1. Course Title: Pre-Sea Rating Training (Engine)

2. Scope With reference to convention Imo Model Course: This course is intended for fresh trainees who have not previously served on board a ship to prepare them for working as engine ratings. This training, together with the Basic Safety Training (STCW Code A-VI/1.2) and company arranged Training will cover the mandatory minimum training requirement prescribed in Regulation VI/1 and III/4-2.2.2 of International Convention on Standards of Training, Certification and Watch keeping for Seafarers (STCW), (as amended) Code.

Main content of the course covers orientation and familiarization of ship in general and machinery space and machinery, equipment & plants therein in particular. This includes training on duties, functions, responsibilities and watch keeping in addition to Emergency, Safety and Survival.

3. Objective:

1. This Course will provide sufficient knowledge for a person intending to go to sea as an Engine Rating to operate and work on

the shipboard machinery and systems typical of either motor or steam ship in a safe and efficient manner.

2. On successful completion of this Course, the participant should be able to:
    a. Describe the basic layout of a typical engine room and its piping systems with the essential components, their functions, interconnections and safety and pollution hazards.
    b. Identify the common types of fuels, lubricants, solvents etc used on board, stating their purpose and safety hazards.
    c. Identify the individual components, which make up the items of shipboard machinery used in the engine room and elsewhere.
    d. Understand the requirements and procedures for watch keeping in the machinery space as an engine rating.

4. Course Outline Shore base & On board Training:

Subject Area			Hours	
			Lectures	**Practical**
1.	**Ship and Shipping Familiarization**			
	1.1	Introduction	0.75	
	1.2	Ship, shipboard organization, structure and process	1.50	
	1.3	Department of Shipping, Government of Bangladesh	1.50	
	1.4	Seafarers and ship owner organization	0.75	
	1.5	Seafarer and the Law	1.50	
			6.00	
2.	**General Ship Knowledge**			
	2.1	Types of ships	0.75	
	2.2	Machinery space	1.50	
	2.3	Items in the machinery space	2.25	
	2.4	Tanks	2.25	
	2.5	General safety	1.50	
			23.25	0.75
3.	**Fuel, Lubricants, Chemicals**			
	3.1	Types and applications of fuels	1.50	
	3.2	Hazards associated with fuels	1.50	
	3.3	Types and properties of lubricants	0.75	
	3.4	Treatment of fuels and lubricants	1.50	
	3.5	Chemicals and their uses	0.75	
	3.6	Safe storage and handling	1.50	

			7.50	
4.	**Propulsion System**			
	4.1	Propulsion engines	1.50	
	4.2	Shafting	2.25	
	4.3	Stern tube	2.25	
	4.4	Propeller	1.50	
			7.50	
5.	**Diesel Engines**			
	5.1	Classification characteristics	3.75	1.50
	5.2	Construction and components	3.75	1.50
	5.3	starting and reversing	1.50	
	5.4	Supercharging	1.50	
	5.5	Cooling, Lubricating and fuel systems	4.50	
	5.6	Engine safety and interlocks	3.00	13.50
			18.00	3.00
6.	**Boilers and steam engine**			
	6.1	Types of boilers	1.50	0.75
	6.2	Mountings, fittings and safety devices	3.00	
	6.3	Feed water and steam distribution system	2.25	
	6.4	Operation and maintenance	4.50	
	6.5	Steam turbine engine and system	3.00	
			14.25	0.75
7.	**Auxiliary Machinery and Systems**			
	7.1	Pipes and pipe fittings	2.25	
	7.2	Pumps	4.50	
	7.3	Pumping systems	4.50	
	7.4	Heat exchangers	3.00	
	7.5	Centrifuges	3.00	
	7.6	Air compressors and compressed air system	3.75	1.50
	7.7	Steering gear	3.00	1.50
	7.8	Fresh water generators	1.50	
	7.9	Refrigeration and air conditioning	3.00	
	7.10	Hydraulics	2.25	
			30.75	3.75
8.	**Marine pollution**			
	8.1	Pollution control equipment, systems and procedure	4.50	
			4.50	
9.	**Electricity and Control System**			
	9.1	Power generation	0.75	0.75
	9.2	Electrical components and system	1.50	
	9.3	Batteries	0.75	0.75
	9.4	Electrical safety	3.00	
	9.5	Elementary instrumentation	1.50	
	9.6	Basic control concepts	1.50	
			9.0	1.50
10.	**Watch keeping & Engine Room Operation**			
	10.1	Watch keeping	0.75	
	10.2	Monitoring and alarm system	2.25	
	10.3	Unmanned machinery space (U.M.S) operation	2.25	

