

CURRICULUM

Ordinary Seaman

(A Competency Based Short-term Curriculum)



Council for Technical Education and Vocational Training

Curriculum Development Division

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Introduction

The competency based short-term curriculum for **Ordinary Seaman** is designed to produce skilled and employable lower level technical workforce equipped with knowledge, skills and attitudes related to shipping in order to meet the demand of such workforce in the aboard as there is no provision of shipping and allied industries in Nepal. This curriculum is designed on the basis that the trainees will learn all shipping disciplinary skills through hand on practice mode in real shipping and allied industries outside Nepal.

It is expected that once the trainees acquired the competencies they will have ample opportunities to build successful career in shipping and allied industries through which they will contribute in the national streamline of poverty reduction in Nepal through remittance.

Aim

The aim of this curricular program is to produce lower level technical workforce related to shipping by providing training to the interested individuals of the country and link them to employment in shipping and allied industries aboard.

Objectives

After completion of training the trainees will be able to:

1. Maintain occupational health and safety connecting with the world's waterways and watersheds.
2. Interpret signs, signals and symbols that come under ship operation
3. Provide watch-keeping, cargo operation and boat operation services
4. Perform rigging, mooring and anchoring as form of basic works
5. Perform engine room watch
6. Perform routine services and minor repair and maintenance of faulty parts
7. Create viable business idea

Course description

This course designed based on the job required to perform by Ordinary Seaman at different categories of ship as recognized by the International Maritime Organization (IMO). This course especially focuses on pre ship GP rating system. This course provides knowledge and skills on Personal safety, Personal survival techniques, fire prevention and fire fighting, first aid services, Signs, Signals, Symbols, Drawings and diagrams, Rigging, Anchoring, Engine Room Watch, Watch-Keeping, Mooring, Cargo operations, Boat operations, Routine services and Minor repair and maintenance as disciplinary modules/sub modules. It imparts knowledge and skills on Bench work, Basic electricity and Simple arc welding as a foundation modules/ sub modules. It also encompasses Communication, Professionalism development and Entrepreneurship development as cross cut sub modules.

Trainees will practice tasks and learn skills using typical tools, equipment, machines, and materials necessary for the program. Trainees will learn all the shipping disciplinary skills as provisioned by this curriculum through hands on practice mode in real shipping and allied industries under internship/apprenticeship placement program outside Nepal.

Duration

The total duration of this training program will be of 390 hours

Target Group

The target group for this training program will be all interested individuals having SLC pass education.

Target Location

The target location for this training program will be all over Nepal.

Group Size

The group size for this training program will be maximum 30, provided all necessary resources to practice the tasks/ competencies as specified in this curriculum.

Medium of Instruction

The medium of instruction for this program will be Nepali or English or both

Pattern of Attendance

The trainees should have 80% attendance in theory classes and 90% in practical/ performance to be eligible for internal assessments and final examinations.

Focus of Curriculum

This is a competency-based curriculum. This curriculum emphasizes on competency performance. 80% time is allotted for performance and remaining 20% time is for related technical knowledge. So, the main focus will be on performance of the specified competencies in this curriculum.

Entry Criteria

Individuals who meet the following criteria will be allowed to enter into this program:

- Minimum of School Leaving Certificate(SLC) pass
- Physically fit as provisioned by job
- Minimum of 16 years of age
- Should pass entrance test

Instructional Media and Materials

The following instructional media and materials are suggested for the effective instruction and demonstration.

- **Printed Media Materials** (Assignment sheets, Case studies, Handouts, Information sheets, Individual training packets, Procedure sheets, Performance Check lists, Textbooks etc.).
- **Non-projected Media Materials** (Display, Models, Flip chart, Poster, Writing board etc.).
- **Projected Media Materials** (Opaque projections, Overhead transparencies, Slides etc.).
- **Audio-Visual Materials** (Audiotapes, Films, Slide-tape programs, Videodiscs, Videotapes etc.).
- **Computer-Based Instructional Materials** (Computer-based training, Interactive video etc.).

Teaching Learning Methodologies

The methods of teachings for this curricular program will be a combination of several approaches. Such as Illustrated Lecture, Group Discussion, Demonstration, Simulation, Guided practice, Practical experiences, Fieldwork and Other Independent learning.

- Theory: Mini talk, Discussion, Assignment, Group work.
- Practical: Demonstration, Observation, Guided practice and Self-practice.

Follow up Provision

- First follow up: Six months after the completion of the program
- Second follow up: Six months after the completion of the first follow up
- Follow up cycle: In a cycle of one year after the completion of the second follow up for five years

Grading System

The trainees will be graded as follows based on the marks in percentage secured by them in tests/ evaluations.

- Distinction: Passed with 80% or above
- First Division: passed with 75% or above
- Second Division: passed with 65% or above
- Third Division: passed with 60% or above

Trainees Evaluation Details

- Continuous evaluation of the trainees' performance is to be done by the related instructor/ trainer to ensure the proficiency over each competency under each area of the whole course.
- Related technical knowledge learnt by trainees will be evaluated through written or oral tests as per the nature in the institutional phase of training.
- Trainees must secure minimum marks of 40% and 60% in theory and practical evaluations respectively.
- There will be three internal evaluations and one final evaluation of the whole course.
- The ratio between internal and final examination of knowledge test will be 20:80 but for the performance test it will just reverse.
- The entrance test will be administered by the concerned training institute.

Trainers' Qualification (Minimum)

- Diploma in Maritime Studies or equivalent in related field
- Good communicative and instructional skills
- 3 experienced in related field

Trainer-Trainees Ratio

- In theory classes 1(trainer): 20 (trainees)
- In practical classes (in workshop and laboratory) 1(trainer): 10 (trainees)

Suggestions for Instruction

1. Select Objective

- Write Objective of cognitive domain.
- Write Objective of psychomotor domain.

- Write Objective of affective domain
2. **Select Subject matter**
 - Study subject matter in detail.
 - Select content related to cognitive domain.
 - Select content related to psychomotor domain.
 - Select content related to affective domain.
 3. **Select Instructional Methods**
 - Teacher centered methods: like lecture, demonstration, question answers inquiry, induction and deduction methods.
 - Student initiated methods like experimental, field trip/excursion, discovery, exploration, problem solving, and survey methods.
 - Interaction methods like discussion, group/team teaching, microteaching and exhibition.
 - Dramatic methods like role play and dramatization
 4. Select Instructional method (s) on the basis of Objective of lesson plans and KAS domains.
 5. Select appropriate educational materials and apply at right time and place.
 6. Evaluate the trainees applying various tools to correspond the KAS domains.
 7. Make plans for classroom / field work / workshop organization and management.
 8. Coordinate among Objective, subject matter and instructional methods.
 9. Prepare lesson plan for theory and practical classes.
 10. Deliver /conduct instruction / program.
 11. Evaluate instruction/ program.

Special suggestion for the performance evaluation of the trainees

1. Perform task analysis.
2. Develop a detail task performance checklist.
3. Perform continuous evaluation of the trainees by applying the performance checklist.

Suggestion for skill training

1. Demonstrate task performance in normal speed.
2. Demonstrate slowly with verbal description of each and every step in the sequence of activity of the task performance using question and answer techniques.
3. Repeat 2 for the clarification on trainees demand if necessary.
4. Perform fast demonstration of the task.

Provide trainees the opportunities to practice the task performance demonstration

1. Provide opportunity to trainees to have guided practice.
2. Create environment for practicing the demonstrated task performance.
3. Guide the trainees in each and every step of task performance.
4. Provide trainees to repeat and re-repeat as per the need to be proficient on the given task performance.
5. Switch to another task demonstration if and only trainees developed proficiency in the task performance.

Other suggestions

1. Apply principles of skill training.

2. Allocate 20% time for theory classes and 80% time for task performance while delivering instructions.
3. Apply principles of learning relevant to the learner's age group.
4. Apply principles of intrinsic motivation.
5. Facilitate maximum trainees' involvement in learning and task performance activities.
6. Instruct the trainees on the basis of their existing level of knowledge, skills and attitude.

Certificate Requirements

The related training institute will provide the training certificate of "**Ordinary Seaman**" to those trainees who successfully complete all the requirements as prescribed by the curriculum.

Course Structure of Ordinary Seaman

Modules/Sub modules	Nature	Time (hours)			Marks		
		Th	Pr	Tot.	Th	Pr	Tot.
1. Tools, Equipment, Instruments and Materials	T+P	2	8	10	2	8	10
2. Occupational Health and Safety	T+P	10	40	50	8	32	40
1: Personal Safety	T+P	2	8	10			
2: Personal Survival Techniques	T+P	3	12	15			
3: Fire Prevention and Fire Fighting	T+P	3	12	15			
4: First aid Services	T+P	2	8	10			
3. Symbol and Drawing	T+P	5	20	25	4	16	20
1: Signs, Signals and Symbols	T+P	2	8	10			
2: Drawing and Diagram	T+P	3	12	15			
4. Workshop Practice	T+P	9	34	45	8	32	40
1: Bench Works	T+P	3	12	15			
2: Electrical System	T+P	4	6	10			
3: Arc Welding	T+P	4	16	20			
5. Shipping	T+P	36	144	180	30	100	130
1: Rigging	T+P	6	24	30			
2: Anchoring	T+P	6	24	30			
3: Engine Room Watch	T+P	3	9	12			
4: Watch-Keeping	T+P	7	28	35			
5: Mooring	T+P	4	16	20			
6: Cargo Operations	T+P	8	32	40			
7: Boat Operations	T+P	4	16	20			
6. Servicing and Maintenance	T+P	5	20	25	4	16	20
1: Routine Services	T+P	3	12	15			
2: Repair and Maintenance	T+P	3	12	15			
7. Communication, Professionalism and Entrepreneurship	T+P	20	30	50	15	25	40
1: Communication	T+P	1	4	5			
2: Professionalism Development	T+P	1	4	5			
3: Entrepreneurship Development	T+P	18	22	40			
Total:		90	300	390	71	229	300

Note: T= Theory; P = Practical

List of Modules and Sub modules

Module 1: Tools, Equipment, Instruments and Materials

Module 2: Occupational Health and Safety

Sub module 1: Personal Safety

Sub module 2: Personal Survival Techniques

Sub module 3: Fire Prevention and Fire Fighting

Sub module 4: First aid Services

Module 3: Symbol and Drawing

Sub module 1: Signs, Signals and Symbols

Sub module 2: Drawing and Diagrams

Module 4: Workshop Practice

Sub module 1: Bench Works

Sub module 2: Electrical System

Sub module 3: Arc Welding

Module 5: Shipping

Sub module 1: Rigging

Sub module 2: Anchoring

Sub module 3: Engine Room Watch

Sub module 4: Watch-Keeping

Sub module 5: Mooring

Sub module 6: Cargo Operations

Sub module 7: Boat Operations

Module 6: Servicing and Maintenance

Sub module 1: Routine Services

Sub module 2: Repair and Maintenance

Module 7: Communication, Professionalism and Entrepreneurship

Sub module 1: Communication

Sub module 2: Professionalism Development

Sub module 3: Entrepreneurship Development

Module 1 : Tools, Equipment, Instruments and Materials

Theory 2 Hrs + Practical 8 Hrs = 10 Hours

Theory 2 + Practical 8 = 10 marks

Description:

This module provides knowledge and skills on identification, enumeration and handling of necessary Tools, Equipment, Instruments and Materials related to the occupation.

Objectives:

After completion of this modules the students are able to:

- Handle Tools, Equipment, Instruments and Materials related to shipping.

Tasks:

1. Handle Accommodation ladder
2. Handle Adhesive plaster
3. Handle Ambu bag
4. Handle Autopilot
5. Handle BA Set
6. Handle Bandages
7. Handle Battery
8. Handle Bench vice
9. Handle Bilge strum box
10. Handle Binocular
11. Handle Boat hook
12. Handle Bow stopper
13. Handle Broom
14. Handle Bull-dog grips
15. Handle Capstan/windlass
16. Handle C-clamp
17. Handle Chain stopper
18. Handle Chipping hammer
19. Handle Chisel set
20. Handle Cordage Rope
21. Handle Cranes
22. Handle Cutter
23. Handle Cutting torch
24. Handle Davit
25. Handle Derricks
26. Handle Devil's claw
27. Handle Duct plate
28. Handle Dust mask
29. Handle Ear muff/ear plug

30. Handle Emergency Escape Breathing device

31. Handle Emergency steering gear
32. Handle EOT
33. Handle EPIRB
34. Handle Explosimeter
35. Handle Extinguisher – water
36. Handle Extinguisher – foam
37. Handle Extinguisher – DCP
38. Handle Extinguisher – CO2
39. Handle Eye pads
40. Handle File set
41. Handle Fire axe
42. Handle Fire hose
43. Handle Fire nozzle
44. Handle Fixed deck to deck ladder
45. Handle Flare gauge
46. Handle Gangway
47. Handle Gauze pads
48. Handle Gloves
49. Handle Grabs
50. Handle Grease gun
51. Handle Grease nipple
52. Handle Grip pliers
53. Handle Gyro repeater
54. Handle Hack saw
55. Handle Hammer
56. Handle Hand pump
57. Handle Helmet
58. Handle High pressure water guns
59. Handle Hydrocarbon detector
60. Handle Hydrometer
61. Handle Hydrostatic release unit
62. Handle Lashing bars
63. Handle Life buoy
64. Handle Mallet
65. Handle Man overboard marker
66. Handle Marline spike
67. Handle Mechanical foam gun
68. Handle Metal blocks

69. Handle Mooring Rope
70. Handle Mooring winch
71. Handle Mop
72. Handle Multimeter
73. Handle Needle gun for chipping
74. Handle Neil Robertson stretcher
75. Handle Oil can
76. Handle Oxygen analyzer
77. Handle PA system
78. Handle Paint bowl
79. Handle Paint brush
80. Handle Phase tester
81. Handle pliers
82. Handle Portable ladder
83. Handle Rat guard
84. Handle Ratchet
85. Handle Respiratory protective equipment
86. Handle Rivet gun
87. Handle Ring ratchet
88. Handle Rudder indicator
89. Handle Sacrificial anode
90. Handle Safety goggle
91. Handle Safety harness
92. Handle Safety pins
93. Handle Safety shoes
94. Handle SART
95. Handle Scissors and tweezers
96. Handle Screw driver
97. Handle Scrubber
98. Handle Self igniting light
99. Handle Sheet metal cutter
100. Handle Slings
101. Handle Socket
102. Handle Soldering iron
103. Handle Sounding rod
104. Handle Spanner set (open end and close end)
105. Handle Speed handle
106. Handle Splints
107. Handle Steel wire rope

108. Handle Steering tiller
109. Handle Steering wheel
110. Handle Stethoscope
111. Handle Stopper
112. Handle Talurit clamp
113. Handle Telephone
114. Handle Telescopic reflector
115. Handle Thermal imaging camera
116. Handle Thermal protective aid
117. Handle Thermometer
118. Handle Threading die
119. Handle Torque wrench
120. Handle Triangular bandages
121. Handle Ullage tape
122. Handle valve
123. Handle Vernier calipers
124. Handle Walkie-talkie
125. Handle Water jet nozzle
126. Handle welding torch
127. Handle Winch
128. Handle Wire brush
129. Handle Wooden blocks

Module 2 : Occupational Health and Safety

Theory 10 Hrs + Practical 40 Hrs = 10 Hours

Theory 8 + Practical 32 = 40 marks

Description:

This module provides knowledge and skills on different occupational safeties related the occupation.

