions and sea states. The principles of ship stability, including the concepts of buoyancy, center of gravity, and center of buoyancy, and their influence on a vessel's ability to remain upright. Study of metacentric height, righting moments, and factors affecting stability such as free surface effects and shifting of weights. Damage stability, including the effects of flooding and compartmentalization on the ship's survivability in the event of hull damage.

Damage control procedures, focusing on the causes of flooding and structural damage and the measures required to control and minimize their impact. Methods of flooding control, the use of pumps and watertight closures, and procedures for emergency repairs and temporary strengthening of damaged structures to maintain the safety and seaworthiness of the vessel until permanent repairs can be carried out.

Ship Safety and Environmental Protection (SSEP) (Function-3: Controlling the Operation of the Ship and Care for Persons on Board (Operation Level)):

Study of fire prevention and firefighting causes and prevention of fires in machinery spaces, classification of fires, and the selection of appropriate fire-fighting medium. Fire detection and alarm systems, as well as the operation and maintenance of fixed fire-fighting systems, including carbon dioxide (CO₂), foam, water mist, and dry powder systems commonly installed on board ships. Study of life-saving appliances and survival equipment, including the types, construction, and operation of lifeboats, life rafts, and rescue boats, as well as personal life-saving appliances such as lifejackets and immersion suits and radio lifesaving appliances such as SART and EPIRB. The use of launching appliances, survival procedures, and the responsibilities of ship personnel during emergency abandonment situations.

Study of oil pollution prevention equipment, such as oily water separators and oil discharge monitoring systems, as well as sewage treatment plants and garbage management practices on board ships. Measures for air pollution prevention, including emission control requirements and compliance with international environmental standards. Ballast Water Management System and its equipment. Operational-level competence in BWMS including operation, maintenance, logging alarms etc.

Emergency procedures and contingency management, covering engine room emergency situations such as machinery failure, fire, flooding, and other operational emergencies. Procedures for blackout prevention and restoration of power, emergency operation of steering gear, and the conduct of emergency drills and contingency planning to ensure preparedness and effective response during critical situations.

Knowledge of international maritime conventions and regulatory frameworks governing ship safety and environmental protection. Key provisions and objectives of the International Convention for the Safety of Life at Sea (SOLAS), the International Convention for the Prevention of Pollution from Ships (MARPOL), the Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Convention, the International Safety Management (ISM) Code, Maritime Labour Convention (MLC) and the International Convention on Load Lines, enabling marine engineers to understand their responsibilities in maintaining compliance with international