	10.4	Departure and arrival ports	1.50	
	10.5	Stores and stock control	1.50	
			8.25	
11.	**Safe Work Practice in Engine Room**			
	11.1	Personal safety gears	0.75	
	11.2	Lifting equipment	1.50	
	11.3	Isolation of systems	1.50	
			3.75	
12.	**Drawings and Sketches**			
	12.1	Symbols	1.50	
	12.2	Piping Diagrams	1.50	
			3.00	
13.	**Deck Familiarization**			
	13.1	Various types of merchant ship trades	5.25	
	13.2	Navigational Bridge equipment and operations	3.75	1.50
	13.3	Mooring and Anchoring equipment and operations	5.25	
	13.4	Deck Machinery, Cargo handling, and equipment	4.50	1.50
	13.5	Pilot ladder and safe means of access	5.25	
			24.00	3.00
14.	**Visits**			
	14.1	Ship		4.50
	14.2	Dry-dock		4.50
	14.3	Marine workshop		4.50
				13.5
15.	**English**			
	15.1	Spoken English	27.0	
	15.2	Marine Vocabulary	7.50	
			34.5	
16.	**Workshop**			
	16.1	Personal, General and machine safety		1.50
	16.2	Lathe work		9.00
	16.3	file and filing		3.00
	16.4	Drilling machines and drills	4.50	
	16.5	Measuring, testing and gauging tools	3.00	
	16.6	Fitting	7.50	
	16.7	Hand tools	7.50	
	16.8	Welding and cutting	15.0	
			51.0	
17.	**Assessment**			
	17.1	Item 1 to 12	5.25	
	17.2	Item 13	0.75	
	17.3	Item 15	0.75	2.25
	17.4	Item 16		4.50
			6.75	6.75
		SUBTOTALS	**184.5**	**85.5**
		TOTAL	**270.0**	

5. Competence Standard/Course Syllabus Checked with up-to-date STCW/IMO Model Course:

Learning Objectives		
		Hours
1	**Ship and Shipping Familiarization**	**6.0**
1.1	**Introduction**	**0.75**
	1. Understands the outline of Bangladesh Merchant Services 2. Lists cargoes and trade patterns	
1.2	**Ship, shipboard organization, structure and process**	**1.5**
	1. Describes shipboard organizational set up 2. Understands rules that governs ship's administration 3. Knows duties and responsibilities of different ranks	
1.3	**Department of Shipping, Government of Bangladesh**	**1.5**
	1. Understands the importance of Mercantile Marine office 2. Knows the significance of ship's Article 3. Sates the procedures for joining and leaving ship	
14.	**Seafarer and ship owner organizations**	**0.75**
	Understands the relevance of: 1. Shipowners 2. Unions 3. Crewing agents	
1.5	**Seafarer and the Law**	**1.5**
	Understands the basic concept of: 1. IMO and ILO Conventions 2. Bangladesh Merchant Shipping Recruitment, Training and Certification Rules 3. Bangladesh rules relating to safety of seafarers	
2	**General Machinery Knowledge**	**9.0**
2.1	**Types of ships**	**1.5**
	Defines: 1. Motor and steam ships 2. Cargo ships and its types 3. passenger ships	
2.2	**Machinery space**	**1.5**
	1. Understands the purpose of machinery space 2. Describes the location and lay-out of machinery spaces 3. Explains why there are escape routes from machinery space 4. Defines bulkhead, platform, tank-top, cofferdam, bilge, duct keel, shaft tunnel, ventilators, flaps, drains and watertight door	
2.3	**Items in the machinery space**	**2.25**
	identifies and states the purpose of: 1. Engines 2. Pumps 3. Compressors 4. Boilers 5. Purifiers 6. Pressure vessels 7. Heat exchangers 8. Fresh water generators 9. Miscellaneous safety equipment	

