



## ANNEX B

Joint CHED – MARINA Memorandum Circular No. 1,  
Series 2019



### REVISED GUIDELINES ON THE IMPLEMENTATION OF ONBOARD TRAINING REQUIREMENT UNDER THE BSMT AND BSMarE PROGRAMS

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#### Section 1. Objectives of Onboard Training (OBT)

OBT pertains to the seagoing service requirement for BSMT or BSMarE students to qualify for graduation and to be accepted by the Maritime Administration to take the assessment of competence required for certification as Officer In Charge of a Navigational Watch on seagoing ships of 500 gross tonnage or more under Regulation II/1 and as Officer In Charge of an Engineering Watch in a manned engine-room or as designated duty engineer in a periodically unmanned engine-room on seagoing ships powered by main propulsion machinery of 750 kW propulsion power or more under Regulation III/1 of the STCW Convention, 1978, as amended.

#### Section 2. OBT Requirement

The OBT requirement may either be 12 months or 36 months seagoing service.

##### Section 2.1. OBT for BSMT Program

The OBT requirement shall be complied with by undergoing and completing:

**2.1.1.** not less than 12 months of seagoing service, which shall include the performance of bridge watchkeeping duties for a period of not less than six (6) months under the supervision of the Master or a qualified deck officer, following a structured program of training onboard a seagoing ship of 500 gross tonnage or more engaged in international voyages, documented in the *Training Record Book (TRB)* designed by the *ISF, GlobalMET* or *any other entity* in accordance with the requirements of the STCW Convention, 1978, as amended; or

**2.1.2.** not less than 36 months of seagoing service onboard a seagoing ship of 500 gross tonnage or more engaged in domestic or international voyages, either as Ratings Forming Part of a Navigational Watch, or Able Seafarer Deck, or other relevant capacity in the Deck Department, which shall include the performance of *bridge watchkeeping duties for a period of not less than six (6) months* under the supervision of the Master or a qualified deck officer.

**2.1.3.** The required seagoing service of not less than 12 months or 36 months may be **continuous** or **cumulative**, taking into consideration the requirements of Maritime Labor Convention 2006.



**2.1.4.** The performance of bridge watchkeeping duties shall be documented using the Daily Journal of Bridge Watchkeeping Duty prescribed by the Maritime Administration.

## **Section 2.2. OBT for BSMarE Program**

The OBT requirement shall be complied with by undergoing and completing:

**2.2.1.** *a combined workshop skills training and an approved seagoing service of not less than 12 months as part of an approved training program, which shall include the performance of engine-room watchkeeping duties for a period of not less than six (6) months* under the supervision of the Chief Engineer or a qualified engineer officer, following a structured program of training onboard a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more engaged in international voyages, documented in the *Training Record Book (TRB)* designed by the *ISF, GlobalMET* or *any other entity* in accordance with the requirements of the STCW Convention, 1978, as amended; or

**2.2.2.** *a combined workshop skills training and an approved seagoing service of not less than 36 months of which not less than 30 months shall be seagoing service in the engine department* onboard a seagoing ship powered by main propulsion machinery of 750 kW propulsion power or more engaged in domestic or international voyages, in a position either as Ratings Forming Part of a Watch in a Manned Engine-room or designated to perform duties in a Periodically Unmanned Engine-room, or Able Seafarer Engine, or other relevant capacity in the Engine Department, which shall include the performance of *engine-room watchkeeping duties for a period of not less than six (6) months* under the supervision of the Chief Engineer or a qualified engineer officer.

**2.2.3.** The performance of engine-room watchkeeping duties shall be documented using the Daily Journal of Engine-room Watchkeeping Duty prescribed by the Maritime Administration.

## **Section 3. General Requirements**

**3.1.** The MHEIs shall have a clear and comprehensive system covering the implementation of OBT requirement within its QSS, which shall cover among others, proper arrangement, coordination and supervision of the OBT for their students.

**3.2. OBT Agreement.** The MHEIs shall ensure that an OBT Agreement between the ship owner or manning agency on one hand, and the student and the MHEI on the other, written in the English language, shall be executed before the commencement of the OBT and submit a copy to the CHED Office of Programs and Standards Development.<sup>1</sup>

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<sup>1</sup> Section 2, Rule VII, DOLE Order 129, series of 2013



**3.3.** MHEIs shall ensure that the OBT shall be enrolled before the commencement of the seagoing service. Students who may not have enrolled the OBT prior to embarkation can still enroll, however, the OBT shall be counted only from the date of enrolment.

**3.4.** Ensure that the tuition fee for the forty (40) units OBT and other fees shall be inclusive of health and accident insurance coverage of at least ₱250,000.00 per student while undergoing OBT on domestic seagoing vessels.

**3.5.** Ensure that the MHEI's Office of the Registrar submits notarized list of enrolled students to CHED Regional Office (CHEDRO) concerned within 45 days after the start of the next semester;

**3.6.** Ensure that all students who will be undergoing OBT shall be issued an approved TRB before embarkation;

**3.7.** Establish a system for monitoring students undergoing OBT.

**3.8.** Ensure that in case of any unusual events or incidents, the CHED Regional Office and the parents are promptly provided with information or reports on the status of students and assistance rendered. The agreement between the MHEI and the shipping company should include the responsibility in reporting the status of students.

**3.9.** Ensure the validation of the 12 months or 36 months seagoing service; and

**3.10.** Ensure that students have completed the OBT within six (6) years from completion of classroom instruction and, whenever necessary, are provided with appropriate updating courses taking into account any changes of the standard of competence set forth by the STCW and relevant national policies, standards and guidelines.