Objectives:

After completion of this modules the students are able to:

- Enforce personal safety
- Apply personal survival techniques
- Ensure fire prevention and fire fighting
- Provide first aid services

Sub modules:

1. Personal Safety
2. Personal Survival Techniques
3. Fire Prevention and Fire Fighting
4. First aid Services

Sub module 1: Personal Safety

Theory 2 Hrs + Practical 8 Hrs = 10 Hours

Description:

This sub module provides knowledge and skills related to occupational personal safety precautions.

Objectives:

After completion of this sub module the trainees are able to:

- Enforce personal safety precautions.

Tasks:

1. Use fixed and portable firefighting equipment
2. Use life saving appliances
3. Use personal protective equipment
4. Use protective clothing for welding and allied process
5. Use bridge equipment to avoid collision/grounding
6. Control/isolate equipment
7. Work aloft safely
8. Enter confined space safely
9. Assess potential personal hazards
10. Isolate all liquid and vapor
11. Respond to emergency
12. Follow contingency plan
13. Follow procedural checklist
14. Read/interpret muster list

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Use fixed and portable fire fighting equipment	<input checked="" type="checkbox"/> Identification of different types of fire fighting equipment <input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Application	0.3	0.95	1.25
2	Use life saving appliances	<input checked="" type="checkbox"/> Identification of different types of life saving appliances <input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Application	0.3	0.95	1.25
3	Use personal protective equipment	<input checked="" type="checkbox"/> Identification of different types of personal protective equipment <input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Usage of PPE at various occasions <input checked="" type="checkbox"/> Dangers of absence of PPE	0.15	1.10	1.25
4	Use protective clothing for welding and allied process	<input checked="" type="checkbox"/> Identification of suitable protective clothing <input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Application <input checked="" type="checkbox"/> Dangers of absence of protective clothing	0.15	0.85	1
5	Use bridge equipment to avoid collision/grounding	<input checked="" type="checkbox"/> Identification of different bridge equipment used to avoid collision/grounding <input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Operation <input checked="" type="checkbox"/> Safety precautions	0.3	0.7	1
6	Control/isolation equipment	<input checked="" type="checkbox"/> Identification of the area to be isolated <input checked="" type="checkbox"/> Identification of equipment <input checked="" type="checkbox"/> Re-routing the traffic <input checked="" type="checkbox"/> Safety precautions	0.15	0.85	1
7	Work aloft safely	<input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Usage of permit to work system <input checked="" type="checkbox"/> Safety precautions	0.15	1.10	1.25
8	Enter confined space safely	<input checked="" type="checkbox"/> Definition <input checked="" type="checkbox"/> Identification of confined space <input checked="" type="checkbox"/> Testing of atmosphere <input checked="" type="checkbox"/> Usage of permit to work	0.25	1	1.25

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		system ☒ Safety precautions			
9	Assess potential personal hazards	☒ Definition ☒ Identification of potential personal hazards onboard ☒ Safety precautions	0.15	0.85	1
10	Isolate all liquid and vapor	☒ Definition of marine pollution ☒ Identification of non-dischargeable liquids ☒ Isolation procedure ☒ Safety precautions	0.15	0.6	0.75
11	Respond to emergency	☒ Definition ☒ Identification of various shipboard emergencies ☒ Adaptation to the emergency procedures	0.15	0.6	0.75
12	Follow contingency plan	☒ Identification of appropriate contingency plan ☒ Safety precautions	0.15	0.6	0.75
13	Follow procedural checklist	☒ Definition ☒ Identification of appropriate checklist ☒ Safety precautions	0.15	0.6	0.75
14	Read/interpret muster list	☒ Definition ☒ Identification of muster list ☒ Adaptation to the muster list	0.25	0.5	0.75
		Sub total	2.75	11.25	14

Sub module 2: Personal Survival Techniques

Theory 3 Hrs + Practical 12 Hrs = 15 Hours

Description:

This sub module provides knowledge and skills related to occupational personal survival techniques.

Objectives:

After completion of this sub module the trainees are able to:

- Apply personal survival techniques.

Tasks:

1. Launch life raft
2. Use personal life saving appliances
3. Launch life boat
4. Wear immersion suit
5. Make life raft upright
6. Operate rescue boat
7. Operate hand flares
8. Wear thermal protective aid
9. Board life raft
10. Operate smoke marker
11. Prevent loss of body temp
12. Rescue the survivor from sea
13. Maintain condition of life raft
14. Maintain hydrostatic release unit
15. Use rescue basket
16. Use rescue litter
17. Use rescue sling
18. Use rescue net
19. Launch EPIRB
20. Operate SART
21. Prepare for abandoning ship
22. Abandon the ship

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Launch life raft	<input checked="" type="checkbox"/> Identification of different types of life raft <input checked="" type="checkbox"/> Identification of various components of life raft <input checked="" type="checkbox"/> Unfastening <input checked="" type="checkbox"/> Throwing overboard <input checked="" type="checkbox"/> Inflating <input checked="" type="checkbox"/> Safety precautions	0.25	0.5	0.75
2	Use personal life saving appliances	<input checked="" type="checkbox"/> Identification of different types of personal life saving appliances <input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Checking for the operational status <input checked="" type="checkbox"/> Usage <input checked="" type="checkbox"/> Safety precautions	0.25	0.5	0.75
3	Launch life boat	<input checked="" type="checkbox"/> Identification of different types of life boats <input checked="" type="checkbox"/> Identification of the components <input checked="" type="checkbox"/> Unfastening <input checked="" type="checkbox"/> Manning the boat <input checked="" type="checkbox"/> Lowering overboard <input checked="" type="checkbox"/> Recovering <input checked="" type="checkbox"/> Safety precautions	0.15	0.6	0.75
4	Wear immersion suit	<input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Checking for the operational status <input checked="" type="checkbox"/> Usage <input checked="" type="checkbox"/> Safety precautions	-	0.5	0.5
5	Make life raft upright	<input checked="" type="checkbox"/> Locating the righting arrangement <input checked="" type="checkbox"/> Positioning the life raft against wind <input checked="" type="checkbox"/> Righting <input checked="" type="checkbox"/> Safety precautions	0.25	0.5	0.75
6	Operate rescue boat	<input checked="" type="checkbox"/> Identification of different types of rescue boat <input checked="" type="checkbox"/> Identification of the type and capacity of the engine	0.25	0.5	0.75

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		<input checked="" type="checkbox"/> Identification of steering system <input checked="" type="checkbox"/> Navigating rescue boat <input checked="" type="checkbox"/> Safety precautions			
7	Operate hand flares	<input checked="" type="checkbox"/> Identification of the hand flares <input checked="" type="checkbox"/> Operation <input checked="" type="checkbox"/> Safety precautions	-	0.5	0.5
8	Wear thermal protective aid	<input checked="" type="checkbox"/> Identification of thermal protective aid <input checked="" type="checkbox"/> Usage of thermal protective aid	-	0.5	0.5
9	Board life raft	<input checked="" type="checkbox"/> Identification of different methods <input checked="" type="checkbox"/> Identification of boarding methods <input checked="" type="checkbox"/> Disconnecting painter <input checked="" type="checkbox"/> Paddling <input checked="" type="checkbox"/> Usage of sea anchor <input checked="" type="checkbox"/> Safety precautions	-	0.5	0.5
10	Operate smoke marker	<input checked="" type="checkbox"/> Identification of the smoke marker <input checked="" type="checkbox"/> Operation <input checked="" type="checkbox"/> Safety precautions	-	0.25	0.25
11	Prevent loss of body temp	<input checked="" type="checkbox"/> Assuming heat exchange lessening posture (HELP) <input checked="" type="checkbox"/> Safety precaution while floating in water	-	0.5	0.5
12	Rescue the survivor from sea	<input checked="" type="checkbox"/> Locating the survivor <input checked="" type="checkbox"/> Recovering <input checked="" type="checkbox"/> Safety precautions	0.15	0.6	0.75
13	Maintain condition of life raft	<input checked="" type="checkbox"/> Checking the securing arrangement <input checked="" type="checkbox"/> Checking the automatic release mechanism <input checked="" type="checkbox"/> Checking water tightness	0.15	0.6	0.75
14	Maintain hydrostatic release unit	<input checked="" type="checkbox"/> Checking the operational status <input checked="" type="checkbox"/> Servicing	0.15	0.6	0.75
15	Use rescue basket	<input checked="" type="checkbox"/> Identifying the rescue basket <input checked="" type="checkbox"/> Preparing the patient	0.15	0.6	0.75

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		<input type="checkbox"/> Positioning the patient <input type="checkbox"/> Hooking on to helicopter wire <input type="checkbox"/> Safety precautions			
16	Use rescue litter	<input type="checkbox"/> Identifying the rescue litter <input type="checkbox"/> Preparing the patient <input type="checkbox"/> Positioning the patient <input type="checkbox"/> Hooking on to helicopter wire <input type="checkbox"/> Safety precautions	0.15	0.6	0.75
17	Use rescue sling	<input type="checkbox"/> Identifying the rescue sling <input type="checkbox"/> Preparing the patient <input type="checkbox"/> Positioning the patient <input type="checkbox"/> Hooking on to helicopter wire <input type="checkbox"/> Safety precautions	0.15	0.6	0.75
18	Use rescue net	<input type="checkbox"/> Identifying the rescue net <input type="checkbox"/> Preparing the patient <input type="checkbox"/> Positioning the patient <input type="checkbox"/> Hooking on to helicopter wire <input type="checkbox"/> Safety precautions	0.15	0.6	0.75
19	Launch EPIRB	<input type="checkbox"/> Identification of EPIRB <input type="checkbox"/> Detaching from stowed position <input type="checkbox"/> Throwing overboard	0.15	0.6	0.75
20	Operate SART	<input type="checkbox"/> Identification of SART <input type="checkbox"/> Switching on/off <input type="checkbox"/> Positioning of SART <input type="checkbox"/> Safety precautions	0.15	0.6	0.75
21	Prepare for abandoning ship	<input type="checkbox"/> Usage of warm clothing <input type="checkbox"/> Drinking freshwater <input type="checkbox"/> Wearing personal floatation devises <input type="checkbox"/> Safety precautions <input type="checkbox"/> Launching survival crafts	0.25	0.25	0.5
22	Abandon the ship	<input type="checkbox"/> Mustering in muster station <input type="checkbox"/> Abandoning ship	-	0.25	0.25
		Sub total	2.75	11.25	14

Sub module 3: Fire Prevention and Fire Fighting

Theory 3 Hrs + Practical 12 Hrs = 15 Hours

Description:

This sub module provides knowledge and related to fire prevention and fire fighting techniques including apparatus.

Objectives:

After completion of this sub module the trainees are able to:

- Ensure fire prevention and fire fighting system.

Tasks:

1. Sensitize with fire fighting arrangements
2. Find fire
3. Identify the nature of fire
4. Raise fire alarm
5. Operate fire extinguisher
6. Act upon hearing fire alarm
7. Use fire blanket
8. Use EEBD
9. Use breathing apparatus
10. Wear fireman's suit
11. Operate dry chemical powder system
12. Operate co2 drenching system
13. Connect and use fire hose/nozzle
14. Operate foam smothering system
15. Participate in periodic drills
16. Climb up/down ladder wearing breathing apparatus
17. Assist external fire tender when in port

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Sensitize with fire fighting arrangements	<input checked="" type="checkbox"/> Identification of fire control plan <input checked="" type="checkbox"/> Identification of the location of various fire fighting appliances	0.25	0.25	0.5
2	Find fire	<input checked="" type="checkbox"/> Patrolling <input checked="" type="checkbox"/> Identification of fire hazards <input checked="" type="checkbox"/> Identifying the conditions for fire <input checked="" type="checkbox"/> Identification of the source of smoke <input checked="" type="checkbox"/> Locating the base of fire <input checked="" type="checkbox"/> Locating casualty <input checked="" type="checkbox"/> Safety precautions	0.25	0.5	0.75
3	Identify the nature of fire	<input checked="" type="checkbox"/> Identification of the classification of fire <input checked="" type="checkbox"/> Identification of the burning material <input checked="" type="checkbox"/> Safety precautions	0.15	0.6	0.75
4	Raise fire alarm	<input checked="" type="checkbox"/> Identification of the methods <input checked="" type="checkbox"/> Identification of manual call points <input checked="" type="checkbox"/> Safety precautions	0.15	0.35	0.5
5	Operate fire extinguisher	<input checked="" type="checkbox"/> Identifying the different types of extinguishers <input checked="" type="checkbox"/> Identifying the suitable extinguishing agent to be used <input checked="" type="checkbox"/> Locating the appropriate extinguisher <input checked="" type="checkbox"/> Operating the extinguisher <input checked="" type="checkbox"/> Safety precautions	0.25	1.5	1.75
6	Act upon hearing fire alarm	<input checked="" type="checkbox"/> Identification of different types of audio alarms <input checked="" type="checkbox"/> Identification of the muster station <input checked="" type="checkbox"/> Identification of the duties in fire fighting organisation <input checked="" type="checkbox"/> Reporting to the muster station	0.15	0.6	0.75
7	Use fire blanket	<input checked="" type="checkbox"/> Locating the fire blanket <input checked="" type="checkbox"/> Operation	0.1	0.4	0.5

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		☒ Safety precautions			
8	Use EEBD	☒ Locating EEBD ☒ Wearing of EEBD ☒ Operation ☒ Safety precautions	0.15	0.85	1
9	Use breathing apparatus	☒ Locating breathing apparatus ☒ Wearing of breathing apparatus ☒ Operation ☒ Safety precautions	0.25	0.75	1
10	Wear fireman's suit	☒ Locating fireman's suit ☒ Wearing of fireman's suit ☒ Safety precautions	0.15	0.85	1
11	Operate dry chemical powder (DCP) system	☒ Identification of DCP system ☒ Operation ☒ Safety precaution	0.15	0.85	1
12	Operate CO2 drenching system	☒ Identification of CO2 drenching system ☒ Operation ☒ Safety precaution	0.15	0.85	1
13	Connect and use fire hose/nozzle	☒ Identification of different types of fire hoses and nozzles ☒ Identification of fire hydrants ☒ Locating fire hose, nozzle and hydrant ☒ Identification of suitable fire nozzle ☒ Connecting fire hose and nozzle ☒ Connecting fire hose and hydrant ☒ Application ☒ Safety precautions	0.25	0.75	1
14	Operate foam smothering system	☒ Identification of foam smothering system ☒ Operation ☒ Safety precaution	0.15	0.85	1
15	Participate in periodic drills	☒ Identifying different types drills conducted ☒ Identification of the location ☒ Identification of duties ☒ Safety precautions	0.15	0.85	1

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
16	Climb up/down ladder wearing breathing apparatus	<input checked="" type="checkbox"/> Identifying the different types of ladders used <input checked="" type="checkbox"/> Climbing up and down <input checked="" type="checkbox"/> Safety precautions	0.15	0.6	0.75
17	Assist external fire tender when in port	<input checked="" type="checkbox"/> Receiving the fire tender outside the ship <input checked="" type="checkbox"/> Locating the fire control plan for fire tender <input checked="" type="checkbox"/> Working with fire tender <input checked="" type="checkbox"/> Safety precautions	0.15	0.6	0.75
Sub total			3	12	15

Sub module 4: First Aid Services

Theory 2 Hrs + Practical 8 Hrs = 10 Hours

Description:

This sub module imparts knowledge and skills related to handling and providing first aid cases and services.