	Learning Objectives	
		Hours
2.4	**Tanks**	**2.25**
	1. Understands the functions of tanks 2. Lists the types and names of different tanks common to any ship 3. States the common features of tanks 4. Describes the procedure to take sounding of tank	
2.5	**General safety**	**1.5**
	1. Knows that the machinery space is a hazardous place 2. Understands the concept of Safety First	
3	**Fuel, Lubricants, Chemicals**	**7.5**
3.1	**Types and applications of fuels**	**1.5**
	1. States that all shipboard fuels are extracted from crude oil and are hydrocarbons 2. Lists different marine fuels and states their applications 3. Defines following physical properties in simple terms 1. density 2. viscosity 3. pour point 4. flash point	
3.2	**Hazards associated with fuels**	**1.5**
	1. Defines volatility as the ability to vaporize 2. States that all fuels are volatile and are fire and explosion hazards 3. Stated the health hazards associated with fuels are skin contact, ingestion and inhalation	
3.3	**Types and properties of lubricants**	**0.75**
	1. Lists the origins of lubricants 2. States that mineral and synthetic oils are mostly used on ships 3. Describes different shipboard applications and uses of lubricants	
3.4	**Treatments of fuels and lubricants**	**1.5**
	1. Understands that fuels and lubricants 2. Describes the different treatments for fuel oil and lubricants	
3.5	**Chemicals and their uses**	**0.75**
	1. Lists the common chemicals used on board ships 2. States that chemicals are toxic, explosive and corrosive 3. States the general precautions for handling chemicals	
3.6	**Safe storage and handling**	**1.5**
	1. States that no fuel to be stored in the engine room and outside engine room with al flash point less 60^0 C and 43^0 C respectively 2. Describes the fire hazards associated with oily bilge, waste oil and sludge 3. Knows that 90% of engine room fires are oil fires 4. Describes the safe method of disposal for waste oil, sludge, oily rags, used cleaning fluids etc.	

4	**Propulsion System**	**7.5**
4.1	**Propulsion engines**	**1.5**
	1. Understands propulsion arrangements for ship 2. States that main propulsion engine may be a slow speed diesel engine, a medium speed engine or a steam engine	
4.2	**Shafting**	**2.25**
	1. Describes the shafting arrangement from main engine to propeller 2. Identifies main bearing, thrust block and Plummer blocks	
4.3	**Stern tube**	**2.25**
	1. States the function of stern tube 2. Identifies different components of stern tube 3. Understands sealing and lubrication arrangements of stern tube	
4.4	**Propeller**	**1.5**
	1. Describes the function of a propeller 2. Identifies a fixed pitch and a variable/controllable pitch propeller	
5	**Diesel Engines**	**21.0**
5.1	**Classification characteristics**	**5.25**
	1. Lists different types of diesel engine 2. Defines the term internal combustion engine 3. Understands that a diesel engine is a compression ignition engine 4. Describes the basic working principles of a 2-stroke and 4-stroke engines 5. States that main engines are either slow speed or medium speed engines whereas auxiliary engines are invariably medium or high speed engines	
5.2	**Construction and components**	**5.25**
	1. Describes the basic construction of a diesel engine 2. Identifies and states the functions of the following components: Bedplate, A-frame, cylinder block, cylinder cover and liner, water jacket piston and rings, connecting rod, piston rod, diaphragm and stuffing box. cross-head, cross-head guides, crankshaft, main bearings, cross-head bearings, big end bearings, camshaft, chain/gear drive, fuel injection pump, fuel valves, air inlet valves, exhaust ports, air starting valves, cylinder relief valves, indicator cocks and turning gear	
5.3	**Starting and reversing**	**1.5**
	1. States the different starting arrangements of diesel engines 2. Describes the basic air starting arrangement of diesel engines 3. Understands that a diesel engine can be started in the reverse direction 4. Identifies the safety devices in the air starting system	
5.4	**Supercharging**	**1.5**
	1. Understands the term supercharging 2. Lists different supercharging arrangements 3. Explains the function of a turbocharger 4. States that a turbocharger is driven by exhaust gases from engine	
5.5	**Cooling, lubrication and fuel systems**	**4.5**
	Describes the layout and function of main components of the following systems: 1. Fresh water cooling 2. Lubricating oil 3. Fuel oil system	