**3.11.** MHEIs shall ensure that student(s) who failed to complete the OBT requirement within the period of six (6) years after completion of classroom instruction for OBT purposes shall be required to undertake and complete a Refresher Course approved by the Commission and the Maritime Administration and updating course/s if necessary, prior to the conferment of his degree.

The MHEIs shall first apply and secure proper approval from the Maritime Administration to offer the said course. In case the MHEI does not have the capacity to deliver such courses, it shall have a MOA with accredited MTI for the conduct of the refresher course/s.

**3.12.** MHEIs shall not assign any teaching load to the OBT Supervisor (OTS) to allow him to concentrate on his OBT duties.

#### **Section 4. For the OBT Office**

The OBT Office shall be responsible for the management of the activities and other requirements for students undergoing the OBT. Thus, for the maintenance and operation of this Office, the following shall be established:

- A. a fulltime OBT Supervisor and sufficient staff to effectively manage the daily operation of this Office;
- B. a separate workplace with an area of at least 20 sq. m.;
- C. resources and facilities to support its effective and efficient operation, such as but not limited to:
  - 1. at least one (1) set of computer unit with internet connection and a fax machine or (an equipment and related peripherals which serves the purpose of sending and receiving documents);
  - 2. tables and chairs;
  - 3. at least one (1) telephone line; and
  - 4. a bulletin board;

#### **Section 5. For OBT Supervisor**

##### **A. Qualification**

The OBT Supervisor must possess the following minimum qualifications:

- 1. completed at least 12 months seagoing service as Officer-in-Charge (OIC) of navigational watch or engineering watch;
- 2. completed training in IMO Model Courses 6.09, 3.12 and 6.10;
- 3. have at least one (1) year teaching experience; and
- 4. have proper orientation on the duties and responsibilities of the OBT officer;

##### **B. Role and Responsibilities**

To provide the necessary guidance and thorough orientation/familiarization of all its BSMT and/or BSMarE students who completed their classroom instruction regarding the OBT.

For the effective and efficient operation of the OBT Office, the OBT Supervisor shall:

- 1. arrange for and facilitate the embarkation and/or the workshop skills training of students;
- 2. ensure the completion of the approved workshop skills training by the BSMarE students;



3. conduct orientation of students among others, on the following:
  - a. the difference between the 12 months and 36 months seagoing service;
  - b. the enrollment of the required OBT before embarkation;
  - c. the need to execute Standard Training Agreement contract for domestic and international voyages;
  - d. the proper way of accomplishing and filling-in of entries in the TRB and daily journal, validation of the TRB and the evidence needed to establish seagoing service such as the Masters' Declaration of Safe Departure(MDSD), Crew List (for domestic) and certificate of seagoing service;
  - e. the role of the OBT Supervisor and the students under the system of monitoring the OBT; and
  - f. the assessment of seagoing service;
4. ensure that all students undergoing OBT shall be issued approved TRB before their embarkation;
5. conduct briefing of students prior to embarkation;
6. coordinate with the shipping company and/or manning agency on the schedule, route and standard training agreement;
7. Monitor the progress of students undergoing OBT by:
  - a. communicating, checking and providing guidance as to the accomplishment of TRB;
  - b. maintaining records of monitoring;

The record shall include, among others:

- i. Student's Name
  - ii. Program Enrolled
  - iii. Date of Enrolment
  - iv. Contract/Agreement
  - v. Date of Embarkation
  - vi. Date of Disembarkation
  - vii. Route (Domestic or International)
  - viii. Ship's Particular (gross tonnage or propulsion power, as appropriate)
  - ix. Onboard welfare (complaints/concerns); and
- c. providing guidance and assistance as to onboard welfare, personal and professional concerns when necessary;
8. conduct debriefing, validation of the TRB and the seagoing service, and assessment of students after disembarkation and subsequently issue a Notarized "Certificate of Validation, Assessment and Approval";

9. investigate and impose sanction as per MHEI's policy to students who submitted fraudulent documents and certificates;
10. keep records of the linkages or partnerships with shipping companies and/or manning agencies that the MHEI had established, the results of students' assessment as well as the validation of TRBs and other pertinent records relating to OBT such as OBT agreement and/or employment contract; and
11. Evaluate the Daily Journal of Watchkeeping Duties.

The procedures in the accompanying flowcharts (**Enclosures 1-3**) which are made an integral part of these guidelines shall serve as supplemental guides in evaluating the Daily Journal of Watchkeeping Duties.

## **Section 6. Requirements to Ensure Authenticity of the TRB**

MHEIs shall issue only approved TRB to students who enrolled the 12 months structured OBT. Hence, to ensure the authenticity of the TRB that would be presented by the students after completing the required OBT, and for purposes of validation, assessment, and issuance of Special Order (SO) for graduation, all MHEIs shall ensure that:

- A. all pages of the TRB are stamped with the Student's Number to whom it would be issued;
- B. information such as name of the issuing MHEI and the name and student's number to whom the TRB would be issued are also stamped on a conspicuous page, preferably next to the front page of the TRB; and
- C. TRB control numbers issued to students are indicated in the enrollment list to be submitted to the CHED Regional Office.