Objectives:

After completion of this sub module the trainees are able to:

- Provide first aid services.

Tasks:

1. Interpret vital signs
2. Provide first aid for injuries
3. Provide first aid for burns
4. Provide first aid cuts/wounds
5. Provide first aid for animal bite
6. Provide first aid for bleeding
7. Provide first aid for cold/snow bite/frost bite
8. Provide first aid for chock
9. Provide first aid for electric shock
10. Provide first aid for cases of fracture
11. Perform CPR
12. Perform simple bandaging
13. Perform simple dressing
14. Provide first aid for drowning

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Provide first aid for injuries	<input checked="" type="checkbox"/> Identification of injury – burn, dislocation, fracture, sprain <input checked="" type="checkbox"/> Identification of cause of injury <input checked="" type="checkbox"/> Bandaging <input checked="" type="checkbox"/> Transportation of casualty	0.25	0.75	1
2	Provide first aid for burns	<input checked="" type="checkbox"/> Identification of the cause of burn <input checked="" type="checkbox"/> Stopping burning by rapid cooling <input checked="" type="checkbox"/> Protecting the burn injuries from infection <input checked="" type="checkbox"/> Removing the rings, watches, belts, shoes or smouldering clothing from the injured area <input checked="" type="checkbox"/> Covering the injured area with a sterile dressing <input checked="" type="checkbox"/> Monitoring breathing and circulation <input checked="" type="checkbox"/> Preparing for resuscitation <input checked="" type="checkbox"/> Management of shock <input checked="" type="checkbox"/> Transportation of casualty	0.25	0.75	1
3	Provide first aid cuts/wounds	<input checked="" type="checkbox"/> Identification of cause <input checked="" type="checkbox"/> Stopping bleeding by applying pressure with a clean cloth <input checked="" type="checkbox"/> Cleaning the wound with water <input checked="" type="checkbox"/> Preventing infection <input checked="" type="checkbox"/> Bandaging the wound <input checked="" type="checkbox"/> Watching for swelling and redness <input checked="" type="checkbox"/> Management of shock <input checked="" type="checkbox"/> Transportation of casualty	0.25	0.75	1
4	Provide first aid for animal bite	<input checked="" type="checkbox"/> Identification of the location <input checked="" type="checkbox"/> Identification of species <input checked="" type="checkbox"/> Immobilising the bitten limb <input checked="" type="checkbox"/> Keeping the limb lower than heart <input checked="" type="checkbox"/> Washing the wound with soap and water <input checked="" type="checkbox"/> Keeping the person calm <input checked="" type="checkbox"/> Applying compression	0.15	0.85	1

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		bandage ☒ Transportation of casualty			
5	Provide first aid for bleeding	☒ Exposing the wound ☒ Removing sharp objects ☒ Controlling the blood loss ☒ Preventing shock ☒ Preventing infection ☒ Raising the injured limb above heart level ☒ Transportation of casualty	0.25	1	1.25
6	Provide first aid for cold/snow bite/frost bite	☒ Placing the victim in a warm area ☒ Warming up using warm water until skin appears warm and red ☒ Wrapping the area loosely ☒ Transportation of casualty	0.25	0.75	1
7	Provide first aid for shock	☒ Recognition of shock ☒ Improvement of blood supply to brain, heart and lungs ☒ Loosening the clothing ☒ Covering with warm clothing ☒ Monitoring the breathing and circulation ☒ Preparation for CPR ☒ Transportation of casualty	0.25	0.75	1
8	Provide first aid for electric shock	☒ Isolation of power supply ☒ Detaching the casualty from the conductor using a non-conductor ☒ Checking airway, breathing and circulation ☒ Providing CPR ☒ Usage of AED ☒ Checking for fracture, bleeding or burn ☒ Transportation of casualty	0.25	1	1.25
9	Provide first aid for cases of fracture	☒ Immobilising the injured area ☒ Usage of splint ☒ Stopping any bleeding ☒ Bandaging ☒ Preventing swelling	0.25	1	1.25

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		☒ Transportation of casualty			
10	Perform CPR	☒ Identification of the necessity of CPR ☒ Checking airway, breathing and circulation (ABC) ☒ Providing CPR ☒ Usage of AED	0.25	1	1.25
11	Perform simple bandaging	☒ Rinsing the wound with clean water ☒ Bandaging	0.15	0.85	1
12	Perform simple dressing	☒ Rinsing the wound with clean water ☒ Performing dressing	0.15	0.85	1
13	Interpret vital signs	☒ Inspecting the casualty ☒ Identifying the signs and symptoms ☒ Identifying the First Aid	0.15	0.85	1
14	Provide first aid for drowning	☒ Recovering the casualty from the water ☒ Checking airway, breathing and circulation ☒ Providing CPR ☒ Transportation of casualty	0.15	0.85	1
		Sub total	3	12	15

Module 3 : Symbol and Drawing

Theory 5 Hrs + Practical 20 Hrs = 25 Hours

Theory 4 + Practical 16 = 20 marks

Description:

This module provides knowledge and skills on reading and interpreting Signs, signals and symbols and Simple drawings and diagrams related to ship and water ways.

Objectives:

After completion of this modules the students are able to:

- Interpret signs, signals and symbols
- Interpret drawings and diagrams

Sub modules:

1. Signs, signals and symbols
2. Drawings and diagrams

Sub module 1: Signs, Signals and Symbols

Theory 2 Hrs + Practical 8 Hrs = 10 Hours

Description:

This sub module provides knowledge and skills on reading and interpreting signs, signals and symbols of the ship and waterways.

Objectives:

After completion of this sub module the trainees are able to:

- Interpret signs, signals and symbols

Tasks:

1. Read/interpret international code flags
2. Read /interpret phonetic alphabets
3. Read/interpret light signal
4. Read /interpret sound signal
5. Read/interpret shapes signal
6. Read/interpret IMO symbols
7. Read/interpret emergency signal
8. Read/interpret abandon ship signal
9. Read/interpret fire alarm signal
10. Read/interpret man overboard signal
11. Read/interpret distress signal
12. Interpret dangerous cargo labels

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Read/interpret international code flags	<input checked="" type="checkbox"/> Identification of international code flags <input checked="" type="checkbox"/> Interpreting international code flags	0.25	0.75	1
2	Read /interpret phonetic alphabets	<input checked="" type="checkbox"/> Identification of phonetic alphabets <input checked="" type="checkbox"/> Interpreting phonetic alphabets	-	0.5	0.5
3	Read/interpret light signal	<input checked="" type="checkbox"/> Identification of light signal <input checked="" type="checkbox"/> Interpreting light signal	0.25	1.25	1.5
4	Read /interpret sound signal	<input checked="" type="checkbox"/> Identification of sound signal <input checked="" type="checkbox"/> Interpreting sound signal	0.25	1.25	1.5
5	Read/interpret shapes signal	<input checked="" type="checkbox"/> Identification of shape signal <input checked="" type="checkbox"/> Interpreting shapes signal	0.25	1.25	1.5
6	Read/interpret IMO symbols	<input checked="" type="checkbox"/> Identification of IMO symbols <input checked="" type="checkbox"/> Interpreting IMO symbols	0.1	0.4	0.5
7	Read/interpret emergency signal	<input checked="" type="checkbox"/> Identification of emergency signal <input checked="" type="checkbox"/> Interpreting emergency signal	0.1	0.4	0.5
8	Read/interpret abandon ship signal	<input checked="" type="checkbox"/> Identification of abandon ship signal <input checked="" type="checkbox"/> Interpreting abandon ship signal	0.1	0.4	0.5
9	Read/interpret fire alarm signal	<input checked="" type="checkbox"/> Identification of fire alarm signal <input checked="" type="checkbox"/> Interpreting fire alarm signal	0.1	0.4	0.5
10	Read/interpret man overboard signal	<input checked="" type="checkbox"/> Identification of man overboard signal <input checked="" type="checkbox"/> Interpreting man overboard signal	0.1	0.4	0.5
11	Read/interpret distress signal	<input checked="" type="checkbox"/> Identification of distress signal <input checked="" type="checkbox"/> Interpreting distress signal	0.25	0.25	0.5
12	Interpret dangerous cargo labels	<input checked="" type="checkbox"/> Identification of dangerous cargo labels <input checked="" type="checkbox"/> Interpreting dangerous cargo labels	0.25	0.75	1
		Sub total	2	8	10

Sub module 2: Drawings and Diagrams

Theory 3 Hrs + Practical 12 Hrs = 15 Hours

Description:

This sub module provides knowledge and skills on interpreting simple drawings and diagrams of ship layout and waterways.

Objectives:

After completion of this sub module the trainees are able to:

- Interpret drawings and diagrams

Tasks:

1. Interpret plan of ship
2. Interpret front view of ship
3. Interpret side view of ship
4. Interpret back view of ship
5. Interpret fire control plan
6. Interpret engine room layout plan
7. Interpret circuit diagram
8. Interpret schematic diagram
9. Interpret layout diagram

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Interpret plan of ship	<input checked="" type="checkbox"/> Identification of plan of ship <input checked="" type="checkbox"/> Interpreting plan of ship	0.25	1.25	1.5
2	Interpret front view of ship	<input checked="" type="checkbox"/> Identification of front view of ship <input checked="" type="checkbox"/> Interpreting front view of ship	0.25	1.25	1.5
3	Interpret side view of ship	<input checked="" type="checkbox"/> Identification of side view of ship <input checked="" type="checkbox"/> Interpreting side view of ship	0.25	1.25	1.5
4	Interpret back view of ship	<input checked="" type="checkbox"/> Identification of back view of ship <input checked="" type="checkbox"/> Interpreting back view of ship	0.25	1.25	1.5
5	Interpret fire control plan	<input checked="" type="checkbox"/> Identification of fire control plan <input checked="" type="checkbox"/> Interpreting fire control plan	0.5	1.5	2
6	Interpret engine room layout plan	<input checked="" type="checkbox"/> Identification of engine room layout plan <input checked="" type="checkbox"/> Interpreting engine room layout plan	0.75	1.5	2.25
7	Interpret circuit diagram	<input checked="" type="checkbox"/> Identification of circuit diagram <input checked="" type="checkbox"/> Interpreting circuit diagram	0.25	1.5	1.75
8	Interpret schematic diagram	<input checked="" type="checkbox"/> Identification of schematic diagram <input checked="" type="checkbox"/> Interpreting schematic diagram	0.25	1.25	1.5
9	Interpret layout diagram	<input checked="" type="checkbox"/> Identification of layout diagram <input checked="" type="checkbox"/> Interpreting layout diagram	0.25	1.25	1.5
Sub total			3	12	15

Module 4 : Workshop Practice

Theory 9 Hrs + Practical 36 Hrs = 45 Hours

Theory 8 + Practical 32 = 40 marks

Description:

This module provides basic knowledge and skills on bench work, electrical system and arc welding.

Objectives:

After completion of this modules the students are able to:

- Perform simple bench work techniques
- Sensitize with concept of electricity and electrical system
- Perform simple arc welding techniques

Sub modules:

1. Bench Work
2. Electrical System
3. Arc Welding

Sub module 1: Bench Work

Theory 3 Hrs + Practical 12 Hrs = 15 Hours

Description:

This sub module provides knowledge and skills performing basic bench work techniques.

Objectives:

After completion of this sub module the trainees are able to:

- Perform bench work techniques

Tasks:

1. Perform filling
2. Perform marking /laying out
3. Perform hand punching
4. Perform sawing
5. Perform chiseling
6. Perform drilling
7. Cut threads
8. Perform off hand grinding

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Perform filing	<input checked="" type="checkbox"/> Introduction of files <input checked="" type="checkbox"/> Nomenclature of file <input checked="" type="checkbox"/> Types and uses of files <input checked="" type="checkbox"/> Procedure of filing plain and even surface <input checked="" type="checkbox"/> Safety required in filling	0.5	1.0	1.5
2	Perform marking/ laying out	<input checked="" type="checkbox"/> Introduction of marking <input checked="" type="checkbox"/> Introduction of laying out <input checked="" type="checkbox"/> Procedure of marking and layout	0.25	1.0	1.25
3	Perform hand punching	<input checked="" type="checkbox"/> Introduction of punching <input checked="" type="checkbox"/> Types of punches <input checked="" type="checkbox"/> 3 step of punching/ stamping letters and numbers <input checked="" type="checkbox"/> Safety required in punching	0.5	1.5	2.0
4	Perform sawing	<input checked="" type="checkbox"/> Introduction of metal sawing <input checked="" type="checkbox"/> Methods of metal sawing <input checked="" type="checkbox"/> Procedure of hand hack sawing <input checked="" type="checkbox"/> Safety required in hack sawing	0.25	1.75	2.0
5	Perform chiseling	<input checked="" type="checkbox"/> Introduction of chiseling <input checked="" type="checkbox"/> Types and use of chisels <input checked="" type="checkbox"/> Methods of chipping <input checked="" type="checkbox"/> Procedure of chipping flat surface, <input checked="" type="checkbox"/> Safety required for chiseling	0.25	1.5	2.0
6	Perform drilling	<input checked="" type="checkbox"/> Introduction of drilling <input checked="" type="checkbox"/> Nomenclature of drill bits <input checked="" type="checkbox"/> Sharpening of drill bits <input checked="" type="checkbox"/> Procedure of drilling a pilot hole <input checked="" type="checkbox"/> Safety required in drilling	0.5	1.75	2.0
7	Cut thread	<input checked="" type="checkbox"/> Introduction of thread cutting <input checked="" type="checkbox"/> Methods of thread cutting <input checked="" type="checkbox"/> Procedure of internal and external thread cutting by tap and handle	0.5	1.75	2.25

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		☒ Safety required in thread cutting by hand. ☒			
8	Perform off hand grinding	Introduction of off hand grinding. Procedure of sharpening flat chisels Safety required in off hand grinding	0.25	1.75	2.0
		Sub total	3	12	15

Sub module 2: Electrical System

Theory 2 Hrs + Practical 8 Hrs = 10 Hours

Description:

This sub module provides knowledge and skills related to electrical system.