	4. Understands the importance of draining settling and service tanks Regularly 5. States the problems associated with decrease or increase in engine sump level	
5.6	**Engine safety and interlocks**	**3.0**
	1. States that the two most important parameters of condition of diesel are pressure and temperature 2. Explains why running engine may slow or shut down automatically 3. Describes the importance of crankcase mist detector and relief valve, air starting line relief valve and flame trap, scavenge trunk relief valve and indicator cocks 4. Lists the common interlocks of the engine	
6	**Boilers and Steam Engine**	**15.0**
6.1	**Types of boilers**	**2.25**
	1. States the function and duties of a boiler 2. Understands the basic constructions of a fire tube and a water tube boiler 3. States the difference between oil fired, exhaust and composite boilers 4. Defines low pressure, high pressure and dual pressure boilers 5. Identifies main and auxiliary boilers	
6.2	**Mountings, fittings and safety devices**	**3.0**
	1. Names the common mountings and fittings of a boiler 2. Lists the safety devices fitted to a boiler 3. States the function of each mounting, fitting and safety device of a boiler	
6.3	**Feed water and steam distribution system**	**2.25**
	1. Describes the purpose of feed water system 2. States the functions of the principal components of feed water system 3. Understands the line diagram of a steam distribution system 4. States the purpose of reducing valves and steam traps 5. Understands the importance of regular test and treatment of feed water	
6.4	**Operation and Maintenance**	**4.5**
	1. Describes the procedure of blow down the gauge glass 2. States the action to be taken in case of low level or no level in the gauge glass 3. Describes the procedure and precautions to be taken when lighting up a boiler from cold 4. States the safe blow down and scumming procedures 5. Describes the procedure and precautions to drain and open up a boiler 6. Describes the procedure to be taken to enter and work inside a boiler 7. Understands the importance of regular soot blowing.	
6.5	**Steam turbine engine and system**	**3.0**
	1.Understands the basic working principles of a steam turbine engine 2. Identifies the main components of a steam turbine engine 3. Understands that steam turbines may be used as main engine or prime movers for generators and pumps	
7	**Auxiliary Machinery and Systems**	**34.5**
7.1	**Pipes and pipe fittings**	**2.25**
	1.States the functions of cocks and valves 2. Identifies different types of valves 3. Explains why all valves should be correctly operated and well maintained	

	4. States that jointing, gaskets or rubber rings are essential for flange connection 5. Understands the importance of purging and draining of pipes 6. Describes the corrosion problems of sea water pipes and their preventative and repair procedures 7. States the functions, types and applications of filters and strainers. 8. Identifies the color coding of the different piping systems	
7.2	**Pumps**	**5.25**
	1.States the functions of pumps 2. List the name of different types of pumps and their applications onboard 3. Understands that a centrifugal pumps needs priming 4. States that a positive displacement pump may be rotary or reciprocation 5. Explains why a positive displacement pump must have pressure relief arrangement 6. Describes the procedures for starting and stopping a centrifugal pump and a positive displacement pump.	
7.3	**Pumping systems**	**4.5**
	1. Defines bilge, ballast, fire, domestic fresh water and fuel bunkering systems. 2. Understands the basic line diagrams of the above systems 3. States the bilge, ballast and fire lines are normally interconnected 4. Aware of the importance and location of emergency bilge suction valve	
7.4	**Pumping systems**	**4.5**
	1. Defines a heat exchanger and identifies different types heat exchangers 2. Understands the difference between a cooler, a condenser and a heater 3. Lists the names of heat exchangers normally found on board ships 4. Describes the basic construction the basic construction of a shell and tube type heat exchanger 5. Describes the basic construction of a pate type heat exchanger 6. States that the cooling mediums are seawater or freshwater 7. States the medium being cooled are lubricating oil, fresh water hydraulic oil, steam or refrigerant gas 8.States that the medium being heated are fuel oil, lube oil or fresh water 9. Describes the correct operation and maintenance procedures for heat exchanger 10. Understands that a heater is a pressure vessel and must have relief valve	
7.5	**Centrifuges**	**3.0**
	1.States the functions of centrifuges 2. Understands the difference between a purifier a clarifier 3. Identifies the major components of a purifier 4. Understands the basic working principles of a purifier 5. States that heavy oil, diesel oil and lube oil purifiers are interchangeable 6. Describes the starting and dislodging procedures of a purifier	

7.6	**Air compressor an compressed air system**	**5.25**
	1.States the functions and duties of air compressors and compressed air on board the ships 2. Lists the names of different types of marine air compressors 3. Identifies the major components of a multistage reciprocating air compressor 4. States the purpose and location of the following fittings and safety devices of an air compressor: intake air filter, pressure gauges, relief valves, drains, bursting discs, high temperature alarm & shut down, low lube oil pressure/level alarm & shut down	