## **Section 7. Validation of OBT**

### **A. 12 Months OBT**

1. After completion of the 12 months OBT, every student shall report to the OBT office of the MHEI concerned for debriefing, validation of TRB, approval of the twelve months OBT and assessment purposes. The following documents must be submitted together with the student's TRB to qualify for assessment of OBT and conferment of a bachelor's degree:
  - a. Notarized Certificate of Sea Service signed by the Master and a Certificate of Employment issued by the shipping/manning company.
  - b. Daily Journal of Watchkeeping Duties



For BSMarE students, if OBT is less than 12 months, where 6 months is watchkeeping duties, workshop skills training ashore compliant with 1978 STCW Convention and Code, as amended taken from the MHEI to augment the 12 months seagoing service requirement (CMO 38 series 2016);

The Certificate of Sea Service and Certificate to be issued by the manning/shipping company should follow the accompanying formats (**Enclosures 3 and 4**) which are made as integral part of this PSG.

- c. Seafarer's Identification and Record Book (SIRB or Seaman's Book);
- d. Passport with immigration stamp of departure and arrival for seagoing service, and;

For domestic seagoing service, there shall be at least one per month for a total of 12 months' duration of Philippine Coast Guard (PCG) Certified True Copy of the Masters' Declaration of Safe Departure (MDSD) with the Master and Crew List bearing the ship's stamp and master's signature and PCG Clearance stamp and PCG Officers' signature.

The Crew List to be utilized shall be in accordance with the format of the International Maritime Organization (IMO) Facilitation of Maritime Travel and Transport (FAL) Convention or IMO FAL Form No. 5, which can be downloaded from the IMO website and made as integral part of this PSG.

- e. The 12 months OBT shall only be approved after the students concerned have presented the aforementioned documents. Only students with approved seagoing service shall qualify for assessment.
2. The policies and procedures pertaining to the validation of TRB and approval of the 12 months seagoing service as specified under the Quality Standards System (QSS) of the MHEI concerned shall be followed. Moreover, it is required that a Notarized "Certificate of Validation, Assessment and Approval" of the student's TRB of the 12 months seagoing service be issued by the OBT Office which *shall also be submitted to the CHEDRO* as basis for the issuance of SO for graduation.

## **B. 36 Months Seagoing Service**

- 1. In case the BSMT and BSMarE students who were not able to undergo 12 months structured OBT, but completed at least 36 months seagoing service as provided under Section 2.2.1. or Section 2.2.2. of these guidelines, the following documents must be submitted to the OBT office

for the validation and approval of the students seagoing service in order to qualify for assessment of OBT and conferment of a bachelor's degree:

- a. **Certificate of Seagoing Service** duly signed by the Master or Chief Engineer with the ship's stamp and/or countersigned by responsible officer of local crewing or manning agency of the ship in lieu of the TRB, which should include the following information:
    - 1) Vessel name and type;
    - 2) Gross tonnage;
    - 3) Ship's port of registry;
    - 4) Propulsion power in kilowatt;
    - 5) IMO number; and
    - 6) Length of service (*date signed on and date signed off*) and the position/capacity held;
  - b. SIRB or Seaman's Book;
  - c. Passport with immigration stamp of departure and arrival for ocean-going sea service, and;
  - d. For domestic seagoing service, there shall be at least one per month for a total of 36 months' duration of Philippine Coast Guard (PCG) Certified True Copy of the MDSD with the attached Crew List bearing the ship's stamp and master's signature and PCG Clearance stamp and PCG Officers' signature.
  - f. The 36 months seagoing service shall only be approved for assessment after the students concerned have presented the aforementioned documents.
2. The policies and procedures pertaining to the validation and approval of the 36 months seagoing service as specified under the QSS of the MHEI concerned shall be followed. Moreover, it is required that a Notarized "*Certificate of Validation, Assessment and Approval*" of the student's 36 months seagoing service be issued by the OBT Office which *shall also be submitted to the CHEDRO* as basis for the issuance of SO for graduation.

## Section 8. Assessment

As a general rule, students with a duly validated TRB or OBT may qualify to undergo an assessment of the tasks performed and competencies acquired during the required OBT at the MHEI's OBT Office. Students who qualify for assessment must follow the pertinent assessment policies and procedures specified under the QSS of the MHEI concerned. The methods of assessing the students learning outcomes from the OBT shall be done through:



1. Written or computerized examination. The written or computerized examination based on the TRB shall be designed in accordance with the pertinent requirements under Section A-II/1 and Section A-III/1 of the STCW Code for BSMT and BSMarE, respectively; and
2. An interview (oral assessment) on the learning competencies acquired on board based on the TRB including Sea Projects and entries in Daily Journal of Watchkeeping Duties by a Panel composed of the Dean or duly authorized representative, OBT Supervisor, and one (1) professional instructor, all of whom must be qualified assessors from the MHEI concerned.

In the case of students who completed the 36 months seagoing service, the same assessment methods shall be adopted except for TRB verification.

The written or computerized examination as well as the panel interview (oral assessment) shall aim to ensure and demonstrate that the students being assessed have acquired the necessary learning outcomes for the issuance of BSMT or BSMarE Degree.

For grading purposes, the MHEI shall clearly define in their QSS the weight percentage for the written exam, panel interview and other criteria to sum-up as the students' final grade.

The assessment results shall be recorded and signed by the assessors and consolidated by the OBT Supervisor who shall sign the official grading sheet of the students to be submitted to the MHEI's registrar.

### **Section 9. Remediation**

If in any case, the result of an assessment indicates that the students cannot demonstrate the competencies required under the 1978 STCW Convention and Code, as amended, the MHEI shall institute appropriate remedial measures or activities/workshops in order for the students to rectify any deficiencies noted per its QSS. Thereafter, the students concerned shall be required to undergo reassessment without extra cost to the students based on **Section 8** of this guidelines to determine if they have fully acquired the necessary competencies.