Objectives:

After completion of this sub module the trainees are able to:

- Develop the concept of electricity
- Sensitize with simple electrical system

Tasks:

1. State Ohm's law
2. Measure voltage
3. Measure current
4. Measure resistance
5. Monitor the main switch board
6. Monitor auxiliary switch board
7. Monitor generator

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	State Ohm's Law	<input checked="" type="checkbox"/> Definition of electricity <input checked="" type="checkbox"/> Importance of electricity <input checked="" type="checkbox"/> Nature of electricity <input checked="" type="checkbox"/> Key terms: Current, Voltage and Resistance <input checked="" type="checkbox"/> Units of Current, Voltage and Resistance <input checked="" type="checkbox"/> Statement of Ohm's law <input checked="" type="checkbox"/> Relation among Current, Voltage and Resistance	2	0	2
2	Measure voltage	<input checked="" type="checkbox"/> Definition <input checked="" type="checkbox"/> Identification of voltmeter <input checked="" type="checkbox"/> measurement	0.25	0.75	1
3	Measure current	<input checked="" type="checkbox"/> Definition <input checked="" type="checkbox"/> Identification of ammeter <input checked="" type="checkbox"/> measurement	0.25	0.75	1
4	Measure resistance	<input checked="" type="checkbox"/> Definition <input checked="" type="checkbox"/> Identification of ohmmeter <input checked="" type="checkbox"/> measurement	0.25	0.75	1.0
5	Monitor the main switch board	<input checked="" type="checkbox"/> Identifying the MSB <input checked="" type="checkbox"/> Identifying the controls and gauges available on MSB <input checked="" type="checkbox"/> Monitoring the controls and gauges <input checked="" type="checkbox"/> Logging the readings	0.25	1.25	1.5
6	Monitor auxiliary switch board	<input checked="" type="checkbox"/> Identifying the ASB <input checked="" type="checkbox"/> Identifying the controls and gauges available on ASB <input checked="" type="checkbox"/> Monitoring the controls and gauges <input checked="" type="checkbox"/> Logging the readings	0.5	1.25	1.75
7	Monitor generator	<input checked="" type="checkbox"/> Identifying different types of generators <input checked="" type="checkbox"/> Identifying the controls and gauges <input checked="" type="checkbox"/> Monitoring the controls and gauges <input checked="" type="checkbox"/> Logging the reading	0.5	1.25	1.75
		Sub total	4	6	10

Sub module 3: Arc Welding

Theory 4 Hrs + Practical 16 Hrs = 20 Hours

Description:

This sub module imparts knowledge and skills on basic arc welding techniques.

Objectives:

After completion of this sub module the trainees are able to:

- Perform simple arc welding techniques

Tasks:

1. Strike in metal plate
2. Perform Straight bead welding in flat position
3. Weld Square Butt joint
4. Weld Vee Butt Joint in flat position
5. Weld Bevel Joints (Single + Double)
6. Weld Fillet Tee joint
7. Weld Fillet Lap joint
8. Perform soldering

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Strike in metal plate	<input checked="" type="checkbox"/> Introduction of Arc welding <input checked="" type="checkbox"/> Welding symbols <input checked="" type="checkbox"/> Arc welding machines <input checked="" type="checkbox"/> Welding current <input checked="" type="checkbox"/> Striking procedure	0.75	1.5	2.25
2	Perform Straight bead welding in flat position	<input checked="" type="checkbox"/> Use of welding tools <input checked="" type="checkbox"/> Types of the electrodes <input checked="" type="checkbox"/> Formation and arc weaving method <input checked="" type="checkbox"/> Welding procedure <input checked="" type="checkbox"/> Safety precautions	0.5	2.0	2.5
3	Weld Square Butt joint	<input checked="" type="checkbox"/> Importance of edge preparation. <input checked="" type="checkbox"/> Terminologies: penetration Reinforcement and root gap leg <input checked="" type="checkbox"/> Types of welding position <input checked="" type="checkbox"/> Welding procedure <input checked="" type="checkbox"/> Safety precautions	0.75	2.0	2.75
4	Weld Vee Butt Joint in flat position	<input checked="" type="checkbox"/> Types of Joints <input checked="" type="checkbox"/> Identification of Vee Butt joint <input checked="" type="checkbox"/> Welding procedure <input checked="" type="checkbox"/> Safety precautions	0.5	2.0	2.5
5	Weld Bevel Joints (Single + Double)	<input checked="" type="checkbox"/> Methods of destructive testing <input checked="" type="checkbox"/> Identification of Bevel joints <input checked="" type="checkbox"/> Welding procedure <input checked="" type="checkbox"/> Safety precautions	0.5	3.0	3.5
6	Weld Fillet Tee joint	<input checked="" type="checkbox"/> Definition of penetration, root gap leg, Undercuts, Overlaps <input checked="" type="checkbox"/> Identification of Tee joint <input checked="" type="checkbox"/> Welding procedure <input checked="" type="checkbox"/> Safety precautions	0.5	2.0	2.5
7	Weld Fillet Lap joint	<input checked="" type="checkbox"/> Identification of Tee joint <input checked="" type="checkbox"/> Welding procedure <input checked="" type="checkbox"/> Safety precautions	0.25	2.0	2.25
8	Perform soldering	<input checked="" type="checkbox"/> Identification of soldering iron <input checked="" type="checkbox"/> Soldering procedure <input checked="" type="checkbox"/> Safety precautions	0.25	1.5	1.75
Sub total			4	16	20

Module 5: Shipping

Theory 36 Hrs + Practical 144 Hrs = 180 Hours

Theory 30 + Practical 100 = 130 marks

Description:

This module provides knowledge and skills on Rigging, Anchoring, Engine room watch, Watch keeping, Mooring, Cargo operation and Boat operation system related to the ship and waterways.

Objectives:

After completion of this modules the students are able to:

- Perform rigging
- Perform anchoring
- Perform engine room watch
- Perform watch-keeping
- Perform mooring
- Perform cargo operations
- Perform boat operations

Sub modules:

1. Rigging
2. Anchoring
3. Engine Room Watch
4. Watch-Keeping
5. Mooring
6. Cargo Operations
7. Boat Operations

Sub module 1: Rigging

Theory 6 Hrs + Practical 24 Hrs = 30 Hours

Description:

This sub module provides knowledge and skills related to rigging techniques.

Objectives:

After completion of this sub module the trainees are able to:

- Perform rigging

Tasks:

1. Make knots/bends/hitches
2. Perform splicing
3. Perform whipping
4. Rig derrick
5. Rig accommodation ladder
6. Rig pilot ladder
7. Rig stage
8. Rig bosun chair
9. Rig tackles/purchase

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Make knots/bends/hitches	<input checked="" type="checkbox"/> Identification of various knots/bend/hitches used <input checked="" type="checkbox"/> Construction	0.25	2.75	3
2	Perform splicing	<input checked="" type="checkbox"/> Identification of different methods of splicing <input checked="" type="checkbox"/> Performing splicing	0.5	2.5	3
3	Perform whipping	<input checked="" type="checkbox"/> Identification of different methods of whipping <input checked="" type="checkbox"/> Performing whipping	0.25	2.75	3
4	Rig derrick	<input checked="" type="checkbox"/> Identification of parts of derrick <input checked="" type="checkbox"/> Rigging	1	3	4
5	Rig accommodation ladder	<input checked="" type="checkbox"/> Identification of parts of accommodation ladder <input checked="" type="checkbox"/> Rigging	1	2.5	3.5
6	Rig pilot ladder	<input checked="" type="checkbox"/> Identification of parts of pilot ladder <input checked="" type="checkbox"/> Rigging	0.5	2.5	3
7	Rig stage	<input checked="" type="checkbox"/> Identification of parts of stage <input checked="" type="checkbox"/> Rigging	0.5	3	3.5
8	Rig bosun chair	<input checked="" type="checkbox"/> Identification of parts of bosun chair <input checked="" type="checkbox"/> Rigging	1	2.5	3.5
9	Rig tackles/purchase	<input checked="" type="checkbox"/> Identification of parts of tackles/purchase <input checked="" type="checkbox"/> Rigging	1	2.5	3.5
Sub total			6	24	30

Sub module 2: Anchoring

Theory 6 Hrs + Practical 24 Hrs = 30 Hours

Description:

This sub module provides knowledge and skills related to anchoring techniques.

Objectives:

After completion of this sub module the trainees are able to:

- Perform anchoring

Tasks:

1. Prepare anchoring station
2. Prepare anchor for letting go
3. Let go anchor
4. Prepare for weighing anchor
5. Weigh anchor
6. Clean anchor/cable
7. Secure anchor and cable
8. Secure anchor station
9. Perform anchor watch
10. Execute anchoring orders

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Prepare anchoring station	<input checked="" type="checkbox"/> Identifying the tools required for anchoring <input checked="" type="checkbox"/> Preparing the area <input checked="" type="checkbox"/> Checking communication with bridge <input checked="" type="checkbox"/> Checking the availability of electricity <input checked="" type="checkbox"/> Checking operational status of capstan/windlass <input checked="" type="checkbox"/> Rigging water hose and nozzle <input checked="" type="checkbox"/> Checking for availability of seawater <input checked="" type="checkbox"/> Reporting to the bridge	0.5	2.5	3
2	Prepare anchor for letting go	<input checked="" type="checkbox"/> Clearing the securing arrangements <input checked="" type="checkbox"/> Removing spurling pipe cover and hawse pipe cover <input checked="" type="checkbox"/> Walking back anchor <input checked="" type="checkbox"/> Putting the anchor on windlass breaks	0.5	4.5	5
3	Let go anchor	<input checked="" type="checkbox"/> Understanding orders from bridge <input checked="" type="checkbox"/> Releasing the break <input checked="" type="checkbox"/> Letting go anchor <input checked="" type="checkbox"/> Identifying the joining shackles paid out in the water <input checked="" type="checkbox"/> Reporting length of cable in the water	0.5	2.5	3
4	Prepare for weighing anchor	<input checked="" type="checkbox"/> Identifying the tools required for weighing anchor <input checked="" type="checkbox"/> Preparing the area <input checked="" type="checkbox"/> Checking the availability of electricity <input checked="" type="checkbox"/> Checking operational status of capstan/windlass <input checked="" type="checkbox"/> Rigging water hose and nozzle <input checked="" type="checkbox"/> Checking for availability of seawater	0.5	2.5	3
5	Weigh anchor	<input checked="" type="checkbox"/> Understanding orders from bridge <input checked="" type="checkbox"/> Heaving in anchor	1	3	4

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		<input checked="" type="checkbox"/> Identifying the joining shackles coming on deck <input checked="" type="checkbox"/> Reporting length of cable on deck			
6	Clean anchor/cable	<input checked="" type="checkbox"/> Usage of high pressure water hose <input checked="" type="checkbox"/> Cleaning the anchor and cable	0.5	0.5	1
7	Secure anchor and cable	<input checked="" type="checkbox"/> Housing the anchor <input checked="" type="checkbox"/> Application of the securing arrangements	1	2	3
8	Secure anchor station	<input checked="" type="checkbox"/> Closing the spurling pipe cover and hawse pipe cover <input checked="" type="checkbox"/> Cleaning the anchor station <input checked="" type="checkbox"/> Isolating the power supply <input checked="" type="checkbox"/> Closing all water tight doors and hatches <input checked="" type="checkbox"/> Securing all communication equipment <input checked="" type="checkbox"/> Securing tools and equipment <input checked="" type="checkbox"/> Reporting to the bridge	0.5	3.5	4
9	Perform anchor watch	<input checked="" type="checkbox"/> Keeping a close watch on the anchor and cable <input checked="" type="checkbox"/> Reporting the status of cable to bridge frequently	0.5	1.5	2
10	Execute anchoring orders	<input checked="" type="checkbox"/> Understanding anchoring orders <input checked="" type="checkbox"/> Executing anchoring orders	0.5	1.5	2
		Sub total	6	24	30

Sub module 3: Engine Room Watch

Theory 3 Hrs + Practical 9 Hrs = 12 Hours

Description:

This sub module provides knowledge and skills related to engine room watch.

Objectives:

After completion of this sub module the trainees are able to:

- Perform engine room watch

Tasks:

1. Identify tools/equipment
2. Interpret colour codes
3. Open close valves
4. Take sounding
5. Check operating temperature
6. Report emergencies

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Identify tools/equipment	<input checked="" type="checkbox"/> Identification of various tools and equipment <input checked="" type="checkbox"/> Handling	1	4	5
2	Interpret colour codes	<input checked="" type="checkbox"/> Identification of different colour codes used <input checked="" type="checkbox"/> Interpretation of colour codes	0.25	0.75	1
3	Open close valves	<input checked="" type="checkbox"/> Identification of various valves used <input checked="" type="checkbox"/> Identification of internal structure <input checked="" type="checkbox"/> Operating valves	1	2	3
4	Take sounding	<input checked="" type="checkbox"/> Identification of the purpose of sounding <input checked="" type="checkbox"/> Identification of different methods to take sounding	0.25	0.5	0.75
5	Check operating temperature	<input checked="" type="checkbox"/> Identification of temperature gauge <input checked="" type="checkbox"/> Checking temperature	0.25	0.75	1
6	Report emergencies	<input checked="" type="checkbox"/> Identification of potential emergencies <input checked="" type="checkbox"/> Reporting	0.25	1	1.25
Sub total			3	9	12

Sub module 4: Watch-keeping

Theory 7 Hrs + Practical 28 Hrs = 35 Hours

Description:

This sub module provides knowledge and skills related to watch-keeping.

