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**MINISTRY OF TRANSPORT AND COMMUNICATIONS**  
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**Marine Guidance ( 6 / 2023)**

**Revalidation Requirements for Certificates of Competency and Certificates of Proficiency  
expired more than five years**

**Applicable to:** Seafarers and Maritime Training Institutions

- References:
- (a) Notifications 108/2012 and 1/2022
  - (b) Notification 4/2016
  - (c) Marine Guidance 6/2021 and 1/2022

**Summary**

*This Marine Guidance serves to provide MET System and Syllabus for Updating Training Courses for Revalidation of Certificates of Competency and Certificates of Proficiency of seafarers who have not had an approved seagoing service as required by section A-I/11 of the STCW Code, and to revalidate their certificates in order to meet continued professional competence in accordance with regulation I/11 of the STCW Convention.*

1. Every master, officer and radio operator, who is serving at sea or intends to return to sea after a period ashore, shall, in order to continue to qualify for seagoing service, be required, at intervals not exceeding five years, to establish continued professional competence in accordance with section A-I/11 of the STCW Code.
2. A seafarer holding a certificate expired more than five years has not had an approved seagoing service, performing functions appropriate to the certificate held for a period of either twelve months in total during the preceding five years; or three months in total during the preceding six months immediately prior to application of his intention to return to sea.
3. These additional requirements for MET system, training, examination and certification requirements set out in the following Annexes must be added into the Marine Guidance (6/2021) for updating training course for revalidation of Certificate of Competency and Certificate of Proficiency:

- |     |   |                  |
|-----|---|------------------|
| (a) | System of MET for Deck Officers - Certificate of Competency<br>Updating Training Course for Revalidation  | Annex (PR.12.1); |
| (b) | System of MET for Chief Engineer and 2 <sup>nd</sup> Engineer Officers - Certificate of Competency<br>Updating Training Course for Revalidation | Annex (ER. 4.1); |
| (c) | System of MET for Officer in charge of an Engineering watch - Certificate of Competency<br>Updating Training Course for Revalidation            | Annex (ER. 5.1); |
| (d) | System of MET for Electro-Technical Officer - Certificate of Competency<br>Updating Training Course for Revalidation                            | Annex (ER. 6.1); |
| (e) | System of MET for Electro-Technical Rating - Certificate of Proficiency<br>Updating Training Course for Revalidation                            | Annex (ER. 7.1); |
| (f) | Syllabus of Updating Training Course for Revalidation of Deck Officers - Certificate of Competency  | Annex (PR.12.2); |
| (g) | Syllabus of Updating Training Course for Revalidation of Chief Engineer and 2 <sup>nd</sup> Engineer Officers - Certificate of Competency       | Annex (ER.4.2);  |
| (h) | Syllabus of Updating Training Course for Revalidation of Officer in charge of an Engineering watch - Certificate of Competency                  | Annex (ER.5.2);  |
| (i) | Syllabus of Updating Training Course for Revalidation of Electro-Technical Officer - Certificate of Competency                                  | Annex (ER.6.2);  |
| (j) | Syllabus of Updating Training Course for Revalidation of Electro-Technical Rating - Certificate of Proficiency                                  | Annex (ER.7.2).  |

4. The training and assessment shall be administered, supervised and monitored by the Department of Marine Administration (DMA).

5. DMA shall issue Certificate of Competency and Certificate of Proficiency to the seafarer who has successfully completed the relevant training courses.



Dr. Ko Ko Naing  
Director General (Acting)

**System of Maritime Education & Training, Examination and Certification for  
Deck Officers - Certificate of Competency  
Updating Training Course for Revalidation  
(STCW Convention 1978 as amended, Regulation I/11 &  
STCW Code Section A-I/11)**

The Updating Training Course for Revalidation of Deck Officers (Certificate of Competency), who were serving at sea or intend to return to sea while holding Certificate has expired more than 5 years ago, consists of Theory lectures and Assessment at the Approved Maritime Training Centers.

1. Every candidate for certification shall have successfully completed the updating training course for revalidation conducted at the Approved Maritime Training Centers and followed up by Assessment to meet the standard of competency specified in section A-I/11, paragraph 2 of the STCW Code.
2. The training and assessment shall be administered, supervised and monitored by the Department of Marine Administration (DMA).
3. The DMA shall issue the Deck Officers-Certificate of Competency to the candidates who have successfully completed the updating training course for revalidation as well as holding the respective valid Certificates of Proficiency as required by the STCW Convention and STCW Code.

**Teaching System and Method of Demonstration for  
Deck Officers - Certificate of Competency  
Revalidation and Updating Training Course**

Subjects	Teaching Hours	Demonstrating competence		
		Method	Hours	% Pass
Amendments in the last 10 years and future regulations	3.00	Assessment (MTC)	1	50
Amendments and Changes to important codes recommendations and guidelines	3.00			
Latest developments in machinery installations on new ships	3.00			
Advancements related to improvement in design and materials of marine equipment	6.00			
IMO strategy to reduce GHG, MEPC72 IMO emission limit New National Emission Control Area and methods	3.00			
Modern ENAs; e-Navigation;	3.00			
Law of the Sea	3.00			
Merchant Shipping Act	3.00			
Ship-terminal communications; Industrial requirements – Vetting CDI Ship-shore safety checklist	3.00			
<b>Total</b>	<b>30.0</b>			

**System of Maritime Education & Training, Examination and Certification for  
Chief Engineer Officer and Second Engineer Officers- Certificate of Competency  
(serving on seagoing ships powered by main propulsion machinery  
of above 3,000 kW or between 750 kW and 3,000 kW propulsion power)  
Updating Training Course for Revalidation  
(STCW Convention, Regulation III/2, III/3)**

The Updating Course for Revalidation of Chief Engineer and 2<sup>nd</sup> Engineer Officers (Certificate of Competency), who were serving at sea or intend to return to sea while holding Certificate has expired more than 5 years ago, consists of Theory lectures and Assessment at the Approved Maritime Training Centers.