### **Section 10. Workshop Skills Training for BSMarE Students**

A. Workshop Skills Training shall be the following:

1. Use of appropriate tools for fabrication and repair operations typically performed on ships;
2. Use of hand tools and measuring equipment for dismantling, maintenance, repair and re-assembly of onboard mechanical plant and equipment; and

3. Use of hand tools, electrical and electronic measuring and test equipment for fault finding, dismantling, maintenance, repair and re-assembly of onboard electrical and electronic equipment
- B. Training in workshop skills ashore can be carried out in a CHED-MARINA-approved institution.
  - C. In the event that a BSMarE student completed the required six (6) months watchkeeping service but was unable to complete the required 12 months seagoing service, such student shall be allowed to undergo a workshop skills training ashore to comply with the approved training program.
  - D. The workshop skills training course shall be developed in accordance with CMO 38, series of 2016 or its subsequent amendments, and shall be jointly approved by the Commission and the Maritime Administration through a joint evaluation and inspection.
  - E. The conduct of the workshop skills training course shall be administered by the marine engineering department of an MHEI with a duly recognized BSMarE program.
  - F. The OBT Supervisor shall be responsible in identifying the tasks to be taken in the workshop skills training. Likewise, the OBT Supervisor shall be responsible in the proper orientation of students to workshop skills training ashore.
  - G. The matrix of competence-workshop activities can be attained through:
    1. straight six (6) months workshop; or
    2. less than six (6) months workshop to complete the remaining onboard training experience as shown in the matrix below:

Matrix of onboard service vis-à-vis workshop skills training ashore:

Onboard Training period	Required workshop skills ashore
6 months	6 months
8 months	4 months
10 months	2 months



## Article V MISCELLANEOUS PROVISIONS

### Section 11. Sanctions

- A. An MHEI which fails to board its students for OBT within **five months** from the date of enrolment of the seagoing service shall submit to the CHED Regional Office a corrective and preventive action report.



- B. An MHEI which fails to board the student within one year and six months or eighteen months, the CHED Regional Office shall endorse the matter to the Technical Panel for Maritime Education (TPME) for the imposition of appropriate sanction pursuant to Republic Act No. 7722 [Higher Education Act of 1994], Batas Pambansa Bilang 232 [The Education Act of 1982], CMO No. 40 s. 2008 [Manual of Regulations for Private Higher Education of 2008 (MORPHE)] and all other applicable CHED rules and regulations and legislations; and EO 63 and its IRR.
- C. Any MHEI which submits incomplete and/or fraudulent documents will be issued a Show Cause Order by CHEDRO within 15 working days and will be required to resubmit within 15 days from receipt of the directive.

	<p>Bachelor of Science in Marine Transportation</p> <p><b>Minimum Required Equipment</b></p>	<p><b>Annex C</b> Joint CHED-MARINA Memorandum Circular No. 01, Series of 2019</p>	
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RECOMMENDED MINIMUM EQUIPMENT, MATERIALS, CHEMICALS AND TEACHING AIDS GOVERNING THE OPERATION OF THE BACHELOR OF SCIENCE IN MARINE TRANSPORTATION PROGRAM. HOWEVER, THE EXACT NUMBER SHOULD CONFORM TO THE CARRYING CAPACITY OF THE INSTITUTION. THE TASK MAINTENANCE REPAIR COLUMN ARE USED FOR HANDS ON EXERCISES AND FAMILIARIZATION OF EQUIPMENT, WHEREAS THE SYSTEM INTEGRATION, OPERATION AND FAULT FINDING COLUMN ARE EQUIPMENT NECESSARY TO ADDRESS THE DEFINED INTENDED LEARNING OUTCOMES OF COURSES.

DECK	
1.	Lecture Room
2.	Chart Room
3.	Navigational Equipment
4.	Ship's Bridge Simulator Room
5.	MARCOM Room
6.	Seamanship Room

ITEMS		QUANTITY REQUIRED
<b>1. LECTURE ROOM</b> "The standard classroom shall be a minimum of 1.2 square meters per student. Classrooms must be well-lighted and well-ventilated. It should contain the following:		
1.1 Tables and Chairs or Armed chairs 1.2 Whiteboards/Chalkboards 1.3 Multimedia Equipment 1.4 Teacher's Table		
<b>2. CHART ROOM</b> The ratio of the minimum requirements herein listed shall be proportionate to the total number of maritime students enrolled for the particular course under the following:		
2.1 Chart tables (Dimension: at least 1.0m L x 0.7m W)		Chart tables ratio: 1 table is to 2 students (1:2)
2.2 Navigational charts <ul style="list-style-type: none"> <li>Harbor charts – not necessarily of the same chart no. but should be adequate to create one passage plan (scale: larger than 1:50,000)</li> </ul>		1 chart per table