	5. Describes the procedures for starting and stopping an air compressor manually 6. States the functions of an air receiver 7. Names the mountings fitted to an air receiver 8. Explains the importance of regular draining of an air receiver 9. Understands that different pressures are maintained in the compressed air system	
7.7	**Steering gears**	**4.5**
	1.States the function of a steering gear 2. States that the principal components of an electro-hydraulic steering gear system are the telemotor transmitter, telemotor receiver, hydraulic pumps and the ram actuator or rotary vane actuator 3. Understands a simple sketch showing working of steering gear system 4. Explains the purpose and procedure of emergency steering 5. States the checks and tests carried out on steering gear prior departure and arrival port and also at sea	
7.8	**Fresh water generators**	**1.5**
	1.States the purpose of fresh water generators onboard ships 2. Lists the different types of shipboard fresh water distillation plants 3. Understands the basic working principle and a schematic diagram of a fresh water generator using main engine jacket cooling water as heating medium 4. Describes the starting and stopping procedures of a submerged element type fresh water generator	
7.9	**Refrigeration and air conditioning**	**3.0**
	1.Describes the application of refrigeration and air conditioning systems onboard ships 2. Understands the lay out and basic working principle of vapor compression refrigeration system as found onboard ships 3. Identifies the four major components i.e. compressor, condenser, TX-valve and evaporator and describes their functions 4. Lists the names and knows the functions of common fittings and safety devices as fitted to shipboard vapour compression system 5. States the precautions necessary when handling refrigerants and working on refrigeration systems 6. Aware of the environmental hazards associated with CFCs	
7.10	**Hydraulics**	**2.25**
	1.Lists the hydraulic power systems available onboard ships 2. Understands the principles of fluid power 3. Identifies the major components of hydraulic power system 4. Describes the care, maintenance and safety associated with hydraulic systems	
8	**Marine pollution**	**4.5**
8.1	**Pollution control equipment, systems and procedure**	**4.5**
	1.Lists the names of pollution control equipment normally found onboard ships 2. Understands the basic working principles of an oily water separator 3. Describes the starting and stopping procedures of an oily water separator 4. States that some ships may have slop tank to collect bilge 5. Explains the actions to be taken to minimize the effects in case of an oil pollution from the ship 6. Aware of the Shipboard oil Pollution Emergency Plan	
9	**Electricity and Control System**	**10.5**
9.1	**Power generation**	**1.5**

	1.Understands basic difference between A.C. and D.C. systems 2. Identifies diesel-generators, turbo-generators and shaft generators 3. Demonstrates paralleling of two generators and distribute loads evenly on them 4. Describes emergency power supply arrangements on ships	
9.2	**Electrical components and system**	**1.5**
	1.Understands the differences between types of motors 2. Identifies major components of electrical system e.g. main switchboard, circuit breakers, relays, AVR, starters etc 3. Lists the portable electrical equipment commonly used onboard ships	
9.3	**Batteries**	**1.5**
	1.Explains the use and applications of batteries onboard ships 2. Describes basic construction of shipboard battery maintenance	
9.4	**Electrical safety**	**3.0**
	1.Lists the electrical safety devices and protections e.g. earthling, fuses, circuit breakers, trips etc 2. States correct use and application of different types of meters e.g. millimeter, meager instrument, tong tester etc.	
	3.Identifies the hazards of electrics shock 4. States how to avoid electrics and immediate actions to be taken in case of electrocution. 5. Describes proper procedure for electrical isolation of components and system.	
9.5	**Elementary instrumentation**	**1.5**
	1.Understands basic concepts of measuring elements 2. Describes typical pressure and temperature measuring instruments 3. Identifies other common instrumentation e.g. flow sensors, tachometers, photocells, differential pressure cells, oil content monitors, level gauges etc.	
9.6	**Basic control concepts**	**1.5**
	1.Defines telemetering or transuding 2. Understands control theory-basic concepts and control actions 3. States that a control system may be pneumatic or hydraulic or electronic	
10	**Watch keeping and Engine Room Operation**	**8.25**
10.1	**Watch keeping requirements**	**0.75**
	1.Defines watch keeping-manned and unmanned 2. Understands that the purpose of watch keeping is to ensure safe operation of machinery and safety of machinery space 3. States that watch keeping requires good use of sensory organs 4. Explains the purpose of the logbook and how to fill it up	
10.2	**Monitoring and alarm system**	**2.25**
	1.Understands that the two important parameters of condition monitoring of an engine or machinery are pressure and temperature 2. Understands that the two most important parameters of condition monitoring of an electrical equipment are vibration and insulation 3. States the function of engine control room 4. Lists all instruments and gadgets common to any engine control room 5. States the normal values of pressure and temperature readings for main propulsion plant	
10.3	**Unmanned machinery space (U.M.S) operation**	**2.25**
	1.Understands the difference between manned and unmanned watch keeping 2. States the requirements for unattended machinery space.	