Objectives:

After completion of this sub module the trainees are able to:

- Perform watch-keeping

Tasks:

1. Read compass
2. Perform look out
3. Steer the ship
4. Man gangway
5. Execute helm orders
6. Perform anti-piracy watch
7. Maintain gangway books
8. Monitor the visitors
9. Check the belongings of the visitors
10. Report emergencies
11. Report sighting of ships/floating objects/aircrafts
12. Report unusual weather condition
13. Report navigational hazards/rocks/reefs
14. Report malfunction of ship's lights

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Read compass	<input checked="" type="checkbox"/> Identification of various compasses used onboard ship <input checked="" type="checkbox"/> Identification of compass card <input checked="" type="checkbox"/> Reading compass	1	2	3
2	Perform look out	<input checked="" type="checkbox"/> Identification of various duties <input checked="" type="checkbox"/> Reporting the findings <input checked="" type="checkbox"/> Handing/taking over duty	0.5	0.5	1
3	Steer the ship	<input checked="" type="checkbox"/> Identification of course <input checked="" type="checkbox"/> Identification of different modes of steering <input checked="" type="checkbox"/> Changing steering modes <input checked="" type="checkbox"/> Identification of different methods of steering <input checked="" type="checkbox"/> Handing/taking over steering	2	13	15
4	Man gangway	<input checked="" type="checkbox"/> Rigging gangway <input checked="" type="checkbox"/> Manning gangway	0.25	1.75	2
5	Execute helm orders	<input checked="" type="checkbox"/> Identification of various helm orders <input checked="" type="checkbox"/> Interpretation of helm orders <input checked="" type="checkbox"/> Executing helm orders	0.5	4.5	5
6	Perform anti-piracy watch	<input checked="" type="checkbox"/> Keeping eye on fast moving crafts in the vicinity <input checked="" type="checkbox"/> Reporting suspected crafts to bridge	0.25	0.75	1
7	Maintain gangway books	<input checked="" type="checkbox"/> Identification of gangway books <input checked="" type="checkbox"/> Making proper entries <input checked="" type="checkbox"/> Closing the book	0.25	0.75	1
8	Monitor the visitors	<input checked="" type="checkbox"/> Stopping at the gangway <input checked="" type="checkbox"/> Checking the photo identity <input checked="" type="checkbox"/> Restricting the entry if required <input checked="" type="checkbox"/> Reporting any irregularities <input checked="" type="checkbox"/> Escorting the visitor	0.5	0.5	1
9	Check the belongings of the visitors	<input checked="" type="checkbox"/> Stopping at the gangway <input checked="" type="checkbox"/> Checking the belongings for drugs, fire arms, ammunition, camera, etc. <input checked="" type="checkbox"/> Restricting the entry <input checked="" type="checkbox"/> Reporting	0.5	0.5	1
10	Report gangway emergencies	<input checked="" type="checkbox"/> Identification of emergency	0.25	0.75	1

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		<input checked="" type="checkbox"/> Protecting oneself <input checked="" type="checkbox"/> Reporting			
11	Report sighting of ships/floating objects/aircrafts	<input checked="" type="checkbox"/> Identification of the object <input checked="" type="checkbox"/> Reporting	0.25	0.75	1
12	Report unusual weather condition	<input checked="" type="checkbox"/> Monitoring the weather <input checked="" type="checkbox"/> Reporting	0.25	0.75	1
13	Report navigational hazards/rocks/reefs	<input checked="" type="checkbox"/> Identification of navigational hazards <input checked="" type="checkbox"/> Reporting	0.25	0.75	1
14	Report malfunction of ship's lights	<input checked="" type="checkbox"/> Identification of ship's lights <input checked="" type="checkbox"/> Reporting the malfunction	0.25	0.75	1
		Sub total	7	28	35

Sub module 5: Mooring

Theory 4 Hrs + Practical 16 Hrs = 20 Hours

Description:

This sub module provides knowledge and skills on mooring techniques.

Objectives:

After completion of this sub module the trainees are able to:

- Perform mooring

Tasks:

1. Prepare mooring stations
2. Prepare mooring ropes
3. Pass messenger line
4. Pass mooring rope
5. Tighten the mooring rope
6. Apply rope stoppers
7. Secure mooring ropes
8. Recover mooring ropes
9. Secure mooring station
10. Execute mooring orders

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Prepare mooring stations	<input checked="" type="checkbox"/> Identifying the tools and equipment required for mooring <input checked="" type="checkbox"/> Preparing the area <input checked="" type="checkbox"/> Checking communication with bridge <input checked="" type="checkbox"/> Checking the availability of electricity <input checked="" type="checkbox"/> Checking operational status of winches <input checked="" type="checkbox"/> Reporting to the bridge	1	2	3
2	Prepare mooring ropes	<input checked="" type="checkbox"/> Identification mooring ropes to be used <input checked="" type="checkbox"/> Checking the rope <input checked="" type="checkbox"/> Flaking down <input checked="" type="checkbox"/> Taking out through fairlead	0.5	1.5	2
3	Pass messenger line	<input checked="" type="checkbox"/> Preparation of messenger line <input checked="" type="checkbox"/> Passing messenger line <input checked="" type="checkbox"/> Connecting with mooring rope	0.25	0.75	1
4	Pass mooring rope	<input checked="" type="checkbox"/> Connecting messenger line <input checked="" type="checkbox"/> Paying out sufficient length to water	0.25	1.75	2
5	Tighten the mooring rope	<input checked="" type="checkbox"/> Taking turns on winch <input checked="" type="checkbox"/> Operating the winch in the right direction <input checked="" type="checkbox"/> Heaving in on mooring rope as ordered	0.25	1.75	2
6	Apply rope stoppers	<input checked="" type="checkbox"/> Identification of right stopper <input checked="" type="checkbox"/> Securing to the anchor point <input checked="" type="checkbox"/> Application	0.25	1.75	2
7	Secure mooring ropes	<input checked="" type="checkbox"/> Transferring the weight of the rope to stoppers <input checked="" type="checkbox"/> Taking sufficient turns on bollards <input checked="" type="checkbox"/> Lashing	0.5	1.5	2
8	Recover mooring ropes	<input checked="" type="checkbox"/> Loosening rope <input checked="" type="checkbox"/> Removing from the pier <input checked="" type="checkbox"/> Recovering the rope with the help of winch	0.25	1.75	2
9	Secure mooring station	<input checked="" type="checkbox"/> Securing mooring ropes and stoppers	0.5	1.5	2

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		<input checked="" type="checkbox"/> Cleaning the mooring station <input checked="" type="checkbox"/> Isolating the power supply <input checked="" type="checkbox"/> Closing all water tight doors and hatches <input checked="" type="checkbox"/> Securing all communication equipment <input checked="" type="checkbox"/> Securing tools and equipment <input checked="" type="checkbox"/> Reporting to the bridge			
10	Execute mooring orders	<input checked="" type="checkbox"/> Identification of the mooring orders <input checked="" type="checkbox"/> Interpretation of orders <input checked="" type="checkbox"/> Executing orders	0.25	1.75	2
		Sub total	4	16	20

Sub module 6: Cargo Operations

Theory 8 Hrs + Practical 32 Hrs = 40 Hours

Description:

This sub module provides knowledge and skills related to cargo operations.

Objectives:

After completion of this sub module the trainees are able to:

- Perform cargo operations

Tasks:

1. Lash cargo
2. Handle ropes/wires
3. Perform cargo watch
4. Take sounding
5. Clean cargo hold
6. Operate cargo hold access equipment
7. Assess status of cargo
8. Check leakage of cargo hold
9. Load/unload cargo
10. Man guide ropes
11. Place dunnage
12. Display standard hand signals
13. Open/close water tight door
14. Open/close water tight hatch
15. Use ladder to climb up/down decks
16. Operate cranes
17. Operate derricks
18. Use slings
19. Handle dangerous cargo

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Lash cargo	<input checked="" type="checkbox"/> Identification of suitable lashing arrangement <input checked="" type="checkbox"/> Lashing of cargo	0.25	1.75	2
2	Handle ropes	<input checked="" type="checkbox"/> Identification of safety precautions to use ropes <input checked="" type="checkbox"/> Handling the rope safely	0.25	0.75	1
3	Perform cargo watch	<input checked="" type="checkbox"/> Monitoring the loading and unloading of cargo <input checked="" type="checkbox"/> Checking the sounding of ballast tanks <input checked="" type="checkbox"/> Reporting	0.25	1.75	2
4	Take sounding	<input checked="" type="checkbox"/> Identification of the purpose of sounding <input checked="" type="checkbox"/> Identification of different methods to take sounding	0.25	0.75	1
5	Clean cargo hold	<input checked="" type="checkbox"/> Identification of different methods of cleaning <input checked="" type="checkbox"/> Identification of equipment <input checked="" type="checkbox"/> Usage	1	3	4
6	Operate cargo hold access equipment	<input checked="" type="checkbox"/> Identification of different access equipment <input checked="" type="checkbox"/> Identification of the methods of operation	0.25	1.75	2
7	Assess status of cargo	<input checked="" type="checkbox"/> Identification of any damage <input checked="" type="checkbox"/> Reporting the damage	0.25	0.75	1
8	Check leakage of cargo hold	<input checked="" type="checkbox"/> Identification of different methods to check the leakage <input checked="" type="checkbox"/> Checking leakage <input checked="" type="checkbox"/> Reporting	0.25	1.75	2
9	Load/unload cargo	<input checked="" type="checkbox"/> Slinging the cargo <input checked="" type="checkbox"/> Hooking to the cargo hook <input checked="" type="checkbox"/> Loading/unloading	0.25	1.75	2
10	Man guide ropes	<input checked="" type="checkbox"/> Positioning of guide ropes <input checked="" type="checkbox"/> Manning	0.25	0.75	1
11	Place dunnage	<input checked="" type="checkbox"/> Identification of dunnage <input checked="" type="checkbox"/> Placing of dunnage	0.25	0.75	1
12	Display standard hand signals	<input checked="" type="checkbox"/> Identification of standard hand signals <input checked="" type="checkbox"/> Interpretation of hand signals <input checked="" type="checkbox"/> Displaying	0.25	1.75	2
13	Open/close water tight door	<input checked="" type="checkbox"/> Identification of water tight	0.25	0.75	1

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
		doors ☒ Identification of clips ☒ Opening/closing			
14	Open/close water tight hatch	☒ Identification of water tight hatches ☒ Identification of clips ☒ Opening/closing	0.25	0.75	1
15	Use ladder to climb up/down decks	☒ Identification of suitable ladder ☒ Rigging of ladder ☒ Identification of appropriate use ☒ Reporting of defects	0.25	0.75	1
16	Operate cranes	☒ Identification of the parts ☒ Identification of SWL of different parts ☒ Operation of crane	1.5	3.5	5
17	Operate derricks	☒ Identification of the parts ☒ Identification of SWL of different parts ☒ Operation of derrick	1.5	3.5	5
18	Use slings	☒ Identification of various slings ☒ Identification of suitable sling for the load ☒ Identification of various slinging arrangements ☒ Reporting defects	0.25	2.75	3
19	Handle dangerous cargo	☒ Identification of dangerous cargo ☒ Identification of the safety precautions ☒ Wearing of PPE ☒ Reporting any abnormality	0.25	2.75	3
		Sub total	8	32	40

Sub module 7: Boat Operations

Theory 4 Hrs + Practical 16 Hrs = 20 Hours

Description:

This sub module provides knowledge and skills related to boat operations.

Objectives:

After completion of this sub module the trainees are able to:

- Perform boat operations

Tasks:

1. Lash/unlash boat
2. Lower/hoist boat
3. Man boat
4. Pull the boat using oars
5. Dry up the bilge
6. Hook on to the boat falls
7. Prepare for lowering boat
8. Prepare for hoisting boat
9. Tighten the bilge drain plug
10. Perform lookout

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Lash/unlash boat	<input type="checkbox"/> Identification of different securing arrangements <input type="checkbox"/> Identification of different types of lashing <input type="checkbox"/> Lashing/unlashing <input type="checkbox"/> Reporting defects	0.5	1.5	2
2	Lower/hoist boat	<input type="checkbox"/> Identification of different arrangements <input type="checkbox"/> Lowering/hoisting <input type="checkbox"/> Reporting defect	0.5	1.5	2
3	Man boat	<input type="checkbox"/> Identification of the duties of crew members <input type="checkbox"/> Manning the boat	0.25	1.75	2
4	Pull the boat using oars	<input type="checkbox"/> Identification of oars/crutches <input type="checkbox"/> Boat pulling	1	6	7
5	Dry up the bilge	<input type="checkbox"/> Drying up bilge <input type="checkbox"/> Tracing the water leakage <input type="checkbox"/> Reporting defects	-	0.5	0.5
6	Hook on to the boat falls	<input type="checkbox"/> Identification of boat hooks <input type="checkbox"/> Identification of boat falls <input type="checkbox"/> Identification of hooking arrangement <input type="checkbox"/> Hooking up the boat	0.25	0.75	1
7	Prepare for lowering boat	<input type="checkbox"/> Checking for power supply <input type="checkbox"/> Checking the davit <input type="checkbox"/> Checking communication <input type="checkbox"/> Unlashing the boat <input type="checkbox"/> Manning the boat	0.5	1.5	2
8	Prepare for hoisting boat	<input type="checkbox"/> Checking for power supply <input type="checkbox"/> Checking the davit <input type="checkbox"/> Checking communication <input type="checkbox"/> Lowering of boat falls <input type="checkbox"/> Hooking up the boat	0.5	1.5	2
9	Check the bilge drain plug	<input type="checkbox"/> Identification of bilge drain plug <input type="checkbox"/> checking the plug	-	0.5	0.5
10	Perform lookout	<input type="checkbox"/> identification of duties <input type="checkbox"/> Reporting	0.5	0.5	1
Sub total			4	16	20

Module 6: Service and Maintenance

Theory 6 Hrs + Practical 24 Hrs = 30 Hours

Theory 4 + Practical 16 = 20 marks

Description:

This module provides knowledge and skills on simple routine service and maintenance of simple component parts of ship.

Objectives:

After completion of this modules the students are able to:

- Perform routine services
- Repair and maintain simple component parts of ship

Sub modules:

1. Routine Services
2. Repair and Maintenance

Sub module 1: Routine Services

Theory 3 Hrs + Practical 12 Hrs = 15 Hours

Description:

This sub module provides knowledge and skills related to performing routine services.