1. Every candidate for certification shall have completed updating course for four weeks conducted in approved training centres with continuous assessment system for the following **Marine Engineering Technology** subjects:
  - (A) Marine Engineering at management level (Marine Engineering Knowledge (General));
  - (B) Electrical, Electronic and Control Engineering at management level (Marine Electro Technology);
  - (C) Maintenance and Repair at management level (Marine Engineering Knowledge (Motor));  
and
  - (D) Controlling the operation of the ship and care for persons on board at management level (Maritime Convention, Naval Architecture & Ship Construction).
  
2. have to continue the assessment Written Examination conducted by approved training centres for the following **Marine Engineering Technology** subjects:
  - (A) Marine Engineering at management level (Marine Engineering Knowledge (General));
  - (B) Electrical, Electronic and Control Engineering at management level (Marine Electro Technology);
  - (C) Maintenance and Repair at management level (Marine Engineering Knowledge (Motor));  
and
  - (D) Controlling the operation of the ship and care for persons on board at management level (Maritime Convention, Naval Architecture & Ship Construction).

(That Written Examination shall be administered, supervised and monitored by the Department of Marine Administration.)
  
3. The candidates, who have successfully completed assessment in Written Examination, shall have to sit the relevant Oral Examination conducted by the Department of Marine Administration.
  
4. The candidates shall have successfully completed the following Training Courses after passing the Oral Examination:
  - (A) Design feature of High-Voltage installation; and
  - (B) Engine Room Resources Management (Leadership and Managerial Skills) Course.
  
5. The Department of Marine Administration shall issue the relevant Certificate of Competency to the candidates who have successfully completed the Oral Examination as

well as holding the respective valid Certificates of Proficiency which are required by the STCW Convention Regulations and Codes.

**SUMMARY OF TEACHING HOURS FOR  
MARINE ENGINEERING TECHNOLOGY SUBJECTS**

No.	Subjects	Examination	Teaching hours	Total weeks
1.	Marine Engineering Knowledge (GEK)	Assessment	33.5	
2.	Maintenance and Repair (MEK)	Assessment	3	
3.	Electrical, Electronic and Control Engineering (E-Tech)	Assessment	82	
4.	Controlling the operation of the ship and care for persons on board (NA&SC)	Assessment	1.5	
Total weeks				4 weeks

**MODE AND MARKING SYSTEM FOR  
ASSESSMENT EXAMINATION**

No.	Subject	Mode of Examination	Duration of Examination	Maximum marks	Pass marks
1.	Marine Engineering Knowledge (GEK)	Written	2 Hours	100	50
2.	Maintenance and Repair (MEK)	Written	1 Hour	100	50
3.	Electrical, Electronic and Control Engineering (E-Tech)	Written	2 Hours	100	50
4.	Controlling the operation of the ship and care for persons on board (NA&SC)	Written	1 Hour	100	50

**Oral Examination system for Marine Engineering Technology subjects**

<b>No.</b>	<b>Subjects</b>	<b>Mode of Examination</b>	<b>Given marks</b>	<b>Passed marks</b>
1.	Marine Engineering Technology Subjects	Oral	100	90

**System of Maritime Education & Training, Examination and Certification for  
Officer In charge of an Engineering Watch- Certificate of Competency  
(serving on a seagoing ships powered by main propulsion machinery of 750 kW  
propulsion power or more)  
Updating Training Course for Revalidation  
(STCW Convention Regulation III/1)**

The Updating Course for Revalidation of Officer In charge of an Engineering Watch (Certificate of Competency), who were serving at sea or intend to return to sea while holding Certificate has expired more than 5 years ago, consists of Theory lectures and Assessment at the Approved Maritime Training Centers.

1. Every candidate for certification shall have completed updating course for six weeks conducted in approved training centres with continuous assessment system for the following **Marine Engineering Technology** subjects:
  - (A) Marine Engineering at operational level (Marine Engineering Knowledge (General));
  - (B) Electrical, Electronic and Control Engineering at operational level (Marine Electro Technology);
  - (C) Maintenance and Repair at operational level (Marine Engineering Knowledge (Motor)); and
  - (D) Controlling the operation of the ship and care for persons on board at operational level (Maritime Convention, Naval Architecture & Ship Construction)
2. have successfully completed the assessment Written Examination conducted by Training Centres for the following **Marine Engineering Technology** subjects:
  - (A) Marine Engineering at operational level (Marine Engineering Knowledge (General));
  - (B) Electrical, Electronic and Control Engineering at operational level (Marine Electro Technology);
  - (C) Maintenance and Repair at operational level (Marine Engineering Knowledge (Motor)); and
  - (D) Controlling the operation of the ship and care for persons on board at operational level (Maritime Convention, Naval Architecture & Ship Construction)  
(That Written Examination shall be administered, supervised and monitored by the Department of Marine Administration.)
3. The candidates who have successfully completed assessment in Written Examination shall have to sit the Oral Examination conducted by the Department of Marine Administration.
4. The candidates shall have successfully completed the following Training Courses after passing the Oral Examination:
  - (A) Operational Principles of High-Voltage installation; and
  - (B) Engine Room Resources Management (Leadership and Teamworking Skills) Course.
5. The Department of Marine Administration shall issue Marine Engineer Officer Class III Certificate of Competency to the candidates who have successfully completed the Oral

Examination as well as holding the respective valid Certificates of Proficiency which are required by the STCW Convention Regulations and Codes.

**SUMMARY OF TEACHING HOURS FOR  
MARINE ENGINEERING TECHNOLOGY SUBJECTS**

No.	Subjects	Examination	Teaching hours	Total Weeks
1.	Marine Engineering Knowledge (GEK)	Assessment	33	
2.	Maintenance and Repair (MEK)	Assessment	19.5	
3.	Electrical, Electronic and Control Engineering (E-Tech)	Assessment	75	
4.	Controlling the operation of the ship and care for persons on board (NA&SC)	Assessment	52	
Total weeks				6 weeks

**MODE AND MARKING SYSTEM FOR  
ASSESSMENT EXAMINATION**

No.	Subject	Mode of Examination	Duration of Examination	Maximum marks	Pass marks
1.	Marine Engineering Knowledge (GEK)	Written	2 Hours	100	50
2.	Maintenance and Repair (MEK)	Written	2 Hours	100	50
3.	Electrical, Electronic and Control Engineering (E-Tech)	Written	2 Hours	100	50
4.	Controlling the operation of the ship and care for persons on board (NA&SC)	Written	1 Hour	100	50

**Oral Examination system for Marine Engineering Technology subjects**

No.	Subjects	Mode of Examination	Given marks	Passed marks
1.	Marine Engineering Technology Subjects	Oral	100	90



**System of Maritime Education & Training, Examination and Certification for  
Electro-Technical Officer (ETO) - Certificate of Competency  
(serving on a seagoing ships powered by main propulsion machinery of 750 kW  
propulsion power or more)  
Updating Training Course for Revalidation  
(STCW Convention, Regulation III/6)**

The Updating Course for Revalidation of existing Electrical-Engineer or Electro-Technical Officer (Certificate of Competency), who were serving at sea or intend to return to sea while holding Certificate has expired more than 5 years ago, consists of Theory lectures and Assessment at the Approved Maritime Training Centers.

