



Curriculum Document				
Curriculum Code	Curriculum Title			
735101002	Deck Hand (Able Seaman) Able Seafarer Engine			
Development Quality Partner	Name	E-mail	Phone	Logo
	Transport Education Training Authority	<a href="mailto:victor@teta.org.za">victor@teta.org.za</a>	021 531-3064	

\_\_\_\_\_  
Learner QDF Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
QDF Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
DQP Representative Signature

\_\_\_\_\_  
Date

## **SECTION 1: CURRICULUM SUMMARY**

### **1. Occupational Information**

#### **1.1 Associated Occupation**

735101: Deck Hand (Able Seaman)

#### **1.2 Occupation or Specialisation Addressed by this Curriculum**

735101002: Able Seafarer Engine

#### **1.3 Alternative Titles used by Industry**

- Able Seafarer
- Able Seaman
- Mariner
- Sailor
- Ship Crew Member
- General Purpose Worker
- Oiler

### **2. Curriculum Information**

#### **2.1 Curriculum Structure**

This qualification is made up of the following compulsory Knowledge and Practical Skill Modules:

##### **Knowledge Modules:**

- 735101002-KM-01, Marine Engineering Operations Theory, NQF Level 3, Learning Contract Time 20 days, Credits 16
- 735101002-KM-02, Proficiency in Survival Craft and Rescue Boats, NQF Level 3, Learning Contract Time 3 days, Credits 3
- 735101002-KM-03, Personal Survival Techniques, NQF Level 4, Learning Contract Time 2 days, Credits 2
- 735101002-KM-04, Personal Safety and Social Responsibility, NQF Level 4, Learning Contract Time 2 days, Credits 2
- 735101002-KM-05, Medical First Aid, NQF Level 3, Learning Contract Time 3 days, Credits 2
- 735101002-KM-06, Fire Prevention and Firefighting, NQF Level 3, Learning Contract Time 3 days, Credits 2
- 735101002-KM-07, Safety Familiarisation, NQF Level 3, Learning Contract Time 2 day, Credits 2
- 735101002-KM-08, Security Awareness, NQF Level 3, Learning Contract Time 2 day, Credits 2
- 735101002-KM-09, Fundamentals of Communications, NQF Level 3, Learning Contract Time 2 days, Credits 2

- 735101002-KM-10, Introduction to Applied Marine Science and Maths, NQF Level 3, Learning Contract Time 2 day, Credits 2

Total number of credits for Knowledge Modules: 35 (26%)

#### **Practical Skill Modules:**

- 315101002-PM-01, Perform marine engineering watchkeeping duties at a support level, NQF Level 3, Learning Contract Time 6 days, Credits 5
- 315101002-PM-02, Assist with bunkering and internal liquid transfers at a support level, NQF Level 3, Learning Contract Time 6 days, Credits 5
- 315101002-PM-03, Contribute to the safe operation of the engine-room and care for persons on-board at a support level, NQF Level 3 , Learning Contract Time 6 days, Credits 5
- 315101002-PM-04, Perform safe electrical, electronic and control engineering duties at the support level, NQF Level 3, Learning Contract Time 6 days, Credits 5
- 315101002-PM-05, Provide maintenance and repair on board ship at support level, NQF Level 3 , Learning Contract Time 6 days, Credits 5
- 315101002-PM-06, Carry out security duties and contingency plans at support level, NQF Level 3, Learning Contract Time 6 days, Credits 5

Total number of credits for Practical Skill Modules: 30 (22%)

This qualification also requires the following **Work Experience Modules:**

- 735101002-WM-01: Following marine engineering processes at the support level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-02: Adhering to bunkering and internal liquid transfer operational procedures at the support level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-03: Adhering to engine-room operational responsibilities and care for persons on board at the support level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-04: Conforming to safe electrical, electronic and control engineering processes at the support level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-05: Complying with maintenance and repair procedures at the support level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-06: Following security procedures and contingency plans at support level, NQF level 3, Learning Contract Time 60 days (Credits: 12)

Total number of credits for Work Experience Modules: 72 (52%)

## **2.2 Entry Requirements**

The entry requirements are prescribed by the Merchant Shipping (Safe Manning Training and Certification) Regulations.

Further to the above requirement, the learner must have a current approved SAMSA medical fitness and eye test certificate.

### **3. Assessment Quality Partner Information**

Name of body: South African Maritime Safety Authority (SAMSA)  
Address of body: 146 Lunnon Road, Cnr Jan Shoba & Lunnon Road, Hillcrest, 0183.  
P.O Box 13186, Hatfield, Gauteng, Republic of South Africa  
Contact person name: Mr Azwimbavhi Mulaudzi  
Contact person work telephone number: (012) 366 2600, [amulaudzi@smsa.org.za](mailto:amulaudzi@smsa.org.za)

### **4. Part Qualification Curriculum Structure**

This qualification does not have any associated part qualifications

### **5. Articulation**

Relation of this Curriculum to the Occupation and Qualification Progression  
Learners entering this qualification will likely feed into the industry with a National Occupational Certificate: Able Seafarer Engine.

The likely vertical progression for this qualification is a National Occupational Qualification: Ordinary Seafarer, Able Seafarer Engine, Marine Motorman (Grade 2, 1, Higher Grade), Engineering Officer of the Watch, 2<sup>nd</sup> Engineer, Chief Engineer

This National Occupational Certificate articulates horizontally with other Able Seafarer occupations with cross-cutting credits in the Knowledge Specifications, i.e. Fishing, Ship Repair, Port Operations, Coastal Shipping, International Merchant Fleet, and Off-shore Industry

### **6. International Comparability**

The international comparability study conducted specifically focused on identifying occupational standards or qualifications used in other countries that might contain indicators of best practice that could be used for comparison to or in the development of the Able Seafarer qualifications to be submitted for registration to the QCTO.