ITEMS	QUANTITY REQUIRED
<ul style="list-style-type: none"> <li>Coastal charts – not necessarily of the same chart no. but should be adequate to create one passage plan (scale: 1:50,000 to 1:150,000)</li> </ul>	1 chart per table
<ul style="list-style-type: none"> <li>General charts – not necessarily of the same chart no. but should be adequate to create one passage plan (scale: from 1:150,000 to 1:600,000)</li> </ul>	1 chart per table
<ul style="list-style-type: none"> <li>Sailing charts – not necessarily of the same chart no. but should be adequate to create one passage plan (scale: smaller than 1:600,000)</li> </ul>	1 chart per table
<ul style="list-style-type: none"> <li>Chart projections               <ul style="list-style-type: none"> <li>Gnomonic</li> <li>Mercator plotting sheet from equator to 90 degrees latitude</li> <li>Routeing chart</li> </ul> </li> </ul>	1 set 1 set 1 set (Jan – Dec)
2.3 Parallel rulers	10 pcs
Navigational triangles	3 pairs
Compass Dividers	3 pairs
2.4 IALA Maritime Bouyage System (Drawing/ Illustration)	2 pcs
2.5 Publications (photocopy acceptable) <ul style="list-style-type: none"> <li>Pilot Book / Sailing Directions</li> </ul>	3 books of different publications
<ul style="list-style-type: none"> <li>Weekly notice to Mariners</li> </ul>	6 pcs
<ul style="list-style-type: none"> <li>Radio Signals, Radio Time Signal Aids, Radio Navigational Warnings</li> </ul>	Vol 1-6
<ul style="list-style-type: none"> <li>Nautical Tables (e.g. HO publications) or Useful tables</li> </ul>	1 pc
<ul style="list-style-type: none"> <li>Nautical Almanac</li> </ul>	1 pc (at least within the last 5 years edition)
<ul style="list-style-type: none"> <li>Tide Tables</li> </ul>	1 pc (at least within the last 5 years edition)
<ul style="list-style-type: none"> <li>Sight Reduction Tables</li> </ul>	1 set
2.6 Maneuvering Board	20 pcs
<b>3.0 LIST OF NAVIGATIONAL EQUIPMENT</b> <ul style="list-style-type: none"> <li>Equipment shall be fully operational</li> <li>Equipment may be live stand alone or integrated to a bridge simulator room</li> <li>Some equipment may be found in the ship's bridge simulator room and/or in a separate dedicated room</li> </ul>	

ITEMS	QUANTITY REQUIRED
3.1 Global Positioning System (GPS)	1 unit
3.2 Gyro compass with at least one repeater	1 set
3.3 Pelorus/ Azimuth Circle	1 pc
3.4 Echo sounder	1 unit
3.5 RPM/Speed Indicator	1 unit
3.6 Steering equipment with automatic pilot	1 unit
3.7 Bridge/ engine room telegraph	1 unit
3.8 Hygrometer (dry and wet bulb thermometer)	2 pcs
3.9 Anemometer (marine type)	1
3.10 Aneroid Barometer (marine type)	1
3.11 Weather Facsimile receiver or any equipment capable of giving weather report	1
3.12 Marine chronometer	1
3.13 Marine Sextant	2
3.14 Magnetic compass	1
3.15 Signaling lamp	1
3.16 International signal flags	1 set
3.17 Clinometer	1
3.18 Automatic Identification System (AIS)	1 unit
3.19 Appropriate equipment for giving light and sound signals (e.g. bell, gong, ship's whistle, morse light, etc.)	1 set
3.20 Equipment for display signals (lights and shapes):	
3.20.1 Anchor ball	2 pcs
3.20.2 Diamond shape	2 pcs
3.20.3 Cylindrical shape	2 pcs
3.20.4 Anchor light	1 pc
3.20.5 Not under command light	1 pc
3.20.6 Light to indicate "vessel restricted in her ability to manoeuvre"	1 pc



ITEMS	QUANTITY REQUIRED
<p><b>4.0 SHIP'S BRIDGE SIMULATOR ROOM</b></p> <p><b>4.1 GENERAL REQUIREMENT</b></p> <p>Instruction and assessment in RADAR-ARPA and ECDIS shall be conducted with the use of simulator equipment.</p> <p>4.1.1 The design, features and capabilities of the simulators used shall be in compliance with Regulation I/12 and guidelines under Section A-I/12 and B-I/12 of the 1978 STCW as amended.</p> <p>4.1.2 The installation must be capable of covering all the competences and KUPs as stated in the Table of Competence A-II/1 of the STCW Code related to RADAR-ARPA and/or ECDIS.</p> <p>4.1.3 The number of student stations shall be adequate in order for each student to undergo the minimum required exposure to the equipment</p> <p>4.1.4 There must be an INSTRUCTOR STATION where exercises are generated and are able to monitor each student station during an exercise or assessment</p> <p>4.1.5 All other simulators which can be used by the MHEIs for other competences shall follow the same guidelines as in item number 4.1.1.</p> <p>RADAR/ARPA AND GMDSS COMMUNICATION SIMULATOR MAY BE LOCATED IN DEDICATED SIMULATOR ROOM OR THEY MAY BE INTEGRATED TO A BRIDGE SIMULATOR.</p> <p>The ratio of the minimum requirement for simulator equipment to student shall be as follows:</p> <p><b>Academic Year 2015-2016 – 1:5</b>  <b>Academic Year 2016-2017 – 1:5</b>  <b>Academic Year 2017-2018 – 1:4</b>  <b>Academic Year 2018-2019 – 1:4</b>  <b>Academic Year 2019-2020 – 1:3</b></p>	
<p><b>4.2 OTHER REQUIREMENTS</b></p> <p>4.2.1 Navigational charts corresponding to particular coast or harbor must be available in the simulator room</p> <p>4.2.2 Parallel rulers / Navigational triangles</p> <p>4.2.3 Compass divider</p>	<p>1 set for each work station</p>
<p><b>5.0 MARCOM ROOM - GMDSS / COMMUNICATION SIMULATOR</b></p> <p>5.1 GMDSS simulator capable of simulating the following:  DSC, NAVTEX, EPIRB, Satellite communication for a particular GMDSS area.</p> <p>5.1.1 Instructor/Student and GMDSS station ratio</p> <p>5.1.2 GMDSS operation able to meet the training objectives to include the determination of limitations and possible errors of the equipment.</p> <p>5.1.3 Able to provide controlled operating environment</p>	<p>As per performance standards adopted by the IMO</p>