1. Every candidate for certification shall have completed ETO updating course for 1 month conducted in approved training centres with continuous assessment system for the following **Marine Electro Technology and Supporting Knowledge** subjects:
  - (A) Electrical, electronics and control engineering at operational level;
  - (B) Maintenance, repair at operational level;
  - (C) General engineering knowledge at operational level and;
  - (D) Controlling the operation of the ship and care for persons on board at operational level.
  
2. The candidates, who have successfully completed the ETO updating course, shall have to continue the assessment Examination conducted by Training Centre for the following **Marine Electro Technology** subjects:
  - (A) Electrical, electronics and control engineering at operational level;
  - (B) Maintenance, repair at operational level;
  - (C) General engineering knowledge at operational level and;
  - (D) Controlling the operation of the ship and care for persons on board at operational level.  
  
(Assessment Examinations shall be administered, supervised and monitored by the Department of Marine Administration.)
  
3. The candidates who have successfully completed assessment in Written Examination shall have to sit the Oral Examination conducted by the Department of Marine Administration.
  
4. The candidates shall have successfully completed the following Training Courses after passing the Oral Examination:
  - (A) Operate and Maintain High Voltage power Systems; and
  - (B) Engine Room Resources Management (Leadership and Teamworking Skills) Course.
  
5. The Department of Marine Administration shall issue Electro-Technical Officer Certificate of Competency to the candidates who have successfully completed the Oral Examination as well as holding the respective valid Certificates of Proficiency which are required by the STCW Convention Regulations and Codes.

**SUMMARY OF TEACHING HOURS FOR  
MARINE ELECTRO-TECHNOLOGY SUBJECTS**

No.	Subjects	Examination	Teaching hours	Total weeks
1.	Electrical , Electronics and Control Engineering	Assessment	30	
2.	Maintenance and Repair	Assessment	54	
3.	General Engineering Knowledge	Assessment	24	
4.	Controlling the operation of ship and care for persons onboard	Assessment	12	
Total weeks				4 weeks

**MODE AND MARKING SYSTEM FOR  
ELECTRO-TECHNICAL OFFICER CoC EXAMINATION**

No.	Subject	Mode of Examination	Duration of Examination	Maximum marks	Pass marks
1.	Electrical , Electronics and Control Engineering	Written	2 Hours	100	50
2.	Maintenance and Repair	Written	2 Hours	100	50
3.	General Engineering Knowledge	Written	1 Hour	100	50
4.	Controlling the operation of ship and care for persons onboard	Written	1 Hour	100	50

**Oral Examination system for Marine Electro technology subjects**

No.	Subjects	Mode of Examination	Given marks	Passed marks
1.	Marine Engineering Technology Subjects	Oral	100	90

**System of Maritime Education & Training, Examination and Certification for  
Electro-Technical Rating - Certificate of Proficiency  
(serving on a seagoing ships powered by main propulsion machinery of 750 kW propulsion  
power or more)  
Updating Training Course  
(STCW Convention, Regulation III/7)**

The Updating Course for Revalidation of existing Assistant Electrical-Officer or Electro-Technical Rating (Certificate of Proficiency), who were serving at sea or intend to return to sea while holding Certificate has expired more than 5 years ago, consists of Theory lectures and Assessment at the Approved Maritime Training Centers.

1. Every candidate for certification shall have completed Electro-Technical Rating updating course for 1 month conducted in approved training centres with continuous assessment system for the following **Electro-Technical Engineering Knowledge** subjects:
  - (A) Electrical, electronics and control engineering at support level;
  - (B) Maintenance and repair at support level; and
  - (C) Controlling the operation of the ship and care for persons on board at support level.

(or)

have completed approved ETO workshop skills training course for 4 months conducted in approved training centres with continuous assessment system for the following **Marine Electro-Technology and Supporting Knowledge Practical** subjects:

- (A) Electrical, electronics and control engineering at operational level;
- (B) Maintenance and repair at operational level;
- (C) General engineering knowledge at operational level; and
- (D) Controlling the operation of the ship and care for persons on board at operational level.

have to continue the assessment written examination conducted by Training Centre for **Electro-Technical Engineering Knowledge** subjects.

(That written examination shall be administered, supervised and monitored by the Department of Marine Administration.)

2. The candidates, who have successfully completed assessment in Written Examination, shall have to sit the Oral Examination conducted by the Department of Marine Administration.
3. The Department of Marine Administration shall issue Electro-Technical Rating Certificate of Proficiency to the candidates who have successfully completed the Oral Examination.