The International Maritime Organisation and its member states (UK, Australia and India) were selected as best practice as it was accepted as International standards.

The content, scope and duration of the qualification is uniform internationally.

The Maritime profession is an area with globally recognised best practices, standards and Qualifications. This Qualification and set of module specifications utilises international and locally recognised best practice and standards.

The data collection process included the following:

- International legislation and conventions
- An extensive Internet search focussing on the countries identified as best practice countries
- Follow-up by email to obtain more detailed information especially in relation to case studies
- Contacting professional and academic colleagues in target countries with direct

involvement in the development or application of relevant vocational qualifications

The international comparability study was done in various countries, such as Papua New Guinea, United Kingdom, Australia, USA, India and South Africa.

### **Conclusion**

The identification of tasks and job profiles is based upon a sound methodology and extensive consultation with practitioners, resulting in valid and credible outputs that informed the development of the qualifications and module specifications. Useful comparisons may be drawn between the environmental trends identified in the best practice countries and those affecting the competencies covered in these qualifications and module specifications.

#### **7. Likely uptake of qualification: learners**

Although exact numbers are difficult to come by, the employees within the Maritime sectors sector have already indicated a critical need for these advanced level occupational qualifications. Therefore a big uptake is expected should these occupational qualifications and part qualifications be associated to the regulatory environment within the Maritime industry.

#### **8. Likely uptake of qualification: providers**

It is anticipated that these occupational qualifications will be provided by various tertiary institutions and private providers

## **SECTION 2: OCCUPATIONAL PROFILE**

### **1. Occupational Purpose**

The Able Seafarer Engine performs engineering, operational and maintenance tasks at a support level on board a vessel

### **2. Occupational Tasks**

- Marine engineering watchkeeping assistance provided at support level (NQF Level 3)
- Bunkering and internal liquid transfers handled at the support level (NQF Level 3)
- Shipboard operations assistance provided and care for persons on board at support level (NQF Level 3)
- Safe electrical, electronic and control engineering processes followed at support level (NQF Level 3)
- Maintenance and repairs provided at the support level (NQF Level 3)
- Security duties and contingency plans carried out at support level (NQF Level 3)

### **3. Occupational Task Details**

#### **3.1 Marine engineering watchkeeping provided at support level (NQF Level 3)**

##### **Unique Product or Service:**

Safe and secure engine operations

##### **Occupational Responsibilities:**

###### **The learner will be required to:**

- Assist with the safe operation of the ship's equipment and machinery
- Conduct a safe engine-room watchkeeping handover / shift change
- Assist in monitoring operating parameters and institute corrective action
- Record watchkeeping activities

##### **Occupational Contexts:**

###### **The learner will be required to be exposed to:**

- Engine-room watchkeeping procedures
- Engine-room orders
- Communication procedures.
- Emergency procedures.
- Environmental protection procedures

#### **3.2 Bunkering and internal liquid transfers performed at the support level (NQF Level 3)**

##### **Unique Product or Service:**

Effective bunkering and liquid transfers operations

##### **Occupational Responsibilities:**

**The learner will be required to:**

- Contribute to fuelling and oil transfer operations
- Assist with ballast and bilge operations

**Occupational Contexts:**

**The learner will be required to be exposed to:**

- Standard operational procedures for bunkering and liquid transfer
- Marine pollution prevention procedures

**3.3 Shipboard operations assistance provided and care for persons on board at support level (NQF Level 3)**

**Unique Product or Service:**

Safe ship and personnel

**Occupational Responsibilities:**

**The learner will be required to:**

- Identify and use different types of lifting equipment
- Apply occupational health and safety precautions
- Apply precautions and contribute to the prevention of pollution of the maritime environment

**Occupational Contexts:**

**The learner will be required to be exposed to:**

- Shipboard safety procedures
- Shipboard operational procedures
- National and international maritime safety legislation
- Marine pollution prevention procedures

**3.4 Safe electrical, electronic and control engineering processes followed at support level (NQF Level 3)**

**Unique Product or Service:**

Safe and secure plant operations

**Occupational Responsibilities:**

**The learner will be required to:**

- Assist in safe electrical, electronic and control engineering processes at support level on board the vessel

**Occupational Contexts:**

**The learner will be required to be exposed to:**

- Adhere to safety precautions before commencing work or repair
- Isolation of electrical equipment
- Support with safe use of electrical equipment

- Occupational health and safety legislation and procedures

### **3.5 Maintenance and repairs provided at the support level (NQF Level 3)**

#### **Unique Product or Service:**

Well maintained ship and equipment

#### **Occupational Responsibilities:**

##### **The learner will be required to:**

- Use painting, lubrication and cleaning materials and equipment
- Perform routine maintenance and repairs
- Use hand and power tools and dispose of waste materials

#### **Occupational Contexts:**

##### **The learner will be required to be exposed to:**

- Shipboard maintenance and repair procedures.
- National and international maritime safety legislation
- Shipboard waste and garbage management procedures
- Permit-to-work and related procedures

### **3.6 Security duties and contingency plans carried out (NQF Level 3)**

#### **Unique Product or Service:**

Safe and secure vessel

#### **Occupational Responsibilities:**

##### **The learner will be required to:**

- Carry out engine-room security duties
- Conduct a security patrol in a simulated environment

#### **Occupational Contexts:**

##### **The learner will be required to be exposed to:**

- International and national maritime security legislation
- Ship security procedures and contingency plans