	3. Aware of the safety measures for entering machinery space during unattended period 4. Describes the duties of engine ratings in a UMS ship	
10.4	**Departure**	**1.5**
	1.Describes the preparations for starting main engine 2. States the duties of engine ratings prior departure and arrival ports 3. Understands the watch keeping duties at sea and during stand-by period 4. Describes how to start a generator from cold and put it on load	
10.5	**Stores and stock control**	**1.5**
	1.Understands the importance of maintaining proper store keeping for all spare parts and consumable items in the ship 2. Describes the procedures for stock control and inventory 3. Aware of the importance of knowing the location of all special tools	
11	**Safe Working Practice in Engine Room**	**3.75**
11.1	**Personal safety gears**	**0.75**
	1.Understands the hazards associated with non-use of personal safety gears 2. Identifies all the personal safety gears that may be used onboard ships 3. Explains the proper use of all personal safety gears	
11.2	**Lifting equipment**	**1.5**
	1.Lists all the lifting equipment and their accessories used onboard ships 2. Describes the safe use of lifting equipment 3. Understands the code of hand signals for use with lifting appliances	
11.3	**Isolation of systems**	**1.5**
	1. States the risks involved and precautions to be taken in isolating part of a liquid pressure system e.g. hot oil. Seawater, hydraulic medium etc. 2. States the risks involved and precautions to be taken in isolating part of a gas pressure system e.g. steam, compressed air, refrigerant etc.	
12	**Drawing and Sketches**	**3.0**
12.1	**Symbols**	**1.5**
	1. Identifies the symbols used in ship's drawings 2. Identifies the symbols uses in electrical drawings	
12.2	**Piping diagrams**	**1.5**
	1. Understand how to read and interpret piping diagrams 2. Knows how to relate piping diagrams with actual system	
13	**Deck Familiarization**	**27.0**
13.1	**Various types of merchant ship trades**	**5.25**
	Defines 1.General cargo 2. Liquid Bulk cargo 3. Containerized cargo 4. Roll-on/Roll-off cargo 5. Solid Bulk cargo	
13.2	**Navigational bridge equipment and usage**	**5.25**
	1. Lists all bridge equipment 2. Recognizes lights and shapes 3. Identifies distress signals 4. Identifies electronic navigational aids 5. Names all communication equipment	
13.3	**Mooring and anchoring equipment and operation**	**5.25**

	Understands 1. Safe use of windlass and winches 2. General mooring arrangement 3. Common types of anchors and anchoring operations	
13.4	**Deck machinery and cargo handling**	**6.0**
	1. Lists and identifies all deck machinery 2. Describes safe working practices in using derricks and cranes 3. Describes rigging of lifting equipment and pipelines 4. Demonstrates the use of cargo slings and cargo gears	
13.5	**Pilot ladder and safe means of access**	**5.25**
	Understands and describes 1. Inspection, rigging and maintenance of pilot ladders and pilot hoists 2. Safe usage of gangways, accommodation ladders 3. Safety nets, side rails, stanchions and securing	
14	**Visits**	**13.5**
14.1	**Ship**	**4.5**
	1. Guided tour of ships available in Chittagong port	
14.2	**Dry-dock**	**4.5**
	1. Supervised visit to the Chittagong Dry-Dock	
14.3	**Marine workshop**	**4.5**
	1. Guided tour of BSC Marine Workshop of other suitable marine workshops	
15	**English**	**34.5**
15.1	**Spoken English**	**27.0**
	1. Knows how to greet, show etiquette, order request, question and use verbs 2. Uses pronouns, prepositions, correlatives, active and passive voices, temporal, emphasis, countable nouns and idiomatic sentences correctly 3. Makes sentences of invitation, meeting, parting, gratitude, congratulations, good wishes, refusal, relating to meals, permission, encouragement, consolation, affection, negation, consent, apologies and annoyance 4. Understands the common terms regarding health, doctors, hospitals, animals, games, post office, restaurants, shipping, transport, law, drugs and contraband items, police, immigration and all day to day affairs 5. Knows correct spelling, pronunciation, abbreviations and phrases 6. Understands common words and terms used onboard by multinational crew	
15.2	**Marine Vocabulary**	**7.5**
	1. Understands words and expressions relating to shipboard procedures, responses, urgent messages, position, courses, bearings, distances, speed, numbers, geographical names and time 2. Knows the terms associated with dangers to Navigation, warnings and assistance 3. Discusses events relating to anchoring, arrival, berthing, departure, maneuvering, pilotage, fairway navigation, canal and lock operations and routing, 4. Knows common shipping terminology associated with course, radar, tide, storms, ports, weather, fishing, helicopters, ice-breakers etc. 5. Knows how to communicate between ship-to ship, shore and within ship by wireless of VHF sets	
16	**Workshop**	**51.0**
16.1	**Personal, general and machine safety**	**1.5**
	1. Knows the use of items in the Workshop	