**SUMMARY OF TEACHING HOURS FOR  
ELECTRO-TECHNICAL ENGINEERING KNOWLEDGE SUBJECTS  
(ELECTRO-TECHNICAL RATING UPDATING COURSE)**

No.	Subjects	Examination	Teaching Hours	Total weeks
1.	Electrical , Electronics and Control Engineering	Assessment	66	
2.	Maintenance and Repair	Assessment	39	
3.	Controlling the operation of ship and care for persons	Assessment	15	
Total weeks			120 hours	4 weeks

**MODE AND MARKING SYSTEM FOR  
ELECTRO-TECHNICAL RATING WRITTEN EXAMINATION**

No.	Subject	Mode of Examination	Duration of Examination	Maximum marks	Pass marks
1.	Electro-Technical Engineering Knowledge	Training Centre's Written Exam	3 Hours	100	50

**OR**

**SUMMARY OF TEACHING HOURS FOR  
MARINE ELECTRO TECHNOLOGY AND SUPPORTING  
KNOWLEDGE PRACTICAL SUBJECTS  
(ELECTRO-TECHNICAL OFFICER WORKSHOP SKILLS TRAINING COURSE)**

No.	Subjects	Examination	Teaching Hours	Total weeks
1.	Electrical , Electronics and Control Engineering	Assessment	292	9.7
2.	Maintenance and Repair	Assessment	115	3.9
3.	General Engineering Knowledge	Assessment	100	3.3
4.	Controlling the operation of ship and care for persons	Assessment	12	0.4
Total weeks				17.3 (4 months)

**EXAMINATION SYSTEM FOR MARINE ELECTRO TECHNOLOGY AND  
SUPPORTING KNOWLEDGE PRACTICAL SUBJECTS**

<b>No.</b>	<b>Subject</b>	<b>Examination</b>	<b>Maximum marks</b>	<b>Pass marks</b>
1.	Electrical, Electronics and Control Engineering	continuous assessment	100	70
2.	Maintenance and Repair	continuous assessment	100	70
3.	General Engineering Knowledge	continuous assessment	100	60
4.	Controlling the operation of ship and care for persons	continuous assessment	100	60

**MODE AND MARKING SYSTEM FOR  
ELECTRO-TECHNICAL RATING ORAL EXAMINATION**

<b>No.</b>	<b>Subject</b>	<b>Mode of Examination</b>	<b>Duration of Examination</b>	<b>Maximum marks</b>	<b>Pass marks</b>
1.	Oral Examination	DMA		100	90

**SYLLABUS OF UPDATING TRAINING COURSE FOR REVALIDATION OF  
DECK OFFICERS-  
CERTIFICATE OF COMPETENCY**

**Latest and upcoming changes in IMO and ILO conventions**

- 1.1. International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974)
- 1.2. Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974 (SOLAS PROT 1988)
- 1.3. Codes and other instruments made mandatory under SOLAS
  - 1.3.1. Use of the safety-related provisions of the Polar Code mandatory
  - 1.3.2. Amendments to the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended
  - 1.3.3. Code for Ships Operating in Polar Water (Polar Code)
  - 1.3.4. Amendments to the International Code for the Enhanced Programme of Inspections during Surveys of Bulk Carriers and Oil Tankers, 2011 (2011 ESP Code)
  - 1.3.5. Amendments to the International Convention for the Safety of Life at Sea, 1974, as amended
  - 1.3.6. Requirements for maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and Rescue boats, launching appliances and release gear
  - 1.3.7. Amendments to the International Convention for the Safety of Life at Sea, 1974, as amended: Protection against noise, boiler space foam type extinguisher
  - 1.3.8. Amendments to the International Convention for the Safety of Life at Sea, 1974, as amended: Performance standard for protective coatings for dedicated seawater ballast tanks in all types of ships and double-side skin spaces of bulk carriers
  - 1.3.9. Amendments to the International Life-Saving Appliance (LSA) Code: Launching and Embarkation appliance
  - 1.3.10. Amendments to the International Life-Saving Appliance (LSA) Code: Survival Craft, Launching and Embarkation Appliances
  - 1.3.11. Amendments to the Protocol of 1988 relating to the International Convention for the Safety of Life at Sea, 1974: IGF code and ship using low Sulphur
  - 1.3.12. International Code of Safety for Ships using Gases or other Low-flashing Point Fuels (IGF Code)
  - 1.3.13. Amendments to the International Code of Safety for Ships using Gases or other Low-flashing Point Fuels (IGF Code)
  - 1.3.14. Amendments to the International Code of Safety for Ships using Gases or other Low-flashing Point Fuels (IGF Code)
  - 1.3.15. Amendments to the International Maritime Dangerous Goods (IMDG) Code

- 1.3.16. Adoption of International Maritime Solid Bulk Cargoes (IMSBC) Code
- 1.3.17. Amendments to the International Maritime Solid Bulk Cargoes (IMSBC) Code
- 1.3.18. Areas for improvement to avoid detentions. (Machinery breakdown/ personal injury)
- 1.3.19. International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code): Guidelines on Maritime Cyber Risk Management
- 1.4. International Convention for the Prevention of Pollution from Ships, 1973, as Modified by the Protocol of 1978 relating thereto (MARPOL)
- 1.5. Codes made mandatory under MARPOL 73/78
  - 1.5.1. Guidelines of the development of a Ship Energy Efficiency Management Plan (SEEMP)
  - 1.5.2. Guidelines for Port State Control under MARPOL Annex VI Chapter 3
  - 1.5.3. Amendments to the Annex of the International Convention for the Prevention of Pollution from Ships, 1973, as amended by the Protocol of 1978 relating thereto: Amendments to MARPOL Annex I
  - 1.5.4. Amendments to the Annex of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Amendments to MARPOL Annex V
  - 1.5.5. Amendments to the Annex of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Amendments to MARPOL Annexes I, II and V (Electronic Record Books)
  - 1.5.6. Amendments to the Annex of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Amendments to MARPOL Annex II (Cargo residues and tank washings of persistent floating products)
  - 1.5.7. Amendments to the Annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Topic 1.5 ; Codes made mandatory under MARPOL 73/78: 2016 amendments (MARPOL Annex VI, regulations 13
  - 1.5.8. Amendments to the NOx Technical Code 2008: Nitrogen Oxides from Marine Diesel Engines
  - 1.5.9. Amendments to the Annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Amendments to MARPOL Annex VI Data collection system for fuel consumption