## **SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS**

### **SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS**

#### **List of Knowledge Modules for which Specifications are included**

- 735101001-KM-01, Marine Engineering Operations Theory, NQF Level 3, Learning Contract Time 20 days, Credits 16
- 735101001-KM-02, Proficiency in Survival Craft and Rescue Boats, NQF Level 3, Learning Contract Time 5 days, Credits 4
- 735101001-KM-03, Personal Survival Techniques, NQF Level 3, Learning Contract Time 2 days, Credits 2
- 735101001-KM-04, Personal Safety and Social Responsibility, NQF Level 3, Learning Contract Time 3 days, Credits 2
- 735101002-KM-05, Medical First Aid, NQF Level 3, Learning Contract Time 3 days, Credits 2
- 735101001-KM-06, Fire Prevention and Firefighting, NQF Level 3, Learning Contract Time 4 days, Credits 3
- 735101001-KM-07, Safety Familiarisation, NQF Level 3, Learning Contract Time 2 day, Credits 2
- 735101001-KM-08, Security Awareness, NQF Level 3, Learning Contract Time 2 day, Credits 2
- 735101001-KM-09, Fundamentals of Communications, NQF Level 3, Learning Contract Time 2 days, Credits 2
- 735101002-KM-10, Introduction to Applied Marine Science and Maths, NQF Level 3, Learning Contract Time 2 day, Credits 2

# **1 735101002-KM-01: Marine Engineering Operations Theory, NQF Level 3, Learning Contract Time 20 days, Credits 16**

## **1.1 Purpose of the Knowledge Modules**

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge to conduct the essential operations associated with efficient and safe marine engineering operations within a sea going context at the support level.

The learning will enable learners to demonstrate an understanding of:

KM-01-KT01:	Theory of Safe Marine Engineering Watch (10%)
KM-01-KT02:	Concepts of Bunkering and Internal Liquid Transfers (10%)
KM-01-KT03:	Fundamentals of Bilge and Ballast Operations and Maintenance Support (10%)
KM-01-KT04:	Concepts relating to Handling of Stores and Spares (10%)
KM-01-KT05:	Policies and Procedures of Shipboard Operations Support and Care for Persons On Board (10%)
KM-01-KT06:	Basic Concepts of Safe Operation of Equipment and Machinery (10%)
KM-01-KT07:	Processes and Procedures on Safe Electrical, Electronic and Control Engineering (15%)
KM-01-KT08:	Concepts and Procedures of Maintenance and Repair Support (15%)
KM-01-KT09:	Fundamentals of Security Duties and Contingency Plans (10%)

## **1.2 Guidelines for Topics**

### **1.2.1 KM-01-KT01: Theory of Safe Marine Engineering Watch (10%)**

#### ***Topic elements to be covered include:***

KT0101	Fundamentals of main propulsion and auxiliary machinery
KT0102	Safe operating parameters
KT0103	Data gathering and reporting of deviations
KT0104	Marine engineering watch maintenance procedures
KT0105	Handover and relief procedures

#### ***Internal Assessment Criteria***

1. Identify and determine safe operating parameters for various equipment and machinery in the plant
2. Explain the meaning of engine-room orders, related instructions and responses
3. Understand the responsibilities of an engineering watch including compulsory rest periods and fitness for duty
4. Identify a sound signal and / or light in the engine-room
5. Understand the reporting procedure for a sound signal and / or light in the engine-room
6. Know equipment and machinery terms and definitions
7. Understand use of internal communication and alarm systems
8. Recognise orders and communicate with regards to watchkeeping duties
9. Explain procedures for the taking over, the maintenance and the handover of a watch
10. Understand the functions of the muster list and emergency signals

11. Describe the location of emergency equipment and escape routes in the machinery space
12. Discuss initial and appropriate actions to be taken in the event of equipment and / or machinery malfunction
13. Describe the appropriate personal protective equipment and list examples of specific activities

**(Weight: 10%)**

### **1.2.2 KM-01-KT02: Concepts of Bunkering and Internal Liquid Transfers (10%)**

**Topic elements to be covered include:**

KT0201	Function and operation of fuel systems and oil transfer operations
KT0202	Fuelling / bunkering and oil transfer operations
KT0203	Monitoring and reporting tank levels
KT0204	Incident identification and reporting
KT0205	MARPOL SOPEP locker equipment

#### **Internal Assessment Criteria**

1. Identify and describe preparations for fuelling and transfer operations
2. Discuss the procedures for connecting and disconnecting fuelling and transfer hoses
3. Explain the process for identifying incidents and reporting to the relevant authorities
4. Identify location of equipment in the MARPOL SOPEP locker
5. Explain the importance of correct recordkeeping
6. Define the implications of spillage for the environment and the operator

**(Weight: 10%)**

### **1.2.3 KM-01-KT03: Fundamentals of Bilge and Ballast Operations and Maintenance Support (10%)**

**Topic elements to be covered include:**

KT0301	Bilge and ballast operations defined
KT0302	Function, operations and maintenance procedures
KT0303	Incident identification and reporting
KT0304	Monitoring and reporting tank levels

#### **Internal Assessment Criteria**

1. Explain the importance of effective communications during bilge and ballast operations
2. Discuss the issue of safety during bilge and ballast operations
3. Identify the precautions to be taken to prevent pollution to the marine environment
4. Explain the reason behind having a holding tank for bilge water onboard
5. Site examples of actions to be taken if discrepancies are noted
6. Discuss the procedure for pumping water directly overboard and the possible reasons that would require it

**(Weight: 10%)**

#### **1.2.4 KM-01-KT04: Concepts Relating to Handling of Stores and Spares (10%)**

**Topic elements to be covered include:**

KT0401	Stores and spares handling
KT0402	Stores and spares stowage and securing
KT0403	Hazardous stores handling

**Internal Assessment Criteria**

1. Identify stores and spares handling equipment suitable for different cargo types
2. Understand appropriate methods for securing different stores and spares types
3. Identify hazardous stores and spares according to labelling
4. Explain the safety aspects when dealing with hazardous stores

**(Weight 10%)**

#### **1.2.5 KM-01-KT05: Policies and Procedures of Shipboard Operations Support and Care for Persons On Board the Vessel (10%)**