	2. Identifies the hazards associated with workshop Practice 3. Describes the safe work practice in the Workshop	
16.2	**Lathe work**	**9.0**
	1. Identifies the components of a lathe machine 2. Operates the different controls of a lathe machine 3. Grinds tool correctly 4. Performs turning, tapering and boring	
16.3	**File and filing**	**3.0**
	1. Recognizes different types of files 2. Detects different grades and cut to teeth 3. Performs filing of a surface and tests for fairness	
16.4	**Drilling machines and drills**	**4.5**
	1. Identifies different types of drilling machines and drills 2. Performs countersinking, counter boring and spot facing operations 3. Calculates correct drilling speeds and identifies causes of drill failure 4. Performs setting up holding work 5. Sharpens the drill correctly	
16.5	**Measuring, testing and gauging tools**	**3.0**
	1. Recognizes different measuring, testing and gauging tools 2. Uses protractor, straight-edge, combination set 3. Works with types of gauges and calipers	
16.6	**Fitting**	**7.5**
	1. Dismantles pumps and diesel engine components 2. Boxes up dismantled pumps and diesel engine components 3. Dismantles and fits back piping with proper gaskets/jointing 4. Identifies common types of nuts and bolts, split and gridlock pins, screws, washers, circlips, key and tapers 5. Recognizes different types of threads, common forms and proportions	
16.7	**Hand tools**	
	1. Identifies different types of hacksaws, screw drivers, spanners, chisels, scrapers, reamers and portable power tools 2. Performs chiseling, chipping, scraping, reaming, cutting and tightening with the above tools	
16.8	**Welding and cutting**	**15.0**
	1. Identifies welding and gas cutting equipment and their components 2. Performs basic cutting and welding of mild steel with gas and electric equipment 3. Recognizes common faults in welding	
17	**Assessment**	**13.5**
17.1	**Item 1 to 12**	**5.25**
	1. Written quizzes, tests and examinations of continuous basis and orals	
17.2	**Item 13**	**0.75**
	1. Written assessment	
17.3	**Item 15**	**3.0**
	1. Written assessment and orals	
17.4	**Item 16**	**4.5**
	1. Practical assessment and orals	

6. Entry Standard, Selection Criteria of Students:
Passed Secondary school Certificate
Age limits: 16-20 years.

7. Intake limitation, with specific mention Instructor-student ratio:
For practical exercises student/teacher ratio should not exceed 10:1

8. Qualification and experience of instructors:
Minimum qualification of any instructor must be Class 4 Marine Engineer officer certificate of competency or equivalent with relevant sea experience.

9. Qualification and experience of assessors: The practical exercises must be conducted and achievement of competency must be assessed under the supervision of a retained or serving fire fighter (or a person with equivalent qualifications and experience). The person conducting the practical training must be in possession of a recognized First Aid qualification. The ratio of staff to students for the practical exercises involving live fires or the use of breathing apparatus should not exceed 1:8.