- 1.5.10. Amendments to The Annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Amendments to MARPOL Annex VI, Designation of the Baltic Sea and the North Sea Emission Control Areas for NO<sub>x</sub> Tier III control) (Information to be included in the bunker delivery note)
- 1.5.11. Amendments to the Annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Amendments to MARPOL Annex VI, ECAs and required EEDI for ro-ro cargo ships and ro-ro passenger ships
- 1.5.12. Amendments to the Annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto: Amendments to MARPOL Annex VI, Prohibition on the carriage of non-compliant fuel oil for combustion purposes for propulsion or operation on board a ship
- 1.5.13. Amendments to the Annex of the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto amendments to MARPOL Annex VI, Electronic Record Books and EEDI regulations for ice-strengthened ships
- 1.5.14. Amendments to the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (Nox Technical Code 2008) (Electronic Record Books and Certification requirements for SCR systems)
- 1.5.15. 2019 Guidelines for On Board Sampling for the Verification of the Sulphur Content of the Fuel Oil Used On Board Ships
- 1.5.16. 2019 Guidelines for Consistent Implementation of the 0.50% Sulphur Limit under MARPOL Annex VI
- 1.5.17. CIMAC WG7 Guidelines for Marine fuel handling in connection to stability and compatibility
- 1.5.18. IMO emission limit (Tier III)
- 1.5.19. New National Emission control Area and methods
- 1.6. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 1978)
  - 1.6.1. Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended: IGF training (Basic and Advanced)
  - 1.6.2. Amendments to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended
- 1.7. Maritime Labour Convention 2006
  - 1.7.1. International Medical Guide for Ships



1.7.2. Medical First Aid Guide for Use in Accidents Involving Dangerous Goods

1.7.3. International Maritime Training Guide

1.7.4. The 2016 amendments to the Maritime Labour Convention, 2006

1.7.5. The 2018 amendments to the Maritime Labour Convention, 2006

1.8 Merchant Shipping Act

1.9 Law of the Sea

### **New technology developments**

2.1. Latest developments in machinery installations on new ships being constructed across the world, which may include green technologies and new technologies adopted for propulsion and Auxiliary systems

2.2. Advancements related to improvement in design and materials of marine equipment. 2.3. Modern ENAs; e-Navigation;

2.4. Ship-terminal communications;

2.5. Industrial requirements – Vetting CDI

2.6. Ship-shore safety checklist

2.7. Latest developments in machinery installations on new ships being constructed across the world, which may include green technologies and new technologies adopted for propulsion and Auxiliary systems. [14 Technologies to Make the Ultimate Green Ship]

2.8. Advancements related to improvement in design and materials of marine equipment.

- Development in Automation/instrumentation and Control system
- Development in Tier –III Engines and Electronically controlled camless engine
- Dual fuel engine arrangement and safety
- Using Low Sulphur fuel oil and problem it may occur

### **Environmental pollution prevention**

3.1. Port state control and Flag state inspection, Concentrated inspection Campaigns

3.2. Areas for improvement to avoid detentions.

3.3. IMO strategy to reduce GHG, MEPC72

3.4. IMO emission limit (Tier III)

3.5. New National Emission Control Area and methods

**SYLLABUS OF UPDATING TRAINING COURSE FOR REVALIDATION OF  
CHIEF ENGINEER OFFICER AND SECOND ENGINEER OFFICERS-  
CERTIFICATE OF COMPETENCY  
( STCW Convention , Regulation III/2,III/3)**

**FUNCTION 1: MARINE ENGINEERING AT THE MANAGEMENT LEVEL**

**SUBJECTS: MARINE ENGINEERING KNOWLEDGE (GENERAL)**

**1.1 MANAGE THE OPERATION OF PROPULSION PLANT MACHINERY**

- 1.1.1 Design Features and Operative Mechanism of Marine Diesel Engine and Associated Auxiliaries
- 1.1.2 Design Features and Operative Mechanism of Marine Steam Turbine and Associated Auxiliaries
- 1.1.3 Design Features and Operative Mechanism of Marine Gas Turbine and Associated Auxiliaries
- 1.1.4 Design Features and Operative Mechanism of Marine Steam Boiler and Associated Auxiliaries
- 1.1.5 Design Features and Operative Mechanism of Propeller Shaft and Associated Auxiliaries

**1.2 PLAN AND SCHEDULE OPERATIONS (Theoretical knowledge)**

- 1.2.1 Thermodynamics and Heat Transmission
- 1.2.2 Mechanics and Hydromechanics
- 1.2.3 Propulsive Characteristics of Diesel Engines, Steam and Gas Turbines, Including Speed, Output and Fuel Consumption
- 1.2.4 Heat Cycle, Thermal Efficiency and Heat Balance
- 1.2.5 Refrigerators and Refrigeration Cycle
- 1.2.6 Physical and Chemical Properties of Fuels and Lubricants
- 1.2.7 Technology of Material

**1.3 OPERATION, SURVEILLANCE, PERFORMANCE ASSESSMENT AND MAINTAINING SAFETY OF PROPULSION PLANT AND AUXILIARY MACHINERY (Practical knowledge)**

- 1.3.1 Start up and shut down main and auxiliary machinery, including associated system
- 1.3.2 Operation Limits of Propulsion Plants
- 1.3.3 Efficient operation, surveillance, performance assessment and maintaining safety of propulsion plant and auxiliary machinery
- 1.3.4 Functions and Mechanism of Automatic Control for Main Engine
- 1.3.5 Functions and Mechanism of Automatic Control for Auxiliary Machinery

**1.4 MANAGE FUEL, LUBRICATION AND BALLAST OPERATIONS**

- 1.4.1 Operation and Maintenance of Machinery, Including, Pumps and Pumping System

**FUNCTION 2: ELECTRICAL, ELECTRONIC AND CONTROL ENGINEERING AT THE MANAGEMENT LEVEL**

**SUBJECTS. MARINE ELECTRO TECHNOLOGY**

**2.1 MANAGE OPERATION OF ELECTRICAL AND ELECTRONICS CONTROL (Theoretical knowledge)**

- 2.1.1 Marine electro technology, electronics, power electronics, automatic control engineering and safety devices
- 2.1.2 Design features and system configuration of automatic control equipment and safety devices
- 2.1.3 Design features and system configuration of operational control equipment for electrical motors.
- 2.1.4 Design features of high-voltage installations (Exclusive course)
- 2.1.5 Features of pneumatic and hydraulic control equipment

**2.2 MANAGE TROUBLE SHOOTING AND RESTORATION OF ELECTRICAL AND ELECTRONIC CONTROL EQUIPMENT TO OPERATING CONDITION (Practical knowledge)**

- 2.2.1 Trouble shooting of electrical and electronic control equipment
- 2.2.2 Function test of electrical, electronic control equipment and safety devices
- 2.2.3 Trouble shooting of monitoring systems
- 2.2.4 Software version control