**Topic elements to be covered include:**

KT0501	Lifting equipment
KT0502	Deck equipment
KT0503	Occupational health and safety precautions
KT0504	Pollution prevention and response procedures

**Internal Assessment Criteria**

1. List various types of lifting equipment and identify suitable lifting stores and machinery within safe working load limitations
2. Identify basic signals for operational equipment
3. Explain the different types of knots, bends, hitches and splices and whippings and explain their application
4. Describe the procedures for preparing a crane and rigging
5. Name the safety pre-checks for lifting equipment including the importance of limit switches
6. Appreciate the contribution of observation to the safe use of lifting equipment
7. Describe characteristics of fibre & wire ropes, cables and chains, their construction, use and markings, maintenance and proper stowage and use of appropriate stoppers
8. Identify safety signs and describe it in terms of associated risks and safe conduct
9. Explain safe working practices and personal onboard safety procedures designed to safeguard personnel and the vessel
10. Identify various types of personal protective equipment and explain their uses
11. Explain the permit to work system and enumerate procedures which require such permits
12. List the safety procedures for work aloft, confined spaces, electrical, hot work
13. Describe the factors that constitute a garbage plan and explain the disposal of pollutants
14. Discuss the basic elements of the MARPOL Convention
15. Discuss the use of anti-pollution - and SOPEP equipment

**(Weight 10%)**

### **1.2.6 KM-01-KT06: Basic Concepts of Safe Operation of Equipment and Machinery (10%)**

#### ***Topic elements to be covered include:***

KT0601	Operation of equipment and machinery
KT0602	Safety precautions
KT0603	Basic crane winch and hoist signals

#### ***Internal Assessment Criteria***

1. Describe the importance of dealing with different equipment and machinery safely, with specific reference to valves and pumps hoists and lifting equipment, hatches, watertight doors, ports and related equipment
2. Identify the correct pre-start, starting, operating and shutting down operational checks
3. Classify basic crane and hoist signals

***(Weight: 10%)***

### **1.2.7 KM-01-KT07: Basic Concepts of Safe Operation of Electrical, Electronic and Control Equipment (15%)**

#### ***Topic elements to be covered include:***

KT0701	Safety precautions prior to commencing work or repair
KT0702	Isolation procedures
KT0703	Emergency procedures for electrical, electronic and control equipment
KT0704	Different voltages onboard

#### ***Internal Assessment Criteria***

1. List safety precautions before commencing work or repair
2. Define isolation procedures
3. Discuss the importance of following correct emergency procedures
4. Describe the risks associated with high-voltage equipment and onboard work
5. Identify the causes of electric shock and precautions to be observed to prevent shock

***(Weight: 15%)***

### **1.2.8 KM-01-KT08: Concepts and Procedures of Maintenance and Repair Support (15%)**

#### ***Topic elements to be covered include:***

KT0801	Painting, lubrication and cleaning materials and equipment
KT0802	Routine maintenance and repair
KT0803	Hand and power tools
KT0804	Maintenance waste material disposal
KT0805	Manufacturer's safety guidelines and shipboard instructions
KT0806	Metalwork concepts

#### ***Internal Assessment Criteria***

1. Interpret the conditions under which corrosion occurs

2. Identify and describe various types of primers, undercoats and paint systems to prevent or inhibit corrosion
3. Appreciate the importance of correct surface preparation and application of coatings on timber and metal surfaces
4. Appreciate the importance of seamanship and good housekeeping
5. Explain planned maintenance procedures including lubrication and maintenance of engine-room equipment
6. Identify hand and portable power tools and describe their uses
7. Describe procedures for the safe operation of hand and power tools
8. Dispose of waste materials from working processes according to the garbage plan
9. Describe various types of metal and their uses

**(Weight 15%)**

### **1.2.9 KM-01-KT09: Fundamentals of Security Duties and Contingency Plans (10%)**

**Topic elements to be covered include:**

KT0901	Engine-room watchkeeping duties
KT0902	Security lookout duties
KT0903	Security incident response

#### **Internal Assessment Criteria**

1. Describe the engine-room watchkeeper's duties in relation to the ISPS code and the Vessel Security Plan
2. Discuss the significance of ISPS security levels and how that impacts his/her duties
3. Identify potential security threats
4. Explain the procedures to follow when responding to security incidents

**(Weight 10%)**

### **1.3 Provider Accreditation Requirements for the Knowledge Module**

*Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

*Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

*Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **1.4 Critical Topics to be Assessed Externally for the Knowledge Subject**

- None

### **1.5 Exemptions**

- None

## **2. 735101002-KM-02, Proficiency in Survival Craft and Rescue Boats, NQF level 4, Learning Contract Time 4 days, Credits 4**

### **2.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge and understanding to launch and handle Survival Craft and Rescue Boats.

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01: Processes for Taking Charge of a Survival Craft or Rescue Boat (20%)
- KM-02-KT02: Concepts relating to Operating a Survival Craft Engine (20%)
- KM-02-KT03: Managing Survivors and Craft after Abandoning Vessel (20%)
- KM-02-KT04: Procedures for Locating Devices (20%)
- KM-02-KT05: Procedures and Processes relating to First Aid for Survivors (20%)

### **2.2 Guidelines for Topics**

#### **2.2.1 KM-02-KT01: Processes for Taking Charge of a Survival Craft or Rescue Boat (20%)**

**Topic elements to be covered include:**

- KT0101 Survival Craft and Rescue Boats construction
- KT0102 Survival Craft and Rescue Boats characteristics
- KT0103 Survival Craft and Rescue Boats launching and recovering methods
- KT0104 Maintenance Procedures