ITEMS	QUANTITY REQUIRED
capable of producing various conditions such as, emergency, hazardous or unusual situations relevant to the training objective. 5.1.4 Provide an interface through which a trainee can interact with the equipment, and the simulated environment. 5.1.5 Allow an instructor to control and monitor exercises.	
5.2 International Radio Laws (ITU) Part I and Part II	1 set
5.3 Admiralty List of Radio Signals (Vol. I & II) [may be found in the Chart Room]	1 set
5.4 INMARSAT Maritime Communication Handbook	1 pc
5.5 International Code of Signals	1 pc
5.6 Morse Signaling Apparatus	1 set
5.7 Semaphore Flags	2 sets
5.8 Single Letter Flags	1 set
<p><b>The ratio of the minimum requirement for GMDSS simulator equipment shall be as follows:</b></p> <p><b>Academic Year 2015-2016 – 1:5</b>  <b>Academic Year 2016-2017 – 1:5</b>  <b>Academic Year 2017-2018 – 1:4</b>  <b>Academic Year 2018-2019 – 1:4</b>  <b>Academic Year 2019-2020 – 1:3</b></p>	
<b>6.0 SEAMANSHIP ROOM</b>	
6.1 Work benches	6
6.2 Visas attached to work benches for splicing	12
6.3 Models/Drawings/Video of the following:	
▪ Derrick (single or married fall system)	1
▪ Deck crane	1
▪ Anchor windlass	1
▪ Mooring winch/capstan	1
▪ Hatch cover (any type, complete parts)	1
▪ Head and heel blocks	1 each
▪ Types of vessels	1
▪ Various hatch covers	1
6.4 Samples of cargo plans of at least 4 types of ships	1 each
6.5 Bollard	2
6.6 Bitts	2
6.7 Cleats	2
6.8 Anchor with chain	1



ITEMS	QUANTITY REQUIRED
6.9 Chipping hammer	10
6.10 Hand scraper, angular	10
6.11 Long handled scraper	10
6.12 Wire brush	10
6.13 Fid	10
6.14 Marlinspike (6-10 inches)	10
6.15 Rope, at least 12mm in diameter (nylon or Manila rope)	100 mtr
6.16 Wire rope for splicing, at least 8mm in diameter	30 mtr
6.17 Seaman's knife	10
6.18 Sewing palms and kit for canvass works <ul style="list-style-type: none"> <li>▪ Sewing needle</li> <li>▪ Eyelet</li> <li>▪ Canvass or tarpaulin</li> <li>▪ Thimble (for sewing)</li> <li>▪ Punch and Dye</li> </ul>	1 set
6.19 Serving mallet	1
6.20 Pilot ladder	1
6.21 Jacob's ladder	1
6.22 Wire cutter	1
6.23 Painting stage w/rigging	1
6.24 Bosun's chair	1
6.25 Cargo net	1
6.26 Safety net	1
6.27 Gun tackle	1
6.28 Two-fold purchase rigged preferably on wooden blocks	1
6.29 Three-fold purchase rigged preferably on wooden blocks	1
6.30 Metal cargo swivel block	1
6.31 Cargo hook SWL at least 5 tons	1
6.32 Chain block, at least 1 ton	1
6.33 Snatch block, size at least 160mm	1
6.34 Safety helmet	25
6.35 Safety goggle	25
6.36 Safety Belt / Safety Harness	3
6.37 Working gloves	25
6.38 Thimble	6
6.39 Shackle (various sizes)	6
6.40 Turnbuckle	6
6.41 Ships Certificates e.g. SOLAS, etc.	At least 5
6.42 Ships Organizational Chart	1

ITEMS	QUANTITY REQUIRED
6.43 Tabular Chart for the strength of ropes and wires	1
6.44 Various types of blocks	1
6.45 IMDG Code: Labels, marks and signs (SN: IMO-220E)	1
6.46 Drawings of various tanker ships showing tanks, pipes and pumping arrangement (oil, chemical & gas)	1
6.47 Drawings/illustration/actual equipment of measuring device and oxygen device	1
6.48 Copy of actual Ship Capacity Plan/Dead Weight Plan	1
6.49 Trim and Stability Table	1
6.50 International Loadline Chart (seasonal Chart)	1
6.51 Computer based software on Trim and Stability [may be found in a separate room]	1
6.52 Diagram of a Ship's Manoeuvring Characteristics	1
6.53 Posters/pictures of River, Bends, Locks, Port Facilities, Navigable canals, rivers, etc.	1
6.54 Posters/pictures of various types of propellers and bow-thruster	1

#### Summary of Courses that may need Bridge Simulator

Courses	Simulator
Navigation 1, 3, 7	Any of categories 1, 2, and 4
Navigation 5, 6	Any of categories 1, 2, 3 and 4
D-Watch 2 - Deck Watchkeeping	Any of categories 1, 2, and 4
Seam 5 – Ship Handling and Manoeuvring	Any of categories 1, 2, 3 and 4

#### Standard Classification of Ship's Bridge Simulator



CATEGORY 1	Full Mission Simulator	A full mission simulator capable of simulating a total shipboard bridge operation situation including the capability for advanced manoeuvring in restricted areas.
CATEGORY 2	Multi Task Simulator	A multi task simulator capable of simulating a total shipboard bridge operation situation but excluding the capability for advanced manoeuvring in restricted waterways.
CATEGORY 3	Limited Task Simulator	A limited task simulator capable of simulating a shipboard bridge operation situation for limited (instrumentation or blind) navigation and collision avoidance.