10. Details Facilities & Equipment, materials and resources available for the training; Visual aids lecture Notes, Library facilities, Rental documents, Workshops Training Equipment: Navigational, Engineering, Communication, Seamanship etc:
Normal classroom facilities with an overhead projector must be available. VCR. Television and instructional Video Tapes are highly recommended. The demonstration room/laboratory will be required to contain the following items/models of items cross-sectioned for inspection or poster size drawings/photographs of the same so that the main components are visible:

1. Diesel and Steam Engines.
II. Boilers
III. Reciprocation air compressors and their safety valves.
IV. Various types of pumps.
V. Plate and tubular heat exchanger
VI. Valves: gate, Globe, butterfly, spring loaded, screw down and non-return type.

11. Conduct of Training with number of classroom lectures, practical work use of simulator, video etc:

Day / Period	1st Period 0900-0930	2nd Period 0945-1030	3rd Period 1030-1115	TEA BREAK 1115-1145	5th Period 1145-1230	6th Period 1230-1315	7th Period 1315-1400
Sunday	DF	DF	PS	TEA BREAK	PS	WS	WS
Monday	DF	DF	PS		PS	WS	WS
Tuesday	ENG	ENG	PS		PS	WS	WS
Wednesday	ENG	ENG	PS		PS	WS	WS
Thursday	ENG	ENG	PS		PS	WS	WS

1. Propulsion System (PS): Nazrul Islam, Instructor.
2. General Ship Knowledge (GSK): Mr. Didarul Alam.
3. Deck Familiarization: Mr. Ataur Rahman, CNI.
4. English (ENG): Visiting Lecturer: Syeda Nafisa Alam.
5. Work Shop (WS): Md. Salauddin Ahmed

12. Total duration of Training; Duration of Practical's:
Theory- 171.0 hrs.
Practical- 72.0 hrs.
Assessment- 27.0 hrs.

13. Assessment procedure, whether independent of instruction or continuous performance evaluation:
Short answer, multiple choice, fill in the blanks, hot spot, true/false and sketch labeling type questions in a written test are used for assessment, Practical assessment includes direct observation of ability under realistic situation.

14. Formats of certificate to be issued with correct reference to STCW and reference to approval and authorization by the Department of Shipping and contact point of the issuing institution for verifying authenticity:

Cert No : 2017.02.000123.R DoS No :2017.02.000123.R

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

ন্যাশনাল মেরিটাইম ইন্সটিটিউট

NATIONAL MARITIME INSTITUTE

South Halishahar, P.O. Bandar, Chittagong-4100, Bangladesh.
Phone : +88-031-740569, Fax : +88-031-800620, E-mail : info@nmi.gov.bd

PRE-SEA (ENGINE) RATING TRAINING CERTIFICATE

This is to certify that,

Mr. **SHAHINUR ISLAM** Son of Mr. **WAJED ALI** Date & Place of Birth **07-Dec-1998 & DINAJPUR** has successfully completed a course on PRE-SEA (ENGINE) RATING TRAINING CERTIFICATE conducted at the National Maritime Institute, Chittagong, Bangladesh.

from **01-Feb-2017** to **24-Aug-2017**

The course is in conformity with the regulation III/4, paragraph 2.2.2 of the International Convention on Standards of Training, Certification & Watch keeping for Seafarers, 1978 as amended and has the approval of the Department of Shipping, Government of the People's Republic of Bangladesh.

Date of Issue : **28-Sep-2017**

CERTIFIED TRAINING INSTITUTE

Signature of the Holder

Principal

to verify this certificate visit- **www.nmi.gov.bd**

15. Maintenance of records in Data-base for facilitation of checking including assessments:
NMI will maintain a data-base of all the students who have completed the course. The following records for each individual will be kept so as to ensure that the certificate is issued to a candidate who has met the requirements as laid down by the governing authority regarding issuance of a certificate on Bridge Resource Management.

- Application form
- Assessment papers after completion of course
- Attendance Sheet
- Attested Xerox copy of the issued certificates & licenses
- A registered data-base in hard copy and soft form

16. Internal Quality Standard System if any. Students Impressions, past results:
The institute maintains quality standard system ISO 9001:2008, Certified by DNV GL

17. Course notice served, course conducted as per course notice, progression report served:
Will be complied as per DOS Instruction.

18. Attendance of Students and Instructors:
Students and Instructor attendance sheet attached.

Annex- 03

NATIONAL MARITIME INSTITUTE

TRAINING RECORD

Instructor:

Venue:

Subject:

Brief description on training material:

Attendance:

Name & rank	Sign	Name & rank	Sign	Name & rank	Sign

Signature
Management Representative

Signature
Principal