**FUNCTION 3: MAINTENANCE AND REPAIR AT THE MANAGEMENT LEVEL**

**SUBJECTS. MARINE ENGINEERING KNOWLEDGE (MOTOR)**

**3.1 MANAGESAFE AND EFFICIENT MAINTENANCEAND REPAIR PROCEDURES**

- 3.1.1 Marine engineering practice Theoretical knowledge
- 3.1.2 Manage safe and effective maintenance and repair procedure (Practical knowledge)
- 3.1.3 Planning Maintenance, Including statutory and Class Verifications
- 3.1.4 Planning repairs (Practical knowledge)

**3.2 DETECT AND IDENTIFY THE CAUSE OF MACHINERY MALFUNCTIONS AND CORRECT FAULTS (Practical knowledge)**

- 3.2.1 Detection of machinery malfunction, location of faults and action to prevent damage
- 3.2.2 Inspection and adjustment of equipment
- 3.2.3 Non-destructive examination

**3.3 ENSURE SAFE WORKING PRACTICES (Practical knowledge)**

- 3.3.1 Safe Working Practices

**FUNCTION 4: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE MANAGEMENT LEVEL**

**SUBJECTS: MARITIME CONVENTION, NAVAL ARCHITECTURE & SHIP CONSTRUCTION**

**4.1 CONTROL TRIM, STABILITY AND STRESS**

4.1.1 Effect on trim and stability in event of damage and flooding

4.1.2 Effect of flooding on transverse stability and trim

4.1.3 IMO recommendations concerning ship stability

**4.2 MONITOR AND CONTROL COMPLIANCE WITH LEGISLATIVE REQUIREMENTS AND MEASURES TO ENSURE SAFETY OF LIFE AT SEA AND PROTECTION OF THE MARINE ENVIRONMENT**

4.2.1 Knowledge of relevant international maritime law embodied in international agreements and conventions

**4.3 MAINTAIN SAFETY AND SECURITY OF CREW AND PASSENGERS AND THE OPERATIONAL CONDITION OF SAFETY SYSTEM**

4.3.1 Lifesaving appliances regulations.

4.3.2 Organization of fire and abandon ship drills.

4.3.3 Maintenance of **operational condition of** Life-saving, Fire-fighting and Other Safety Systems.

4.3.4 Actions to be taken to protect and safeguard all persons on board in emergencies.

4.3.5 Action to limit damage and save the ship following fire explosion, collision of grounding.

**4.4 DEVELOP EMERGENCY AND DAMAGE CONTROL PLANS AND HANDLE EMERGENCY SITUATIONS**

4.4.1 Preparation of Contingency Plans for Response to emergencies

4.4.2 Ship Construction Including Damage Control

4.4.3 Methods and aids for fire prevention, Detection and Extinction

4.4.4 Functions and Use for Life Saving Appliances

**SYLLABUS OF UPDATING TRAINING COURSE FOR REVALIDATION OF  
OFFICER INCHARGE OF AN ENGINEERING WATCH-  
CERTIFICATE OF COMPETENCY  
(STCW Convention, Regulation III/1)**

**FUNCTION 1: MARINE ENGINEERING AT THE OPERATIONAL LEVEL**

**SUBJECTS. MARINE ENGINEERING KNOWLEDGE (GENERAL)**

**1.1 MAINTAIN A SAFE ENGINEERING WATCH**

- 1.1.1 Thorough knowledge of Principles to be observed in keeping an engineering watch,
- 1.1.2 Safety and emergency procedures
- 1.1.3 Safety precautions to be observed during a watch and immediate actions to be taken
- 1.1.4 Engine-room resource management

**1.2 USE ENGLISH IN WRITTEN AND ORAL FORM**

**1.3 USE INTERNAL COMMUNICATION SYSTEMS**

- 1.3.1 Operation of All Internal Communication Systems Onboard

**1.4 OPERATE MAIN AND AUXILIARY MACHINERY AND ASSOCIATED CONTROL SYSTEMS**

- 1.4.1 Basic Construction and Operation Principles of Machinery Systems
- 1.4.2 Safety and Emergency Procedures for Operation of Propulsion Plant Machinery Including Control Systems
- 1.4.3 Preparation, Operation, Fault Detection and Necessary Measures to Prevent
- 1.4.4 Damage for the Following Machinery Items and Control Systems

**1.5 OPERATE FUEL, LUBRICATION, BALLEST AND OTHER PUMPING SYSTEMS AND ASSOCIATED CONTROL SYSTEMS.**

- 1.5.1 Operational Characteristics of Pumps and Piping Systems Including Control Systems
- 1.5.2 Operation of Pumping Systems
- 1.5.3 Oily Water Separators/ Similar Equipment and Operation

**FUNCTION 2: ELECTRICAL, ELECTRONIC AND CONTROL ENGINEERING AT THE OPERATIONAL LEVEL**

**SUBJECT. MARINE ELECTRO TECHNOLOGY**

**2.1 OPERATE ELECTRICAL, ELECTRONIC AND CONTROL SYSTEMS**

- 2.1.1 Basic electrical engineering
- 2.1.2 Basic Electronics
- 2.1.3 Basic control engineering

**2.2 MAINTENANCE AND REPAIR OF ELECTRICAL AND ELECTRONIC EQUIPMENT**

- 2.2.1 Safety requirements for working on shipboard electrical systems.
- 2.2.2 Maintenance Repair
- 2.2.3 Detection of electric malfunction and measures to prevent damage.
- 2.2.4 Construction and operation of electrical testing and measuring Equipment

- 2.2.5 Function and performance tests of the following equipment and their configuration:
- 2.2.6 Electrical and simple electronic diagrams

**FUNCTION 3: MAINTENANCE AND REPAIR AT THE OPERATIONAL LEVEL**  
**SUBJECT. MARINE ENGINEERING KNOWLEDGE (MOTOR)**

**3.1 APPROPRIATE USE OF HAND TOOLS, MACHINE TOOLS AND MEASURING INSTRUMENTS FOR FABRICATION AND REPAIR ON BOARD**

- 3.1.1 Characteristics and limitations of materials used in construction and repair of ships and equipment
- 3.1.2 Characteristics and limitations of processes used for fabrication and repair
- 3.1.3 Properties and parameters considered in the fabrication and repair of systems and components
- 3.1.4 Methods for carrying out safe emergency/temporary repairs
- 3.1.5 Safety measures to be taken to ensure a safe working environment and for using hand tools, machine tools and measuring instruments
- 3.1.6 Use of hand tools, machine tools and measuring instruments
- 3.1.7 Use of various types of sealants and packing