CATEGORY 4	Special Task Simulator	A special task simulator capable of simulating operation and/or maintenance of particular bridge instruments and/or defined navigation/ manoeuvring scenarios.
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#### Competences addressed by the Ship's Bridge Simulator

STCW Reference	Competence	Category			
		1	2	3	4
Table A-II/1.1	Plan and conduct a passage and determine position	✓	✓		✓
Table A-II/1.2	Maintain safe navigational watch	✓	✓		✓
Table A-II/1.3	Use of RADAR and ARPA to maintain safety of navigation	✓	✓	✓	✓
Table A-II/1.4	Use of ECDIS to maintain the safety of navigation	✓	✓	✓	✓
Table A-II/1.5	Respond to emergencies	✓	✓	✓	✓
Table A-II/1.6	Respond to distress signal at sea	✓	✓	✓	✓
Table A-II/1.8	Transmit and receive information by visual signaling	✓	✓	✓	✓
Table A-II/1.9	Manoeuvre the ship	✓	✓	✓	✓

	<p><b>Bachelor of Science in Marine Engineering</b></p> <p><b>Minimum Required Equipment</b></p>	<p><b>Annex C</b> Joint CHED-MARINA Memorandum Circular No. 01, Series of 2019</p>	
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RECOMMENDED MINIMUM EQUIPMENT, MATERIALS, CHEMICALS AND TEACHING AIDS GOVERNING THE OPERATION OF THE BACHELOR OF SCIENCE IN MARINE ENGINEERING PROGRAM. HOWEVER, THE EXACT NUMBER SHOULD CONFORM TO THE CARRYING CAPACITY OF THE INSTITUTION. THE TASK MAINTENANCE REPAIR COLUMN ARE USED FOR HANDS ON EXERCISES AND FAMILIARIZATION OF EQUIPMENT, WHEREAS THE SYSTEM INTEGRATION, OPERATION AND FAULT FINDING COLUMN ARE EQUIPMENT NECESSARY TO ADDRESS THE DEFINED INTENDED LEARNING OUTCOMES OF COURSES.

Course	Task Maintenance and Repair		System Integration, Operation and Fault Finding
	Key Area Equipment	Quantity Required	
1. Mach 1 Mach 2 Mach 3	Mechanical Workshop		
	1.1. Work benches fitted with vise on each end	6 sets	
	1.2. Gas welding equipment accessories and PPE	6 sets 1 torch /cubicle	
	1.3. Electric, arc welding equipment, accessories and PPE	6 sets 1 machine /cubicle	
	1.4. Pedestal grinder	3 units	
	1.5. drilling machine (approx. 35 mm min. Diameter drill capacity)	3 units	
	1.6. Electric power hand drill with at least 10 mm diameter drilling capacity	6 units	
	1.7. Electric power hand grinder/cutter	4 units	
	1.8. Metal cutting shear (snip)	6 sets	
	1.9. Anvil	6 pcs	
	1.10. Inside and outside steel vernier caliper	6 pcs	
	1.11. Inside and outside micrometers	6 pcs	
	1.12. Depth gauge caliper	6 pcs	
	1.13. Dial micrometer with magnetic base	4 sets	
	1.14. Steel ruler	6 pcs	
	1.15. Flat Chisel	12 pcs	
	1.16. Cross-out chisel	12 pcs	



Course	Task Maintenance and Repair		System Integration, Operation and Fault Finding
	Key Area Equipment	Quantity Required	
	1.17. Diamond point chisel	12 pcs	
	1.18. Round nose chisel	12 pcs	
	1.19. Center punch, 60 mm	12 pcs	
	1.20. Center punch, 90mm	12 pcs	
	1.21. Hacksaw	6 pcs	
	1.22. Tap and dies	6 pcs	
	1.23. Die nuts	6 pcs	
	1.24. Wrench, socket type, 10mm to 24mm	6 sets	
	1.25. Wrench, open type (metric), 10 mm to 24mm	6 sets	
	1.26. Combination Wrench, open-close type (metric), 10 mm to 24mm	6 sets	
	1.27. Double-cut rough files	12 pcs	
	1.28. Second-cut smooth files	12 pcs	
	1.29. Single-cut smooth files	12 pcs	
	1.30. Second cut files	12 pcs	
	1.31. Machinist's combination set	12 pcs	
	1.32. Try square (steel)	12 pcs	
	1.33. Protractor (steel)	12 pcs	
	1.34. Dividers (steel)	12 pcs	
	1.35. Sledge hammer (various sizes, steel/wooden)	6 pcs	
	1.36. Ball peen hammer	12 pcs	
	1.37. Straight peen hammer (various sizes)	12 pcs	
	1.38. Tongs (various sizes)	12 pcs	
	1.39. Pliers, mechanical (various sizes)	12 pcs	
	1.40. Screw driver, Philips, various sizes	12 pcs	
	1.41. Screw driver, flat, various sizes	12 pcs	
	1.42. Vise grip	6 pcs	
	1.43. Feeler gauge (metric/inches)	6 pcs	
	1.44. Pitch gauge	6 pcs	
	1.45. Drill bit, 13-25 mm, tapered shank	6 pcs	
	1.46. Drill bit, 15-30 mm, cylinder shank	3 pcs	
	1.47. Drift punch	6 pcs	