Objectives:

After completion of this sub module the trainees are able to:

- Perform routine services

Tasks:

1. Interpret service manual
2. Identify ship's components/parts
3. Scrub/sweep/wash affected surface
4. Chip the affected surface
5. Scale/buff affected surface
6. Manage serving equipment
7. Paint prepared surface
8. Clean part of ship
9. Apply lubricants
10. Mop the surface
11. Change oil
12. Tighten loose part
13. Remove rust particles

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Interpret service manual	<input checked="" type="checkbox"/> Identification of appropriate service manual <input checked="" type="checkbox"/> Interpreting	0.25	0.75	1
2	Identify ship's components/parts	<input checked="" type="checkbox"/> Identification of ship's components and parts	-	0.5	0.5
3	Scrub/sweep/wash affected surface	<input checked="" type="checkbox"/> Cleaning affected surface	0.25	0.75	1
4	Chip the affected surface	<input checked="" type="checkbox"/> Chipping affected surface	0.25	1.75	2
5	Scale/buff affected surface	<input checked="" type="checkbox"/> Scaling affected surface	0.25	0.75	1
6	Manage serving equipment	<input checked="" type="checkbox"/> Identification of equipment <input checked="" type="checkbox"/> Management	0.25	1.75	2
7	Paint prepared surface	<input checked="" type="checkbox"/> Preparation of paint <input checked="" type="checkbox"/> Application of paint	0.25	0.75	1
8	Clean part of ship	<input checked="" type="checkbox"/> Identification of part of ship <input checked="" type="checkbox"/> Identification of appropriate tools <input checked="" type="checkbox"/> Cleaning	0.25	0.75	1
9	Apply lubricants	<input checked="" type="checkbox"/> Identification of lubricants <input checked="" type="checkbox"/> Application	0.25	0.75	1
10	Mop the surface	<input checked="" type="checkbox"/> Moping of surface	0.25	0.75	1
11	Change oil	<input checked="" type="checkbox"/> Identification of suitable oil <input checked="" type="checkbox"/> Draining out the used oil <input checked="" type="checkbox"/> Filling new oil <input checked="" type="checkbox"/> Checking the oil level	0.25	1.75	2
12	Tighten loose part	<input checked="" type="checkbox"/> Identification of loosen parts <input checked="" type="checkbox"/> Identification of appropriate tools <input checked="" type="checkbox"/> Tightening	0.25	0.75	1
13	Remove rust particles	<input checked="" type="checkbox"/> Identification of rusted area <input checked="" type="checkbox"/> Removal of rust	0.25	0.75	1
		Sub total	3	12	15

Sub module 2: Repair and Maintenance

Theory 3 Hrs + Practical 12 Hrs = 15 Hours

Description:

This sub module provides knowledge and skills related to maintenance of simple component parts of different system of ship.

Objectives:

After completion of this sub module the trainees are able to:

- Repair and maintain simple component parts of ship

Tasks:

1. Read/interpret maintenance schedule
2. Change cordage rope
3. Change steel wire rope
4. Repair/maintain tools/equipment
5. Repair valves
6. Replace gaskets
7. Repair/maintain pipe lines
8. Maintain shackles
9. Replace flags
10. Maintain anchor/cable
11. Maintain boats
12. Maintain cycles
13. Maintain electrical appliances
14. Replace bulb
15. Replace fuse
16. Maintain battery

S.N	Tasks	Related Technical Knowledge	Time(hrs)		
			T	P	Tot
1	Read/interpret maintenance schedule	<input checked="" type="checkbox"/> Identification of maintenance schedule <input checked="" type="checkbox"/> Interpretation of maintenance schedule	0.25	0.5	0.75
2	Change cordage rope	<input checked="" type="checkbox"/> Checking the ropes <input checked="" type="checkbox"/> Identify the defective rope <input checked="" type="checkbox"/> Changing with appropriate rope	0.25	0.75	1
3	Change steel wire rope	<input checked="" type="checkbox"/> Checking the ropes <input checked="" type="checkbox"/> Identify the defective rope <input checked="" type="checkbox"/> Changing with appropriate rope	0.25	0.75	1
4	Repair/maintain tools/equipment	<input checked="" type="checkbox"/> Identification tools and equipment <input checked="" type="checkbox"/> Identification of defect <input checked="" type="checkbox"/> Repairing the defect	0.25	0.75	1
5	Repair valves	<input checked="" type="checkbox"/> Identification of defect <input checked="" type="checkbox"/> Repairing	-	0.75	0.75
6	Replace gaskets	<input checked="" type="checkbox"/> Identification of defect <input checked="" type="checkbox"/> Replacing gaskets	-	0.75	0.75
7	Repair/maintain pipe lines	<input checked="" type="checkbox"/> Identification of defect in pipe line <input checked="" type="checkbox"/> Repairing/maintaining	0.25	0.75	1
8	Maintain shackles	<input checked="" type="checkbox"/> identification of various shackles <input checked="" type="checkbox"/> Maintaining the operational status	0.25	1	1.25
9	Replace flags	<input checked="" type="checkbox"/> Identification of flags <input checked="" type="checkbox"/> Identification of defective flags <input checked="" type="checkbox"/> Replacing flags	0.25	1	1.25
10	Maintain anchor/cable	<input checked="" type="checkbox"/> Checking the anchor and cable <input checked="" type="checkbox"/> Identifying the defects <input checked="" type="checkbox"/> Maintaining the anchor and cable	0.25	0.75	1
11	Maintain boats	<input checked="" type="checkbox"/> Identification of different boats kept onboard <input checked="" type="checkbox"/> Identification of routine maintenance <input checked="" type="checkbox"/> Performing the routine maintenance	0.25	0.75	1

12	Maintain cycles	<input checked="" type="checkbox"/> Identifying the cycles used in the circuit <input checked="" type="checkbox"/> Maintaining the cycle (56/60 Hz)	0.25	0.5	0.75
13	Maintain electrical appliances	<input checked="" type="checkbox"/> Identifying various electrical appliances <input checked="" type="checkbox"/> Identifying the maintenance schedule <input checked="" type="checkbox"/> Performing the maintenance	0.25	1	1.25
14	Replace bulb	<input checked="" type="checkbox"/> Replacing the bulb	-	0.5	0.5
15	Replace fuse	<input checked="" type="checkbox"/> Replacing the fuse	-	0.5	0.5
16	Maintain battery	<input checked="" type="checkbox"/> Inspection of battery <input checked="" type="checkbox"/> Cleaning of terminals <input checked="" type="checkbox"/> Filling up electrolyte/distilled water <input checked="" type="checkbox"/> Usage of hydrometer	0.25	1.0	1.25
		Sub total	3	12	15

Module 7: Communication, Professionalism and Entrepreneurship

Theory 20 Hrs + Practical 30 Hrs = 50 Hours

Theory 25 + Practical 15 = 40 marks

Description:

This module provides knowledge and skills on Communication, Professionalism development and Entrepreneurship development.

Objectives:

After completion of this modules the students are able to:

1. Carry out communication activities
2. Grow professionally in the related job
3. Develop **entrepreneurship**

Sub modules:

1. Communication
2. Professionalism Development
3. Entrepreneurship Development

Sub module 1: Communication

Theory 1 Hr + Practical 4 Hrs = 5 Hours

Description:

This sub module provides knowledge and skills personal safety precaution aspect.

Objectives:

After completion of this sub module the trainees are able to:

- Enforce personal safety precaution

Tasks:

1. Make phone calls
2. Receive phone calls
3. Write letters/memos
4. Communicate with seniors
5. Communicate with juniors
6. Communicate with peers
7. Maintain interpersonal relationship
8. Communicate with rescue helicopter
9. Communicate with company / manufacturers

Sub module 2: Professionalism Development

Theory 1 Hr + Practical 4 Hrs = 5 Hours

Description:

This sub module provides knowledge and skills personal safety precaution aspect.

Objectives:

After completion of this sub module the trainees are able to:

- Enforce personal safety precaution

Tasks:

1. Read Journals / data sheets / manuals / books
2. Participate in meeting / seminar / training / workshop
3. Seek higher education
4. Gain higher Education
5. Browse WWW
6. Participate professional associations

Sub module 3: Entrepreneurship Development

Theory 18 Hrs + Practical 22 Hrs = 40 Hours

Course description

This course is designed to impart the knowledge and skills necessary for micro enterprise startup. The entire course intends to provide basics of entrepreneurial characteristics, finding viable business idea and developing business plan.

Course objectives

After completion of this course students will be able to:

1. Understand concept of entrepreneurship and business
2. Explore viable business idea
3. Learn to prepare business plan

Tasks:

1. State the concept of entrepreneurship/ business/enterprises
2. Grow entrepreneurial attitudes
3. Generate viable business ideas
4. Prepare business plan
5. Prepare basic business records

S.No.	Task statements	Related technical knowledge	Time (hrs)		
			T	P	Tot.
1.	State the concept of entrepreneurship/ business/enterprises	<ul style="list-style-type: none"> • Introduction to entrepreneurship • Classification of enterprises • Benefits of self employment 	2		2
2.	Grow entrepreneurial attitudes	<ul style="list-style-type: none"> • Wheel of success • Risk taking attitude 	3		3
3.	Generate viable business ideas	<ul style="list-style-type: none"> • Business idea generation • Evaluation of business ideas • Creativity and innovation 	3		3
4.	Prepare business plan	<ul style="list-style-type: none"> • Concept of market and marketing • Description of product or service • Selection of business location • Estimation of market share • Promotional measures • Required fixed assets and cost • Required raw materials and costs • Operation process flow • Required human resource and cost • Office overhead and utilities • Working capital estimation • Unit price calculation • Cost benefit analysis • Information collection guidelines 	9	20	29
5.	Prepare basic business records	<ul style="list-style-type: none"> • Day book • Payable & receivable account 	1	2	3
Total:			18	22	40

Suggested references and readings:

Entrepreneur's Handbook, Technonet Asia, 1981

Suggested references and readings for all modules:

- T5 Cahill, R.A. Collisions and their Causes. London, Fairplay Publications, 1983
(ISBN 0-9050-4546-7) OUT OF PRINT 1999)
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- T8 Cockroft, A.N. and Lameijer, J.N.F., A Guide to the Collision Avoidance Rules,
5th ed. Oxford, Heinemann Professional Publishing, 1996. (ISBN 0-434-90274-8)
- TI0 Danton, G. The Theory and Practice of Seamanship. 10th ed. London, Routledg 1987.
(ISBN 0-71 02-041 8-3)
- TI3 Frost, A. Practical Navigation for Second Mates, 6th ed. 1985. Glasgow, Brown,
Sc & Ferguson
- T21 Hooyer, H.H. The Behaviour and Handling of Ships. Cornell Maritime Press
(ISBN 0-787033-306-2)
- T24 International Chamber of Shipping, Bridge Procedures Guide, 3rd ed. 1998
- T28 International Chamber of Shipping, OCIMF, Peril at Sea and Salvage,
5th ed. preparation 1996 (ISBN 0-984591 -46-8)
- T29 International Labour Office. Accident Prevention on Board Ship at Sea and in Port,
2nd ed. Geneva, ILO, 1996 (ISBN 92-2-1 09450-2)
- T31 International Safety Guide for Oil Tankers and Terminals. 4th ed. 1996. ICSIOCIM
Witherby & Co. Ltd. London (ISBN 1-85609-081-7)
- T34 Kemp, J.F. and Young, P., Notes on Compass Work, 2nd ed. 1972, reprinted 1987
London, Stanford Maritime (ISBN 0-540-00362-x)
- T36 Lavery, H.I. Shipboard Operations. 2nd ed. London, Buttemorth-Heinemann,
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- T45 Merchant Ship Search and Rescue Manual (MERSAR) (IMO Sales NO. 974)
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- T 61 The Mariner's Handbook. (NP 100). 6th ed. Taunton (UK), Hydrographer of the Navy, 1989
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- T 73 Subramaniarn, H. Practical Navigation (India) 2nd ed. Nutshell Series Book 1. Vijaya Publications, 1978

Minimum physical facilities

The theory class rooms at least should have area of 10 square feet per trainee and in the workshop it should be at least of 30 square feet per trainees. All the rooms and laboratory should be well illuminated and ventilated.

Well equipped classroom – 1
Well equipped lab (practical room) – 1
Hostel (optional) – 1
Office room – 1
Principal's room – 1
Administrative staff's room – 1
Teaching staff room – 1
Meeting room – 1
Store room – 1
Audio/Visual room – 1
Vehicle (optional) – 1
Library with equipped facility – 1
Ship (apprentice/internship) – 1

Tools, equipment, instrument and materials

1. Accommodation ladder
2. Adhesive plaster
3. Ambu bag
4. Autopilot
5. BA Set
6. Bandages
7. Battery
8. Bench vice
9. Bilge strum box
10. Binocular
11. Boat hook
12. Bow stopper
13. Broom
14. Bull-dog grips
15. Capstan/windlass
16. C-clamp
17. Chain stopper
18. Chipping hammer
19. Chisel set
20. Cordage Rope
21. Cranes

22. Cutter
23. Cutting torch
24. Davit
25. Derricks
26. Devil's claw
27. Duct plate
28. Dust mask
29. Ear muff/ear plug
30. Emergency Escape Breathing device
31. Emergency steering gear
32. EOT
33. EPIRB
34. Explosimeter
35. Extinguisher – water
36. Extinguisher – foam
37. Extinguisher – DCP
38. Extinguisher – CO2
39. Eye pads
40. File set
41. Fire axe
42. Fire hose
43. Fire nozzle
44. Fixed deck to deck ladder
45. Flare gauge
46. Gangway
47. Gauze pads
48. Gloves
49. Grabs
50. Grease gun
51. Grease nipple
52. Grip pliers
53. Gyro repeater
54. Hack saw
55. Hammer
56. Hand pump
57. Helmet
58. High pressure water guns
59. Hydrocarbon detector
60. Hydrometer

61. Hydrostatic release unit
62. Lashing bars
63. Life buoy
64. Mallet
65. Man overboard marker
66. Marline spike
67. Mechanical foam gun
68. Metal blocks
69. Mooring Rope
70. Mooring winch
71. Mop
72. Multimeter
73. Needle gun for chipping
74. Neil Robertson stretcher
75. Oil can
76. Oxygen analyzer
77. PA system
78. Paint bowl
79. Paint brush
80. Phase tester
81. Pliers
82. Portable ladder
83. Rat guard
84. Ratchet
85. Respiratory protective equipment
86. Rivet gun
87. Ring ratchet
88. Rudder indicator
89. Sacrificial anode
90. Safety goggle
91. Safety harness
92. Safety pins
93. Safety shoes
94. SART
95. Scissors and tweezers
96. Screw driver
97. Scrubber
98. Self igniting light
99. Sheet metal cutter

100. Slings
101. Socket
102. Soldering iron
103. Sounding rod
104. Spanner set (open end and close end)
105. Speed handle
106. e Splints
107. Steel wire rope
108. Steering tiller
109. Steering wheel
110. Stethoscope
111. Stopper
112. Talurit clamp
113. Telephone
114. Telescopic reflector
115. Thermal imaging camera
116. Thermal protective aid
117. Thermometer
118. Threading die
119. Torque wrench
120. Triangular bandages
121. Ullage tape
122. Valve
123. Vernier calipers
124. Walkie-talkie
125. Water jet nozzle
126. Handle welding torch
127. Winch
128. Wire brush
129. Wooden blocks