#### **Internal Assessment Criteria**

1. Describe the construction and outfit of Survival Craft and Rescue Boats and individual items of their equipment
2. Name particular characteristics and facilities of Survival Craft and Rescue Boats
3. List various types of device used for launching Survival Craft and Rescue Boats
4. Discuss methods of launching survival craft into a rough sea
5. Name methods of recovering survival craft
6. Discuss action to be taken after leaving the vessel
7. List methods of launching and recovering rescue boats in a rough sea
8. Identify dangers associated with use of on-board release devices
9. Discuss the differences between liferafts, rescue boats and life boats and discuss the relevance to appropriate recovery procedures

**(Weight 20%)**

#### **2.2.2 KM-02-KT02: Concepts relating to Operating a Survival Craft Engine (20%)**

**Topic elements to be covered include:**

- KT0201 Survival craft engine operating methods
- KT0202 Survival craft accessories
- KT0203 Survival craft and accessories monitoring and maintenance

#### **Internal Assessment Criteria**

1. Describe methods of launching survival craft

2. Discuss methods of starting and operating a survival craft engine
3. List methods of operating accessories, and the use of the fire extinguisher provided
4. Verify expiry dates of accessories and fire equipment
5. Assist with monitoring and maintaining the condition of the survival craft and its accessories
6. Record observations and report

**(Weight 20%)**

### **2.2.3 KM-02-KT03: Managing Survivors and Craft After Abandoning Vessel (20%)**

**Topic elements to be covered include:**

- |        |  |
|--------|--|
| KT0301 | Survival craft handling under all weather conditions |
| KT0302 | Appropriate equipment use                            |
| KT0303 | Food and water rations and survivor detection        |
| KT0304 | Helicopter rescue                                    |
| KT0305 | Prevention methods for hypothermia                   |
| KT0306 | Marshalling of craft and survivors                   |
| KT0307 | Survival craft beaching                              |

#### **Internal Assessment Criteria**

1. Describe handling survival craft under all weather conditions
2. Use of painter, sea-anchor and all other equipment
3. Discuss the apportionment of food and water in survival craft
4. Describe the action taken to maximize detection and location of survival craft
5. Discuss the method applied during helicopter rescue
6. List the use of rescue boats and motor lifeboats for marshalling liferafts and rescue of survivors
7. Discuss the procedure during beaching survival craft

**(Weight 20%)**

### **2.2.4 KM-02-KT04: Locating Devices (20%)**

**Topic elements to be covered include:**

- |        |                              |
|--------|------------------------------|
| KT0401 | Radio lifesaving appliances  |
| KT0402 | Pyrotechnic distress signals |
| KT0403 | Alternative locating devices |

#### **Internal Assessment Criteria**

1. Review radio life-saving appliances carried in survival craft, including satellite EPIRBs and SARTs
2. Discuss pyrotechnic distress signals
3. Discuss the use of various alternative locating devices, including, but not limited to mirrors, lights, cellphones

**(Weight 20%)**

### **2.2.5 KM-02-KT05: First Aid for Survivors (20%)**

**Topic elements to be covered include:**

- |        |               |
|--------|---------------|
| KT0501 | First aid kit |
|--------|---------------|



KT0502	Resuscitation techniques
KT0503	Injured persons assistance and stabilisation
KT0504	Treatment and prevention of hypothermia

***Internal Assessment Criteria***

1. Discuss the use of the first-aid kit and resuscitation techniques
2. Expand on the concept of management of injured persons, including control of bleeding and shock
3. Name the effects of hypothermia and its prevention, including the use of protective covers and garments, immersion suits and thermal protective aids

***(Weight 20%)***

**2.3 Provider Accreditation Requirements for the Subject**

*Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

*Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

*Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

**2.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

**2.5 Exemptions**

- None

### **3. 735101002-KM-03, Personal Survival Techniques, NQF Level 4, Learning Contract Time 2 days, Credits 2**

#### **3.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge of survival at sea in the event of vessel abandonment.

The learning will enable learners to demonstrating an understanding of:

KM-03-KT01: Personal Survival Technique Theory (50%)

KM-03-KT02: Liferaft Theory (50%)

#### **3.2 Guidelines for Topics**

##### **3.2.1 KM-03-KT01: Personal Survival Technique theory (50%)**

***Topic elements to be covered include:***

KT0101	Fundamentals of personal survival
KT0102	Vessel abandonment interventions
KT0103	Helicopter rescue procedures
KT0104	Survivor management
KT0105	Locating and communication procedures
KT0106	Fundamentals of first aid

##### ***Internal Assessment Criteria***

1. List the types of emergency situations which may occur
2. State the types of lifesaving appliances normally carried on vessels
3. Identify the equipment contained within various types of survival craft.
4. Define the location of personal lifesaving appliances
5. Describe the principles concerning survival, including;
  - Value of training and drills
  - Personal protective clothing and equipment
  - Need to be ready for any emergency
  - Actions to be taken when:
    - Required to abandon vessel
    - In the water
    - Aboard a survival vessel
6. Provide a brief overview of your understanding of helicopters, ranges of Search and Rescue (S.A.R.) helicopters in use, survivor capacity, winching techniques, dangers of foreign object damage (F.O.D.)
7. Explain the following:
  - Distribution of rations and water,
  - Pooling of extra resources,
  - The use of cigarettes and alcohol, and the conservation of energy
  - Avoidance of de-hydration
  - Importance of craft remaining together and in the vicinity of the foundering vessel

- Importance of pyrotechnics and their most effective use in regard to aircraft or vessels
8. List and explain the following:
- First Aid Kit contents
  - Hypothermia, immersion in water wind chill factors prevention by use of immersion suits and thermal protective aids, buddy warming in a rescue craft
  - Treatment of hypothermia when rescued
  - Mouth to mouth resuscitation and CPR
  - Treatment for shock
  - Control of bleeding and preventative measures