Course	Task Maintenance and Repair		System Integration, Operation and Fault Finding
	Key Area Equipment	Quantity Required	
	1.48. Lockers for storing personal belongings	1 in workshop area 6 sets	
	1.49. Washing facility		
	1.50. Scrap disposal containers		
	1.51. 150 mm swing lathe machine with accessories		
	1.52. Shaper (350mm travel) with accessories	1 set	
	1.53. Milling machine (horizontal, vertical or universal) with cutting tools and accessories	1 set	
	1.74. Hydraulic pipe bender with accessories	1 set	
	1.75. Pipe wrench various sizes	2 sets	
	1.76. Grease gun	2 sets	
	1.77. Oil applicator	2 sets	
	1.78. Wire gauge	2 sets	
	1.79. Surface gauge	2 sets	
	1.80. Blow torch	2 sets	
	1.81. Reamer handset, assorted	2 sets	
	1.82. Torque wrench	2 sets	
	1.83. Pipe cutter and threading tools	2 sets	
2. Marine Diesel	Marine Diesel engine-complete for dismantling with the following components: <ul style="list-style-type: none"> <li>• Cylinder liner</li> <li>• Fuel valve/injector</li> <li>• Cylinder relief valve</li> <li>• Air-starting valve/starting mechanism (not all have ASV)</li> <li>• Crankcase relief valve</li> <li>• Jerk fuel valve pump</li> <li>• Cylinder head</li> <li>• Turbocharger</li> <li>• Bearing shells</li> <li>• Piston and connecting rod</li> <li>• Engine governor</li> <li>• Starting system</li> <li>• Fuel and lube oil filters</li> </ul>	1 set	Marine Diesel Engine (operational) with auxiliaries or ERS Category 3.



Course	Task Maintenance and Repair		System Integration, Operation and Fault Finding
	Key Area Equipment	Quantity Required	
3. Auxiliary Machinery	3.1. Reciprocating displacement pump	1 set	All items in item 3 should be operational or an ERS Category 3 that can be used for the student to learn and demonstrate its operation
	3.2. Gear pump	1 set	
	3.3. Rotary vane pump	1 set	
	3.4. Screw displacement pump	1 set	
	3.5. Centrifugal pump	1 set	
	3.6. Reciprocating air driven pump	1 set	
	3.7. Other parts/components: <ul style="list-style-type: none"> <li>• Gland</li> <li>• <b>Mechanical Seal</b></li> <li>• Drain Cock</li> <li>• globe valve</li> <li>• gate valve</li> <li>• relief valve</li> <li>• quick closing valve</li> <li>• <b>change-over valve chest</b></li> <li>• mud box (strainer)</li> <li>• steam trap</li> <li>• shell and tube cooler</li> <li>• plate-type cooler</li> </ul>	1 set each	
	3.8. Reciprocating air compressor (2 stage or higher) with the following components <ul style="list-style-type: none"> <li>• Cylinder cover</li> <li>• Piston</li> <li>• relief valve</li> <li>• fusible plug</li> <li>• <b>suction and delivering valve</b></li> <li>• water-space safety valve</li> <li>• bursting disc</li> </ul>	1 set	
	3.9. Centrifugal separator/Purifier	1 set	Operational Boiler or ERS Category 3
4. Power Plant 2 – Steam Plant	4.1. Boiler for demonstration only	1 set	
	4.2. Boiler water test kit	1 set	
	4.3. Boiler safety valves (for dismantling)	1 set	





Course	Task Maintenance and Repair		System Integration, Operation and Fault Finding
	Key Area Equipment	Quantity Required	
7. Automation	f. Live Line Tester	5 set	Process Simulator that contains process to be controlled, process transmitter/ sensor, controller (PID, PI, PD), correcting elements/ final control elements
	7.1 Sample of sensors and other instruments as defined in the curriculum		
	7.2. Differential Pressure Switch	1 set	
	7.3. Pressostat	1 set	
	7.4. Thermistor	1 pc	
	7.5. Thermocouple	1 pc	
	7.6. 100Ω Resistance Bulb	1 pc	
	7.7. U-Tube Manometer	1 pc	
	7.8. Transmitters (Pneumatic & Electric)	1 set each	

#### Classification of Machinery Simulators

Category 1	Full Mission Simulator	A full mission simulator capable of simulating all machinery operations in engine control room and machinery spaces, by the use of operational panels in machinery spaces.
Category 2	Multi Task Simulator	A multi task simulator capable of simulating several machinery operations in engine control room and machinery spaces, but with limited use of operational panels in machinery spaces.
Category 3	Limited Task Simulator	A limited task simulator capable of simulating some machinery operations in engine control room for procedural training.
Category 4	Special Task Simulator	A special task simulator capable of simulating operation and/or maintenance of particular machinery equipment, and/or defined engineering scenarios.

## Competencies addressed by the Engine Room Simulator

STCW Reference	Competence	Category			
		1	2	3	4
Table A-III/1.1	Maintain safe engineering watch	✓	✓		✓
Table A-III/1.3	Use internal communications systems	✓	✓		✓
Table A-III/1.4	Operate main and auxiliary machinery and associated controls	✓	✓	✓	✓
Table A-III/1.5	Operate fuel, lubrication, ballast and other pumping systems and associated control systems	✓	✓	✓	✓
Table A-III/1.6	Operate electrical, electronic and control systems	✓	✓	✓	✓
Table A-III/1.7	Maintenance and repair of electrical and electronic equipment				✓
Table A-III/1.11	Maintain seaworthiness of the ship	✓	✓		✓

### NOTE:

“The listed equipment is minimal for reference of MHEI’s. Additional equipment is required based on the Course Specifications of the courses included in the BSMarE program. MHEI’s are required to demonstrate how Course Outcomes are evaluated and assessed.”