**3.2 MAINTENANCE AND REPAIR OF SHIPBOARD MACHINERY AND EQUIPMENT**

- 3.2.1 Safety measures to be taken for repair and maintenance, the safe isolation of shipboard machinery and equipment Required before personal are Permitted to work on such Machinery or Equipment
- 3.2.2 Appropriate basic mechanical knowledge and skills
- 3.2.3 Maintenance and repair including dismantling, adjustment and reassembling of machinery and equipment
- 3.2.4 The use of appropriate specialized tools and measuring instrument
- 3.2.5 Design characteristics and selection of materials in construction of equipment
- 3.2.6 Interpretation of Machinery Drawings and Handbooks
- 3.2.7 The Interpretation of Piping, Hydraulic and Pneumatic Diagrams

**FUNCTION 4: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE MANAGEMENT LEVEL**

**SUBJECTS. MARITIME CONVENTION, NAVAL ARCHITECTURE & SHIP CONSTRUCTION**

**4.1 ENSURE COMPLIANCE WITH POLLUTION PREVENTION REQUIREMENTS**

- 4.1.1 The precautions to be taken to prevent pollution of the marine environment
- 4.1.2 Anti-pollution procedures and all associated equipment
- 4.4.3 Importance of proactive measures to protect the marine environment

**SUBJECT: NAVAL ARCHITECTURE AND SHIP CONSTRUCTION**

**4.2 MAINTAIN SEAWORTHINESS OF THE SHIP**

- 4.2.1 Stability trim and stress tables

4.2.2 The principal structural members of a ship

**4.3 PREVENT, CONTROL AND FIGHT FIRES ON BOARD**

**4.4 OPERATION LIFE-SAVING APPLIANCES**

**4.5 APPLY MEDICAL FIRST AID ON BOARD SHIP**

**4.6 MONITOR COMPLIANCE WITH LEGISLATIVE REQUIREMENTS**

4.6.1 Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment

**4.7 APPLICATION OF LEADERSHIP AND TEAM WORKING SKILLS**

4.7.1 Shipboard personnel management and training

4.7.2 Knowledge of related international maritime conventions and national legislation

**SYLLABUS OF UPDATING TRAINING COURSE FOR REVALIDATION OF  
ELECTRO-TECHNICAL OFFICERS- CERTIFICATE OF COMPETENCY  
(STCW Convention, Regulation III/6)**

**FUNCTION 1: ELECTRICAL, ELECTRONIC AND CONTROL ENGINEERING AT  
THE OPERATIONAL LEVEL**

**SUBJECT: ELECTRICAL, ELECTRONIC AND CONTROL ENGINEERING**

**1.1 MONITOR THE OPERATION OF ELECTRICAL, ELECTRONIC AND  
CONTROL SYSTEMS**

1.1.1 Basic understanding of the operation of mechanical engineering system

SUBJECT: MARINE ELECTRO TECHNOLOGY

1.1.3 Electro – Technology and Electrical and Electrical Machines Theory

1.1.4 Fundamentals of electronics and power electronics

1.1.5 Electrical power distribution boards and electrical equipment

1.1.6 Fundamentals of automation, automatic control systems and technology

1.1.7 Instrumentation, alarm and monitoring systems

1.1.8 Electrical drives

1.1.9 Technology of electrical materials

1.1.10 Electro-hydraulic and electro-pneumatic systems

1.1.11 Appreciations of the hazards and precautions required for the operation of power systems above 1,000 volts

**1.2 MONITOR THE OPERATION OF AUTOMATIC CONTROL SYSTEMS OF  
PROPULSION AND AUXILIARY MACHINERY**

1.2.1 Preparation of control systems of propulsion and auxiliary machinery for operation

**1.3 OPERATE GENERATORS AND DISTRIBUTION SYSTEMS**

1.3.1 Coupling, load sharing and changing over generators

1.3.2 Coupling and Breaking Connection Between Switchboards and Distribution Panels

**1.4 OPERATE AND MAINTAIN POWER SYSTEMS IN EXCESS OF 1,000 VOLTS**

1.4.1 High Voltage Technology

1.4.2 Safety Precautions and Technology

1.4.3 Safe Operations and Maintenance of High – Voltage Systems

**1.5 OPERATE COMPUTERS AND COMPUTER NETWORKS ON SHIPS**

1.5.1 Main features of data processing

1.5.2 Construction and use of computer networks on ships

1.5.3 Bridge-Based, Engine-Room-Based and Commercial Computer Use



**1.6 USE ENGLISH IN WRITTEN AND ORAL FORM**

**1.7 USE INTERNAL COMMUNICATION SYSTEMS**

1.7.1 Operation of all internal communication systems on board

**FUNCTION 2: MAINTENANCE AND REPAIR AT THE OPERATIONAL LEVEL**

**SUBJECT: MAINTENANCE AND REPAIR**

**2.1 MAINTENANCE AND REPAIR OF ELECTRICAL AND ELECTRONIC EQUIPMENT**

2.1.1 Safety Requirements for Working on Shipboard Electrical Equipment

2.1.2 Maintenance and Repair of Electrical System Equipment, Switchboards, Electric Motors, Generator and DC Electrical Systems and Equipment

2.1.3 Detection of Electric Malfunction, Location of Faults and Measures to Prevent Damage

2.1.4 Construction and Operation of Electrical Testing and Measuring Equipment

2.1.5 The interpretation of electrical and electronic diagrams

2.1.6 Basic of ship fire detecting system

**2.2 MAINTENANCE AND REPAIR OF AUTOMATION AND CONTROL SYSTEMS OF MAIN PROPULSION AND AUXILIARY MACHINERY**

2.2.1 Maintenance and Repair of Automation and Control Systems of Main Propulsion and Auxiliary Machinery

**2.3 MAINTENANCE AND REPAIR OF BRIDGE NAVIGATION EQUIPMENT AND SHIP COMMUNICATION SYSTEMS**

2.3.1 Maintenance and repair of bridge navigation equipment

2.3.2 Maintenance and repair of ship communication systems

**2.4 MAINTENANCE AND REPAIR OF ELECTRICAL, ELECTRONIC AND CONTROL SYSTEMS OF DECK MACHINERY AND CARGO-HANDLING EQUIPMENT**