**(Weight 50%)**

### **3.2.2 KM-03-KT02: Liferaft Theory (50%)**

***Topic elements to be covered include:***

KT0201	Liferaft characteristics and facilities
KT0202	Equipment carried
KT0203	Liferaft readiness maintained
KT0204	Liferaft launching procedure
KT0205	Liferaft boarding activities
KT0206	Controlling of persons on-board
KT0207	Liferaft manoeuvring and handling

#### ***Internal Assessment Criteria***

1. Explain the following theory:
  - 1.1 Liferaft characteristics and facilities
  - 1.2 Construction
  - 1.3 Material used
  - 1.4 Vulnerability to damage
2. Describe the liferaft launching procedure, with specific emphasis on the use of the slip and hydrostatic release
3. Discuss the boarding of persons on liferafts
4. Clarify the procedure of controlling the persons on board the liferaft
5. Describe the process of handling and manoeuvring the liferaft with respect to various emergency situations

**(Weight 50%)**

### **15.3 Provider Accreditation Requirements for the Subject**

***Physical Requirements:***

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

***Human Resource Requirements:***

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience

- Achieved accreditation for both facilitators and courseware from SAMSA

*Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

**15.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

**15.5 Exemptions**

- None

#### **4. 735101002-KM-04, Personal Safety and Social Responsibilities, NQF Level 4, Learning Contract Time 2 days, Credits 2**

##### **4.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge subject is to give all persons intending to go to sea, basic training in personal safety and social responsibility.

The learning will enable learners to demonstrating an understanding of:

KM-04-KT01:	Comply with Emergency Procedures (20%)
KM-04-KT02:	Prevention of Pollution of the Marine Environment (20%)
KM-04-KT03:	Safe Working Practices (20%)
KM-04-KT04:	Communication and Human Relations (20%)
KM-04-KT05:	Fitness for Duty (20%)

##### **4.2 Guidelines for Topics**

###### **4.2.1 KM-04-KT01: Comply with Emergency Procedures (20%)**

***Topic elements to be covered include:***

KT0101	Types of emergency procedures
KT0102	Fundamentals of shipboard contingency plans
KT0103	Emergency signals
KT0104	Duties as per muster list
KT0105	Location of emergency equipment as per safety plan
KT0106	Appropriate drills for emergency situations
KT0107	Initial actions per emergency type

###### ***Internal Assessment Criteria***

1. List the types of emergency which may occur
  2. Describe the shipboard contingency plans for responses to emergencies
  3. Name the emergency signals and specific duties allocated in the muster list, muster stations; and correct use of personal safety equipment
  4. Identify the action to take on discovering potential emergency, including fire
  5. State the actions to be taken when hearing any alarm signal
  6. Explain the value of training and drills
  7. List the escape routes and alarm systems
  8. Discuss the importance of the safety plan and the location of safety equipment
- (Weight 20%)***

###### **4.2.2 KM-04-KT02: Prevention of Pollution of the Marine Environment (20%)**

***Topic elements to be covered include:***

KT0201	Impact of shipping on the marine environment
KT0202	Effects of operational or accidental pollution
KT0203	Pollution preventative measures
KT0204	Complexities and diversity of the marine environment

### ***Internal Assessment Criteria***

1. Discuss the impact of shipping on the marine environment and the effects of operational or accidental pollution on it
2. Name the basic environmental protection procedures
3. Describe the complexity and diversity of the marine environment

**(Weight 20%)**

#### **4.2.3 KM-04-KT03: Safe Working Practices (20%)**

##### ***Topic elements to be covered include:***

KT0301	Safety and protective devices for protection against hazards onboard ship
KT0302	Precautions prior to entry into enclosed spaces
KT0303	International measures re accident prevention and occupational health
KT0304	Safe Working Practices for Merchant Seaman
KT0305	Permit-to-work Ethos

### ***Internal Assessment Criteria***

1. State the importance of adhering to safe working practices at all times
2. Identify the safety and protective devices available to protect persons against potential hazards aboard vessel
3. State the precautions to be taken prior to entry into enclosed spaces
4. Describe the international measures concerning accident prevention and occupational health
5. Indicate the contents applicable to personal safety and social responsibility in the publication Safe Working Practices for Merchant Seaman published by HMSO
6. Describe your understanding of a 'permit-to-work' ethos

**(Weight 20%)**

#### **4.2.4 KM-04-KT04: Communication and Human Relations (20%)**

##### ***Topic elements to be covered include:***

KT0401	Effective loop communication onboard
KT0402	Principles of effective communication
KT0403	Barriers to effective communication
KT0404	Teams onboard
KT0405	Legal and regulatory compliance for staff

### ***Internal Assessment Criteria***

1. Define orders and communication with others in relation to onboard duties
2. State the principles of, and barriers to effective communication between individuals and teams within the vessel
3. Explain the importance of maintaining good human and working relationship on board vessel
4. Describe basic team working principles and practice, including conflict resolution
5. Define the social responsibilities; employment conditions; individual rights and obligations

**(Weight 20%)**

#### **4.2.5 KM-04-KT05: Fitness for Duty (20%)**

##### ***Topic elements to be covered include:***

- KT0501 Drug and alcohol abuse
- KT0502 Rest, stress and fatigue and impact on performance
- KT0503 Effects of scheduling variances on seafarer fatigue

##### ***Internal Assessment Criteria***

1. Define the dangers of drug and alcohol abuse
2. Explain the importance of obtaining the necessary rest
3. State the effects of sleep, schedules, and the circadian rhythm on fatigue
4. Name the effects of physical stressors on seafarers
5. List the effects of environmental stressors in and outside the vessel and their impact on seafarers
6. Identify the effects of schedule changes on seafarer fatigue

**(Weight 20%)**

#### **4.3 Provider Accreditation Requirements for the Subject**

##### ***Physical Requirements:***

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

##### ***Human Resource Requirements:***

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

##### ***Legal Requirements:***

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

#### **4.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

#### **4.5 Exemptions**

- None

**5. 735101002-KM-05, Medical First Aid, NQF Level 3, Learning Contract Time 3 days, Credits 2**

**5.1 Purpose of the Knowledge Module**

The learning will enable learners to demonstrate an understanding of immediate first aid requirements.