Duties and Tasks of Ordinary Seaman (OS) for apprenticeship

Duty A. Handle tools/equipment/instruments/materials

Tasks:

1. Handle Accommodation ladder
2. Handle Adhesive plaster
3. Handle Ambu bag
4. Handle Autopilot
5. Handle BA Set
6. Handle Bandages
7. Handle Battery
8. Handle Bench vice
9. Handle Bilge strum box
10. Handle Binocular
11. Handle Boat hook
12. Handle Bow stopper
13. Handle Broom
14. Handle Bull-dog grips
15. Handle Capstan/windlass
16. Handle C-clamp
17. Handle Chain stopper
18. Handle Chipping hammer
19. Handle Chisel set
20. Handle Cordage Rope
21. Handle Cranes
22. Handle Cutter
23. Handle Cutting torch
24. Handle Davit
25. Handle Derricks
26. Handle Devil's claw
27. Handle Duct plate
28. Handle Dust mask
29. Handle Ear muff/ear plug
30. Handle Emergency Escape Breathing device
31. Handle Emergency steering gear
32. Handle EOT
33. Handle EPIRB
34. Handle Explosimeter
35. Handle Extinguisher – water
36. Handle Extinguisher – foam
37. Handle Extinguisher – DCP
38. Handle Extinguisher – CO2
39. Handle Eye pads
40. Handle File set
41. Handle Fire axe
42. Handle Fire hose

43. Handle Fire nozzle
44. Handle Fixed deck to deck ladder
45. Handle Flare gauge
46. Handle Gangway
47. Handle Gauze pads
48. Handle Gloves
49. Handle Grabs
50. Handle Grease gun
51. Handle Grease nipple
52. Handle Grip pliers
53. Handle Gyro repeater
54. Handle Hack saw
55. Handle Hammer
56. Handle Hand pump
57. Handle Helmet
58. Handle High pressure water guns
59. Handle Hydrocarbon detector
60. Handle Hydrometer
61. Handle Hydrostatic release unit
62. Handle Lashing bars
63. Handle Life buoy
64. Handle Mallet
65. Handle Man overboard marker
66. Handle Marline spike
67. Handle Mechanical foam gun
68. Handle Metal blocks
69. Handle Mooring Rope
70. Handle Mooring winch
71. Handle Mop
72. Handle Multimeter
73. Handle Needle gun for chipping
74. Handle Neil Robertson stretcher
75. Handle Oil can
76. Handle Oxygen analyzer
77. Handle PA system
78. Handle Paint bowl
79. Handle Paint brush
80. Handle Phase tester
81. Handle pliers
82. Handle Portable ladder
83. Handle Rat guard
84. Handle Ratchet
85. Handle Respiratory protective equipment
86. Handle Rivet gun
87. Handle Ring ratchet
88. Handle Rudder indicator
89. Handle Sacrificial anode

90. Handle Safety goggle
91. Handle Safety harness
92. Handle Safety pins
93. Handle Safety shoes
94. Handle SART
95. Handle Scissors and tweezers
96. Handle Screw driver
97. Handle Scrubber
98. Handle Self igniting light
99. Handle Sheet metal cutter
100. Handle Slings
101. Handle Socket
102. Handle Soldering iron
103. Handle Sounding rod
104. Handle Spanner set (open end and close end)
105. Handle Speed handle
106. Handle Splints
107. Handle Steel wire rope
108. Handle Steering tiller
109. Handle Steering wheel
110. Handle Stethoscope
111. Handle Stopper
112. Handle Talurit clamp
113. Handle Telephone
114. Handle Telescopic reflector
115. Handle Thermal imaging camera
116. Handle Thermal protective aid
117. Handle Thermometer
118. Handle Threading die
119. Handle Torque wrench
120. Handle Triangular bandages
121. Handle Ullage tape
122. Handle valve
123. Handle Vernier calipers
124. Handle Walkie-talkie
125. Handle Water jet nozzle
126. Handle welding torch
127. Handle Winch
128. Handle Wire brush
129. Handle Wooden blocks

Duty B. Enforce personal safety

Tasks:

1. Use fixed and portable firefighting equipment
2. Use life saving appliances

3. Use personal protective equipment
4. Use protective clothing for welding and allied process
5. Use bridge equipment to avoid collision/grounding
6. Control/isolate equipment
7. Work aloft safely
8. Enter confined space safely
9. Assess potential personal hazards
10. Isolate all liquid and vapor
11. Respond to emergency
12. Follow contingency plan
13. Follow procedural checklist
14. Read/interpret muster list

Duty C. Apply personal survival techniques

Tasks:

1. Launch life raft
2. Use personal life saving appliances
3. Launch life boat
4. Wear immersion suit
5. Make life raft upright
6. Operate rescue boat
7. Operate hand flares
8. Wear thermal protective aid
9. Board life raft
10. Operate smoke marker
11. Prevent loss of body temp
12. Rescue the survivor from sea
13. Maintain condition of life raft
14. Maintain hydrostatic release unit
15. Use rescue basket
16. Use rescue litter
17. Use rescue sling
18. Use rescue net
19. Launch EPIRB
20. Operate SART
21. Prepare for abandoning ship
22. Abandon the ship

Duty D Ensure fire prevention/fire fighting

Tasks:

1. Sensitize with fire fighting arrangements

2. Find fire
3. Identify the nature of fire
4. Raise fire alarm
5. Operate fire extinguisher
6. Act upon hearing fire alarm
7. Use fire blanket
8. Use EEBD
9. Use breathing apparatus
10. Wear fireman's suit
11. Operate dry chemical powder system
12. Operate co2 drenching system
13. Connect and use fire hose/nozzle
14. Operate foam smothering system
15. Participate in periodic drills
16. Climb up/down ladder wearing breathing apparatus
17. Assist external fire tender when in port

Duty E. Provide first aid services

Tasks:

1. Provide first aid for injuries
2. Provide first aid for burns
3. Provide first aid cuts/wounds
4. Provide first aid for animal bite
5. Provide first aid for bleeding
6. Provide first aid for cold/snow bite/frost bite
7. Provide first aid for chock
8. Provide first aid for electric shock
9. Provide first aid for cases of fracture
10. Perform CPR
11. Perform simple bandaging
12. Perform simple dressing
13. Interpret vital signs
14. Provide first aid for drowning

Duty F. Interpret Signs/Signals/Symbols

Tasks:

1. Read/interpret international code flags
2. Read /interpret phonetic alphabets
3. Read/interpret light signal
4. Read /interpret sound signal
5. Read/interpret shapes signal

6. Read/interpret IMO symbols
7. Read/interpret emergency signal
8. Read/interpret abandon ship signal
9. Read/interpret fire alarm signal
10. Read/interpret man overboard signal
11. Read/interpret distress signal
12. Interpret dangerous cargo labels

Duty G. Perform watch-keeping

Tasks:

1. Read compass
2. Perform look out
3. Steer the ship
4. Man gangway
5. Execute helm orders
6. Perform anti-piracy watch
7. Maintain gangway books
8. Monitor the visitors
9. Check the belongings of the visitors
10. Report emergencies
11. Report sighting of ships/floating objects/aircrafts
12. Report unusual weather condition
13. Report navigational hazards/rocks/reefs
14. Report malfunction of ship's lights

Duty H. Interpret drawings/diagrams

Tasks:

1. Interpret plan of ship
2. Interpret front view of ship
3. Interpret side view of ship
4. Interpret back view of ship
5. Interpret fire control plan
6. Interpret engine room layout plan
7. Interpret circuit diagram
8. Interpret schematic diagram
9. Interpret layout diagram

Duty I. Communicate with others

Tasks:

1. Make phone calls

2. Receive phone calls
3. Write letters/memos
4. Write simple reports
5. Write simple proposals
6. Communicate with seniors
7. Communicate with juniors
8. Communicate with company / manufacturers
9. Communicate with peers
10. Maintain interpersonal relationship
11. Communicate with rescue helicopter

Duty J. Perform rigging

Tasks:

1. Make knots/bends/hitches
2. Perform splicing
3. Perform whipping
4. Rig derrick
5. Rig accommodation ladder
6. Rig pilot ladder
7. Rig stage
8. Rig bosun chair
9. Rig tackles/purchase

Duty K. Perform cargo operations

Tasks:

1. Lash cargo
2. Handle ropes
3. Perform cargo watch
4. Take sounding
5. Clean cargo hold
6. Operate cargo hold access equipment
7. Assess status of cargo
8. Check leakage of cargo hold
9. Load/unload cargo
10. Man guide ropes
11. Place dunnage
12. Display standard hand signals
13. Open/close water tight door
14. Open/close water tight hatch
15. Use ladder to climb up/down decks
16. Operate cranes

17. Operate derricks
18. Use slings
19. Handle dangerous cargo

Duty L. Perform mooring

Tasks:

1. Prepare mooring stations
2. Prepare mooring ropes
3. Pass messenger line
4. Pass mooring rope
5. Tighten the mooring rope
6. Apply rope stoppers
7. Secure mooring ropes
8. Recover mooring ropes
9. Secure mooring station
10. Execute mooring orders

Duty M. Perform anchoring

Tasks:

1. Prepare anchoring station
2. Prepare anchor for letting go
3. Let go anchor
4. Prepare for weighing anchor
5. Weigh anchor
6. Clean anchor/cable
7. Secure anchor and cable
8. Secure anchor station
9. Perform anchor watch
10. Execute anchoring orders

Duty N. Repair/maintain ship components/parts

Tasks:

1. Identify ship's components/parts
2. Read/interpret maintenance schedule
3. Change cordage rope
4. Change steel wire rope
5. Repair/maintain tools/equipment
6. Repair valves
7. Replace gaskets
8. Repair/maintain pipe lines

9. Maintain shackles
10. Replace flags
11. Maintain anchor/cable
12. Maintain boats

Duty O. Perform boat operations

Tasks:

1. Lash/unlash boat
2. Lower/hoist boat
3. Man boat
4. Pull the boat using oars
5. Dry up the bilge
6. Hook on to the boat falls
7. Prepare for lowering boat
8. Prepare for hoisting boat
9. Tighten the bilge drain plug
10. Perform lookout

Duty P. Perform engine room watch

Tasks:

1. Identify tools/equipment
2. Interpret colour codes
3. Open close valves
4. Take sounding
5. Check operating temperature
6. Report emergencies

Duty Q. Perform routine services

Tasks:

1. Interpret service manual
2. Scrub/sweep/wash affected surface
3. Chip the affected surface
4. Scale/buff affected surface
5. Manage serving equipment
6. Paint prepared surface
7. Clean part of ship
8. Apply lubricants
9. Mop the surface
10. Change oil
11. Tighten loose part

12. Remove rust particles

Duty R. Perform bench works

Tasks:

1. Perform Filling
2. Perform Hand Punching
3. Perform Sawing
4. Perform Chiseling
5. Perform Drilling
6. Perform Threads by Hand
7. Perform Off Hand Grinding

Duty S. Perform arc welding

Tasks:

1. Strike in metal plate
2. Perform Straight bead/weaving welding
3. Weld Square Butt joint
4. Weld "V" joint
5. Weld Bevel Joints (Single + Double)
6. Weld Fillet Tee joint
7. Weld Fillet Lap joint

Duty T. Sensitize with electrical systems

Tasks:


1. Measure voltage
2. Measure current
3. Measure resistance
4. Maintain cycles
5. Maintain electrical appliances
6. Replace bulb
7. Replace fuse
8. Monitor the main switch board
9. Monitor auxiliary switch board
10. Monitor generator

Duty U. Develop professionalism

Tasks:

1. Read Journals / data sheets / manuals / books
2. Participate in meetings / seminars / Training / workshop

3. Seek higher education
4. Gain higher Education
5. Browse WWW
6. Participate professional associations

<p>Panel members:</p> <p>James M Xavier Seaman</p> <p>Pawan Thapa Seaman</p> <p>Dipak Shrestha Seaman</p> <p>Madhu singh Seaman</p> <p>Saroj Gurung Seaman</p> <p>Balbahdur Sahi Seaman</p> <p>Chiranjibi Sainju Seaman</p> <p>Dilip Belbase Seaman</p>	<p style="text-align: center;">DACUM Job Analysis of Ordinary Seaman</p> <p style="text-align: center;">May 2013</p> <div style="text-align: center;">  </div>
<p>Coordinator: Raju Kumar Shrestha Director, NIMS</p>	
<p>Facilitators/recorders: Mr. Jeeban Chandra Dahal. Chief Senior Curriculum Officer, CDS Mr. M.K. Mainali, Senior Curriculum Officer CDS</p>	
<p style="text-align: center;">Council for Technical Education and Vocational Training Curriculum Development Division Sanothimi, Bhaktapur</p>	

DUTIES and TASKS of Ordinary Seaman

A. Handle tools/equipment/instruments/materials

A1 Handle Helmet	A2 Handle Safety goggles	A3 Handle Gloves	A4 Handle Safety shoes	A5 Handle Safety harness
A6 Handle Ear muff/ear plug	A7 Handle Respiratory protective equipment	A8 Handle Davit	A9 Handle Life buoy	A10 Handle Hydrostatic release unit
A11 Handle EPIRB	A12 Handle SART	A13 Handle Hand pump	A14 Handle fire axe	A15 Handle Thermal imaging camera
A16 Handle Thermometer	A17 Handle Ambu bag	A18 Handle Bandages	A19 Handle Duct plate	A20 Handle Gauze pads
A21 Handle Scissors	A22 Handle Neil Robertson stretcher	A23 Handle Triangular bandages	A24 Handle Adhesive plaster	A25 Handle Eye pads
A26 Handle Safety pins	A27 Handle Splints	A28 Handle Walkie-talkie	A29 Handle PA system	A30 Handle Telephone
A31 Handle BA Set	A32 Handle Dust mask	A33 Handle Fixed deck to deck ladder	A34 Handle Portable ladder	A35 Handle Accommodation ladder
A36 Handle Gyro repeater	A37 Handle Telescopic reflector	A38 Handle Steering wheel	A39 Handle Steering tiller	A40 Handle Autopilot
A41 Handle Emergency steering gear	A42 Handle Rudder indicator	A43 Handle Binocular	A44 Handle EOT	A45 Handle Gangway
A46 Handle cordage Rope	A47 Handle Marline spike	A48 Handle Mallet	A49 Handle Winch	A50 Handle Bull-dog grips
A51 Handle Talurit clamp	A52 Handle Wooden Blocks	A53 Handle Metal blocks	A54 Handle steel wire rope	A55 Handle Derricks
A56 Handle Cranes	A57 Handle Grabs	A58 Handle Slings	A59 Handle Lashing bars	A60 Handle High pressure water guns
A61 Handle Mooring winch	A62 Handle Mooring Rope	A63 Handle Boat hook	A64 Handle Rat guard	A65 Handle stopper
A66 Handle Capstan/windlass	A67 Handle Devil's claw	A68 Handle Bow stopper	A69 Handle Water jet nozzle	A70 Handle Explosimeter
A71 Handle Chipping hammer	A72 Handle Needle gun for chipping	A73 Handle Wire brush	A74 Handle Paint brush	A75 Handle Paint bowl
A76 Handle Hydrocarbon detector	A77 Handle Broom	A78 Handle Mop	A79 Handle Grease gun	A80 Handle Oil can
A81 Handle Bilge strum box	A82 Handle Grease nipple	A83 Handle Oil can	A84 Handle Battery	A85 Handle Sacrificial anode
A86 Handle File set	A87 Handle Chisel set	A88 Handle Screw driver	A89 Handle Cutter	A90 Handle Hammer
A91 Handle Spanner set (open end and close end)	A92 Handle Ring ratchet	A93 Handle Ratchet	A94 Handle Speed handle	A95 Handle Socket
A96 Handle Hack saw	A97 Handle Flare gauge	A98 Handle Vernier calipers	A99 Handle c-clamp	A100 Handle torque wrench