2.4.1 Maintenance and repair of electrical, electronic and control systems of deck machinery

2.4.2 Maintenance and repair of electrical, electronic and control systems of cargo-handling equipment

2.4.3 Electrical and Electronic Systems Operating in Flammable Areas

2.4.4 Safety and emergency procedures

**2.5 MAINTENANCE AND REPAIR OF CONTROL AND SAFETY SYSTEMS OF HOTEL EQUIPMENT**

2.5.1 Maintenance and Repair of Control and Safety Systems of Hotel Equipment

**FUNCTION 3:           CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE OPERATIONAL LEVEL**

**SUBJECT:             CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD**

**3.1     ENSURE COMPLIANCE WITH POLLUTION PREVENTION REQUIREMENTS**

3.1.1   The precautions to be taken to prevent pollution of the marine environment

3.1.2   Anti-pollution procedures and all associated equipment

3.1.3   proactive measures to protect the marine environment

**3.2     PREVENT CONTROL AND FIGHT FIRE ON BOARD**

**3.3     OPERATE LIFE-SAVING APPLIANCES**

**3.4     APPLY MEDICAL FIRST AID ON BOARD SHIP**

**3.5     APPLICATION OF LEADERSHIP AND TEAMWORKING SKILLS**

**3.6     CONTRIBUTE TO THE SAFETY OF PERSONNEL AND SHIP**

3.6.1   Knowledge of personal survival techniques

3.6.2   Knowledge of fire prevention and ability to fight STCW code and extinguish fires

3.6.3   Knowledge of elementary first aid

3.6.4   Knowledge of personal safety and social STCW code responsibility

**3.7     CONTRIBUTE TO THE HANDLING OF STORES**

3.7.1   Knowledge of procedure for safe handling, stowage and securing of store

**SYLLABUS OF UPDATING TRAINING COURSE FOR REVALIDATION OF  
ELECTRO-TECHNICAL RATINGS – CERTIFICATE OF PROFICIENCY  
(STCW Regulation III/7)**

**FUNCTION 1: ELECTRICAL, ELECTRONIC AND CONTROL ENGINEERING AT  
THE SUPPORT LEVEL**

**1.1 INTRODUCTION**

**1.2 SAFE USE OF ELECTRICAL EQUIPMENT**

1.2.1 Safe use and Operation of Electrical Equipment

1.2.2 Knowledge of the causes of electric shock and precautions to be observed to prevent shock

**1.3 MONITORING THE OPERATION OF ELECTRICAL SYSTEMS AND  
MACHINERY**

1.3.1 Basic knowledge of the operation of mechanical engineering systems

1.3.2 Basic knowledge of:

1.3.2.1 Electrical power distribution boards and electrical equipment

1.3.2.2 Fundamentals of automation, automatic control systems and technology

1.3.2.3 Instrumentation, alarm and monitoring systems

1.3.2.4 Electrical drives

1.3.2.5 Electro-hydraulic & Electro- pneumatic control system

1.3.2.6 Coupling, load sharing and changes in electrical configuration

**1.4 USE HAND TOOLS, ELECTRICAL AND ELECTRONIC MEASUREMENT  
EQUIPMENT FOR FAULT FINDING, MAINTENANCE AND REPAIR  
OPERATIONS**

1.4.1 Safety requirements for working on shipboard electrical systems

1.4.2 Application of safe working practices

1.4.3 Construction and operational characteristic of shipboard AC and DC systems and equipment.

1.4.4 Use of measuring instruments, machine tools, and hand and power tools

**FUNCTION 2: MAINTENANCE AND REPAIR AT THE SUPPORT LEVEL**

**2.1 COURSE INTRODUCTION**

**2.2 CONTRIBUTE TO SHIPBOARD MAINTENANCE AND REPAIR**

2.2.1 Lubrication and cleaning material and equipment

2.2.2 Knowledge of safe disposal of waste materials

2.2.3 Ability to understand and execute routine maintenance and repair procedures

2.2.4 Understanding manufacturer's safety guidelines and shipboard instructions

**2.3 CONTRIBUTE TO THE MAINTENANCE AND REPAIR OF ELECTRICAL SYSTEMS AND MACHINERY ON BOARD**

- 2.3.1 Electro-technical drawings and safe isolation of equipment and associated system required before personnel are permitted to work on such plant or equipment
- 2.3.2 Test, detect faults and maintain and restore electrical control equipment and machinery to operating condition
- 2.3.3 Electrical and electronic equipment operating in flammable area
- 2.3.4 Basic of ship fire detecting System
- 2.3.5 Carrying out safe maintenance and repair procedures
- 2.3.6 Detection of machinery malfunction, location of faults and action to prevent damage
- 2.3.7 Maintenance and repair of lighting fixtures and supply systems

**FUNCTION 3: CONTROLLING THE OPERATION OF THE SHIP AND CARE FOR PERSONS ON BOARD AT THE SUPPORT LEVEL**

**3.1 COURSE INTRODUCTION**

**3.2 CONTRIBUTE TO THE HANDLING OF STORES**

- 3.2.1 Knowledge of Procedures for handling, stowage and securing of stores.

**3.3 PREVENTION OF POLLUTION OF THE MARINE ENVIRONMENT**

- 3.3.1 Knowledge of the precautions to be taken to prevent pollution of the marine environment
- 3.3.2 Knowledge of use and operation of anti-pollution equipment
- 3.3.3 Knowledge of approved methods for disposal of marine pollutants

**3.4 APPLIED OCCUPATIONAL HEALTH AND SAFETY PROCEDURES**

- 3.4.1 Working knowledge of safe working practices and personal shipboard safety

**3.5 UNDERSTANDING THE CLAUSE IN ILO'S MARITIME LABOUR CONVENTION (MLC-2006)**

**3.6 MARINE ENVIRONMENTAL AWARENESS**