KM-05-KT01: Medical First Aid Theory (50%)

KM-05-KT02: Stabilisation and Transportation of Patients (50%)

**5.2 Guidelines for Topics**

**5.2.1 KM-05-KT01: Medical First Aid Theory (50%)**

***Topic elements to be covered include:***

- |        |                              |
|--------|------------------------------|
| KT0101 | Medical first aid procedures |
| KT0102 | Types of medical emergencies |

***Internal Assessment Criteria***

1. List the contents of the Emergency First Aid kit
2. Describe the use of bandages including, the improvising of bandages where none is immediately available
3. Explain the body structure and function of:
  - Skeleton
  - Joints, muscles and tendons
  - Major organs, brain, heart, lungs, liver, etc
  - Circulatory, respiratory and nervous systems
4. Identify toxic hazards onboard, including, but not limited to refrigeration gases, bunker and fuel tank fumes, diminished oxygen levels
5. Describe appropriate use of medical first aid kit content in relation to the toxic hazard identified
6. State the immediate measures to be taken when examining casualty or patient
  - Assessment if accident situation
  - Assessment of own hazards
  - Unconsciousness
  - Respiratory arrest
  - Cardiac arrest
  - Severe bleeding
  - Hyperthermia

***(Weight 50%)***

**5.2.2 KM-05-KT02: Stabilisation and Transportation of Patients (50%)**

***Topic elements to be covered include:***

- |        |                           |
|--------|---------------------------|
| KT0201 | Principles of triage      |
| KT0202 | Stabilise the patient     |
| KT0203 | Methods of transportation |



### **Internal Assessment Criteria**

1. State the immediate measures to be taken when examining casualty or patient
  - 1.1 Rescue of casualty
  - 1.2 Notification of emergency
2. Discuss stabilising a patient with spinal injuries
3. Explain how to treat burns, scalds and effects of heat and cold
  - 3.1 Signs of burns and scalds
  - 3.2 Cooling of affected areas
  - 3.3 Treatment of chemical burns
  - 3.4 Treatment of chemical burns of the eye
  - 3.5. Fractures, dislocations and muscular injuries
4. Discuss medical care of rescued persons in particular the treatment and prevention of:-
  - 4.1 Hypothermia
  - 4.2 Immersion foot
  - 4.3 Frost bite
  - 4.4 Seasickness
  - 4.5 Sunburn
  - 4.6 Dehydration and malnutrition
5. List the precautions to take when dealing with blood and excretions from injured persons, the risk of hepatitis and H.I.V.
6. Define the following terms:
  - 6.1 Radio medical advice
  - 6.2 Pharmacology
  - 6.3 Sterilization
  - 6.4 Cardiac arrest, drowning and asphyxia

**(Weight 50%)**

### **5.3 Provider Accreditation Requirements for the Subject**

#### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

#### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

#### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **5.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

### **5.5 Exemptions**

- None

## **6. 735101002-KM-06, Fire Prevention and Firefighting, NQF Level 3, Learning Contract Time 3 days, Credits 2**

### **6.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge to describe the hazards associated with fire at sea, the principles of fire prevention, firefighting appliances and vessel-board organisation.

The learning will enable learners to demonstrating an understanding of:

KM-06-KT01: Fire Prevention Theory (50%)

KM-06-KT02: Firefighting Procedures (50%)

### **6.2 Guidelines for Topics**

#### **6.2.1 KM-06-KT01: Fire Prevention Theory (50%)**

***Topic elements to be covered include:***

KT0101 Components of risk minimisation

KT0102 Characteristics of state of readiness

#### ***Internal Assessment Criteria***

1. Describe the onboard firefighting organisation
2. List the location of firefighting appliances and emergency escape routes including the safety plan
3. Interpret requirements for emergency escape routes from engine-rooms and other spaces, accommodation, work place layouts
4. List the elements of fire and explosion (the fire triangle)
5. Define types and sources of ignition
6. State how to minimise the spread of fire by controlling flammable materials and fire hazards
7. Explain the need for constant vigilance
8. Describe the actions to be taken on board vessels
9. Discuss the principles and applications of fire and smoke detection systems including amongst others the:
  - 9.1 Marine smoke detector
  - 9.2 Zone Type detector
  - 9.3 Radiation smoke detector heads
  - 9.4 Flame detectors
10. Name the classification of fires and applicable extinguishing agents
11. List the preventative measures to be taken to prevent fires on board

***(Weight 50%)***

#### **6.2.2 KM-06-KT02: Firefighting Procedures (50%)**

***Topic elements to be covered include:***

KT0201 Firefighting equipment

KT0202 Methods for firefighting

### ***Internal Assessment Criteria***

1. List the location and uses of firefighting equipment on board
2. Name the fireman's outfit including the minimum number required on board
3. List and describe firefighting personal protective equipment
4. List and discuss firefighting methods
5. Describe firefighting procedures
- 6 Explain the use of breathing apparatus when fighting fires or affecting a rescue in a non-life sustaining or hostile atmosphere

***(Weight 50%)***

### **6.3 Provider Accreditation Requirements for the Subject**

#### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

#### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

#### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **6.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

### **6.5 Exemptions**

- None

## **7. 735101002-KM-07, Safety Familiarisation, NQF Level 3, Learning Contract Time 3 days, Credits 2**

### **7.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge to be aware of onboard hazards

The learning will enable learners to demonstrating an understanding of:

KM-07-KT01: Theories of Basic Onboard Safety (50%)

KM-07-KT02: Personal Survival Aids (50%)