A101 Handle grip pliers	A102 Handle bench wise	A103 Handle sheet metal cutter	A104 Handle rivet gun	A105 Handle scrubber
A106 Handle welding torch	A107 Handle cutting torch	A108 Handle Fire detectors	A108 Handle measuring instrument	A109 Handle Emergency escape breathing device
A110 Handle Extinguisher – water	A111 Handle Extinguisher – foam	A112 Handle Extinguisher – CO2	A113 Handle Extinguisher – DCP	A114 Handle Fire hose
A115 Handle Fire nozzle	A116 Handle Man overboard marker	A117 Handle Mechanical foam gun	A118 Handle Oxygen analyzer	A119 Handle Self igniting light
A120 Handle Sounding rod	A121 Handle Stethoscope	A122 Handle Thermal protective aid	A123 Handle Threading die	A124 Handle Ullage tape
A125 Handle valve	A126 Handle hydrometer	A127 Handle soldering iron		

B. Enforce personal safety

B1 Use fixed and portable firefighting equipment	B2 Use life saving appliances	B3 Use personal protective equipment	B4 Use protective clothing for welding and allied process	B5 Use bridge equipment to avoid collision/grounding
B6 Control/isolation equipment	B7 Work aloft safely	B8 Enter confined space safely	B9 Assess potential personal hazards	B10 Isolate all liquid and vapor
B11 Respond to emergency	B12 Follow contingency plan	B13 Follow procedural checklist	B14 Read/interpret muster list	

C. Apply personal survival techniques

C1 Launch life raft	C2 Use personal life saving appliances	C3 Launch life boat	C4 Wear immersion suit	C5 Make life raft upright
C6 Operate rescue boat	C7 Operate hand flares	C8 Wear thermal protective aid	C9 Board life raft	C10 Operate smoke marker
C11 Prevent loss of body temperature	C12 Rescue the survivor from sea	C13 Maintain condition of life raft	C14 Maintain hydrostatic release unit	C15 Use rescue basket
C16 Use rescue litter	C17 Use rescue sling	C18 Use rescue net	C19 Launch EPIRB	C20 Operate SART
C21 Prepare for abandoning ship	C22 Abandon the ship			

D Ensure fire prevention/fire fighting

D1 Sensitize with fire fighting arrangements	D2 Find fire	D3 Identify the nature of fire	D4 Raise fire alarm	D5 Operate fire extinguisher
D6 Act upon hearing fire alarm	D7 Use fire blanket	D8 Use EEBD	D9 Use breathing apparatus	D10 Wear fireman's suit
D11 Operate dry chemical powder	D12 Operate co2 drenching system	D13 Connect and use fire	D14 Operate foam smothering system	D15 Participate in periodic drills

system		hose/nozzle		
D16 Climb up/down ladder wearing breathing apparatus	D17 Assist external fire tender when in port			

E. Provide first aid services

E1 Provide first aid for injuries	E2 Provide first aid for burns	E3 Provide first aid cuts/wounds	E4 Provide first aid for animal bite	E5 Provide first aid for bleeding
E6 Provide first aid for cold/snow bite/frost bite	E7 Provide first aid for chock	E8 Provide first aid for electric shock	E9 Provide first aid for cases of fracture	E10 Perform CPR
E11 Perform simple bandaging	E12 Perform simple dressing	E13 Interpret vital signs	E14 Provide first aid for drowning	

F. Interpret Signs/Signals/Symbols

F1 Read/interpret international code flags	F2 Read /interpret phonetic alphabets	F3 Read/interpret light signal	F4 Read /interpret sound signal	F5 Read/interpret shapes signal
F6 Read/interpret IMO symbols	F7 Read/interpret emergency signal	F8 Read/interpret abandon ship signal	F9 Read/interpret fire alarm signal	F10 Read/interpret man overboard signal
F11 Read/interpret distress signal	F12 Interpret dangerous cargo labels			

G. Perform watch-keeping

G1 Read compass	G2 Perform look out	G3 Steer the ship	G4 Man gangway	G5 Execute helm orders
G6 Perform anti-piracy watch	G7 Maintain gangway books	G8 Monitor the visitors	G9 Check the belongings of the visitors	G10 Report emergencies
G11 Report sighting of ships/floating objects/aircrafts	G12 Report unusual weather condition	G13 Report navigational hazards/rocks/reefs	G14 Report malfunction of ship's lights	

H. Interpret drawings/diagrams

H1 Interpret plan of ship	H2 Interpret front view of ship	H3 Interpret side view of ship	H4 Interpret back view of ship	H5 Interpret fire control plan
H6 Interpret engine room layout plan	H7 Interpret circuit diagram	H8 Interpret schematic diagram	H9 Interpret circuit diagram	H10 Interpret layout diagram

I. Communicate with others

I1 Make phone calls	I2 Receive phone calls	I3 Write letters/memos	I4 Write simple reports	I5 Write simple proposals
I6 Communicate with seniors	I7 Communicate with juniors	I8 Communicate with peers	I9 Maintain interpersonal relationship	I10 Communicate with rescue helicopter

J. Perform rigging

J1 Make knots/bends/hitches	J2 Perform splicing	J3 Perform whipping	J4 Rig derrick	J5 Rig accommodation ladder
J6 Rig pilot ladder	J7 Rig stage	J8 Rig bosun chair	J9 Rig tackles/purchase	

K. Perform cargo operations

K1 Lash cargo	K2 Handle ropes/wires	K3 Use slings	K4 Perform cargo watch	K5 Take sounding
K6 Clean cargo hold	K7 Operate cargo hold access equipment	K8 Assess status of cargo	K9 Check leakage of cargo hold	K10 Load/unload cargo
K11 Man guide ropes	K12 Place dunnage	K13 Display standard hand signals	K14 Open/close water tight door	K15 Open/close water tight hatch
K16 Use ladder to climb up/down decks	K17 Operate cranes	K18 Operate derricks	K19 Handle dangerous cargo	

L. Perform mooring

L1 Prepare mooring stations	L2 Prepare mooring ropes	L3 Pass messenger line	L4 Pass mooring rope	L5 Tighten the mooring rope
L6 Apply rope stoppers	L7 Secure mooring ropes	L8 Recover mooring ropes	L9 Secure mooring station	L10 Execute mooring orders

M. Perform anchoring

M1 Prepare anchoring station	M2 Prepare anchor for letting go	M3 Let go anchor	M4 Prepare for weighing anchor	M5 Weigh anchor
M6 Clean anchor/cable	M7 Secure anchor and cable	M8 Secure anchor station	M9 Perform anchor watch	M10 Execute anchoring orders

N. Repair/maintain ship components/parts

N1 Identify ship's components/parts	N2 Read/interpret maintenance schedule	N3 Change cordage rope	N4 Change steel wire rope	N5 Repair/maintain tools/equipment
N6 Repair valves	N7 Replace gaskets	N8 Repair/maintain pipe lines	N9 Maintain shackles	N10 Replace flags
N11 Maintain anchor/cable	N12 Maintain boats			

O. Perform boat operations

O1 Lash/unlash boat	O2 Lower/hoist boat	O3 Man boat	O4 Pull the boat using oars	O5 Dry up the bilge
O6 Hook on to the boat falls	O7 Prepare for lowering boat	O8 Prepare for hoisting boat	O9 Tighten the bilge drain plug	O10 Perform lookout

P. Perform engine room watch

P1 Identify tools/equipment	P2 Interpret colour codes	P3 Open close valves	P4 Take sounding	P5 Check operating
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				temperature
P6 Report emergencies				

Q. Perform routine services

Q1 Interpret service manual	Q2 Scrub/sweep/wash affected surface	Q3 Chip the affected surface	Q4 Scale/buff affected surface	Q5 Manage serving equipment
Q6 Paint prepared surface	Q7 Clean part of ship	Q8 Apply lubricants	Q9 Mop the surface	Q10 Change oil
Q11 Tighten loose part	Q12 Remove rust particles			

R. Perform bench works

R1 Perform Filling	R2 Perform Hand Punching	R3 Perform Sawing	R4 Perform Chiseling	R5 Perform Drilling
R6 Perform Threads by Hand	R7 Perform Off Hand Grinding			

S. Perform arc welding

S1 Strike in metal plate	S2 Perform Straight bead/weaving welding	S3 Weld Square Butt joint	S4 Weld "V" joint	S5 Weld Bevel Joints (Single + Double)
S6 Weld Fillet Tee joint	S7 Weld Fillet Lap joint			

T. Sensitize with electrical systems

T1 Measure voltage	T2 Measure current	T3 Measure resistance	T4 Maintain cycles	T5 Maintain electrical appliances
T6 Replace bulb	T7 Replace fuse	T8 Monitor the main switch board	T9 Monitor auxiliary switch board	T10 Monitor generator
T11 Maintain battery	T12 Perform soldering			

U. Develop professionalism

U1 Participate in meetings / seminars / Training / workshop	U2 Participate professional associations	U3 Read Journals / data sheets / manuals / books	U4 Browse WWW	U5 Gain higher Education
U6 Communicate with company / manufacturers	U7 Seek higher education			

Additional Information of “Ordinary Seaman”

Workers’ traits: <ul style="list-style-type: none"> Patience/Punctual/Polite/Dynamic Innovative/Positive/Cooperative Eager/Responsible/accountable Honest /Dedicated/Creative 	Entry requirement: Minimum SLC Pass Age : 16 yrs Physically fit mentally fit Duration: <ul style="list-style-type: none"> 3 months (in-house training) 	Carrier path: Bosun Able Bodied Seaman Future Concerns: High employability Bright future
Related Technical Knowledge	Related Technical Knowledge	Tools and equipment

<p><u>Tools, equipment & materials:</u> Function Identification Handling <u>Personal safety:</u> Introduction Hazards onboard ship Importance of PPE Interpersonal relationship <u>Personal survive technique:</u> Introduction Identification and uses of LSA Techniques Emergency situations Evacuation Survival craft and rescue boat Survival at sea <u>Fire prevention and fire fighting:</u> Introduction Classification of fire Identification of FFA Fire and smoke detection Fight and extinguish fire Use of fixed fire fighting installations Use of breathing apparatus <u>Elementary First Aid:</u> General principle Body structure and function Positioning of casualty Resuscitation Bleeding Management of shock Rescue and transport of casualty <u>Signs, signals and symbols:</u> Identification of IMO symbols Identification of dangerous cargo labels Identification of standard hand signals Identification of international code flags <u>Watchkeeping:</u> Introduction Purpose Techniques <u>Interpretation drawing and diagram:</u> Introduction Types Techniques <u>Communication:</u> Introduction Types</p>	<p><u>Rigging:</u> Introduction Methods and techniques <u>Cargo operations:</u> Introduction Methods and equipments Ballast pumping and piping systems <u>Mooring</u> Introduction Mooring techniques <u>Anchoring:</u> Introduction Anchoring techniques <u>Repairing and maintenance:</u> Identification of different components Fault finding Repairing and replacing of faulty parts <u>Boat operation:</u> Introduction Types of boats Techniques <u>Engine room watch:</u> Introduction Purpose Techniques <u>Servicing:</u> Interpretation of service manual Interpretation of routine service schedule Servicing techniques <u>Bench work:</u> Introduction Filing Cutting Drilling Sawing Punching Threading <u>Arc welding:</u> Introduction Types Method of arc welding Welding accessories <u>Electricity:</u> Definition Terminology Ohm's law <u>Professionalism:</u> Introduction Development techniques</p>	<p>Accommodation ladder Adhesive plaster Ambu bag Autopilot BA Set Bandages Battery Bench wise Bilge strum box Binocular Boat hook Bow stopper Broom Bull-dog grips Capstan/windlass C-clamp Chain stopper Chipping hammer Chisel set Cordage Rope Cranes Cutter Cutting torch Davit Derricks Devil's claw Duct plate Dust mask Ear muff/ear plug Emergency escape breathing device Emergency steering gear EOT EPIRB Explosimeter Extinguisher – CO2 Extinguisher – DCP Extinguisher – foam Extinguisher – water Eye pads File set Fire axe Fire hose Fire nozzle Fixed deck to deck ladder Flare gauge Gangway Gauze pads Gloves Grabs Grease gun Grease nipple Grip pliers Gyro repeater Hack saw</p>
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		Hammer Hand pump Helmet High pressure water guns Hydrocarbon detector Hydrometer Hydrostatic release unit Joining shackle Lashing bars Life buoy Mallet Man overboard marker Marline spike Mechanical foam gun Metal blocks Mooring Rope Mooring winch Mop Needle gun for chipping Neil Robertson stretcher Oil can Oxygen analyzer PA system Paint bowl Paint brush Portable ladder Rat guard Ratchet Respiratory protective equipment Ring ratchet Rivet gun Rudder indicator Sacrificial anode Safety goggle Safety harness Safety pins Safety shoes SART Scissors and tweezers Screw driver Scrubber Self igniting light Sheet metal cutter Slings Socket Soldering iron Sounding rod Spanner set (open end and close end) Speed handle Splints Steel wire rope Steering tiller Steering wheel
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		Stethoscope Stopper Talurit clamp Telephone Telescopic reflector Thermal imaging camera Thermal protective aid Thermometer Threading die Torque wrench Triangular bandages Ullage tape valve Vernier calipers Walkie-talkie Water jet nozzle welding torch Winch Wire brush Wooden Blocks
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