### **7.2 Guidelines for Topics**

#### **7.2.1 KM-07-KT01: Theories of Basic Onboard Safety (50%)**

***Topic elements to be covered include:***

KT0101 Personal safety procedures

KT0102 Lifesaving and firefighting equipment

#### ***Internal Assessment Criteria***

1. Communicate with other persons on board on elementary safety matters and understand safety-information symbols and alarm signals
  - 1.1 Types of alarm signal
  - 1.2 Safety symbols in common use
2. List the appropriate action if:
  - 2.1 A person falls overboard
  - 2.2 Fire or smoke is detected
  - 2.3 The fire or Abandon Vessel Signal is given
3. Identify muster and embarkation stations and the emergency escape routes
4. State what immediate action to take on encountering an accident or other medical emergency before seeking further medical assistance on board covering:
  - 4.1 Basic life-saving actions
  - 4.2 Stop bleeding
  - 4.3 The recovery position
  - 4.4 Priorities on encountering a casualty
  - 4.5 Precautions to take when attending to a casualty:
    - 4.5.1 In confined spaces
    - 4.5.2 In the vicinity of electricity supplies
    - 4.5.3 With the possibility of HIV
5. List the reasons for, the precautions to take and be able to operate water-tight doors, weather tight doors and fire doors, covering:
  - 5.1 Powered water tight doors
  - 5.2 Manual watertight and weather tight doors
  - 5.3 Automated fire door

***(Weight 50%)***

### **7.2.2 KM-07-KT02: Personal Survival Aids (50%)**

#### ***Topic elements to be covered include:***

- KT0201      Firefighting appliances
- KT0202      Personal safety equipment

#### ***Internal Assessment Criteria***

1. Identify muster and embarkation stations and the emergency escape routes covering:
  - 1.1 Muster lists
  - 1.2 Clothing to be worn at emergency position, and for abandoning the vessel
2. Able to locate and don and/or use a
  - a. Life jackets
  - b. Life buoys
3. In Firefighting on board vessel, understand:
  - 3.1 How to Raise the Alarm
  - 3.2 The Fire Triangle
  - 3.3 The common causes of shipboard fires
  - 3.4 Operation of portable fire extinguishers
  - 3.5 Use of the fire blanket

***(Weight 50%)***

### **7.3 Provider Accreditation Requirements for the Subject**

#### ***Physical Requirements:***

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

#### ***Human Resource Requirements:***

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

#### ***Legal Requirements:***

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **7.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

### **7.5 Exemptions**

- None

## **8. 735101002-KM-08, Security Awareness, NQF Level 3, Learning Contract Time 3 day, Credits 2**

### **8.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge of the maritime security requirements.

The learning will enable learners to demonstrating an understanding of:

KM-08-KT01: Theory of Maritime Security (50%)

KM-08-KT02: Onboard Security (50%)

### **8.2 Guidelines for Topics**

#### **8.2.1 KM-08-KT01: Theory of Maritime Security (50%)**

##### ***Topic elements to be covered include:***

KT0101 Maritime security terms and definitions

KT0102 International maritime security regulations and responsibilities

##### ***Internal Assessment Criteria***

1. Identify maritime security terms and definitions, including elements that may relate to piracy and armed robbery
  2. Recognise international maritime security policy and responsibilities of Governments, companies and persons
  3. List the maritime security levels and their impact on security measures and procedures aboard vessel and in port facilities
  4. Describe of security reporting procedures and security-related contingency plans
- (Weight 50%)***

#### **8.2.2 KM-08-KT02: Onboard Security (50%)**

##### ***Topic elements to be covered include:***

KT0201 Security threats

KT0202 Security awareness and vigilance

##### ***Internal Assessment Criteria***

1. Recognise techniques used to circumvent security measures
  2. Identify potential security threats, including elements that may relate to piracy and armed robbery, weapons, dangerous substances and devices and awareness of the damage they can cause
  3. Define the handling of security-related information and communication
  4. Describe training, drill and exercise requirements under relevant conventions, codes and IMO circulars, including those relevant for anti-piracy and armed robbery
- (Weight 50%)***

### **8.3 Provider Accreditation Requirements for the Subject**

#### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

#### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

#### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **8.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

### **8.5 Exemptions**

- None

## **9. 735101002-KM-09, Fundamentals of Communications, NQF Level 3, Learning Contract Time 2 days, Credits 2**

### **9.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge on effective communications.

The learning will enable learners to demonstrating an understanding of:

- KM-09-KT01: Basic Concepts of Written and Verbal Communication, NQF level 3, Credit 1 (Learning contract time 0.75 day) (33.3%)
- KM-09-KT02: Essentials of Internal Communication Systems, NQF level 3, Credit 1 (Learning contract time 0.75 day) (33.3%)
- KM-09-KT03: Fundamentals for Understanding Safety Information Symbols, Signs and Alarm Signals, NQF level 3, Credit 1 (Learning contract time 0.75 day) (33.3%)

### **9.2 Guidelines for Topics**

#### **9.2.1 KM-09-KT01: Basic Concepts of Written and Verbal Communication in the Maritime Industry (33.3%)**

***Topic elements to be covered include:***

- KT0101 English in written and oral form
- KT0102 Recording logbook entries
- KT0103 Reporting faults, incidents and repairs, verbally and in writing
- KT0104 Loop communication

#### ***Internal Assessment Criteria***

1. Discuss importance of knowing the English language
2. Explain the relevance of recording logbook entries
3. Describe why reports need to be submitted and the circumstances under which it should be done
4. Discuss the importance of confirming instructions verbally and / or in writing
5. Explain why it is important to clarify instructions prior to performing duties

***(Weight 33.3%)***

#### **9.2.2 KM-09-KT02: Essentials of Internal Communication Systems (33.3%)**

***Topic elements to be covered include:***

- KT0201 Reporting procedures for manned and unmanned machinery spaces
- KT0202 Correct use of internal communication systems
- KT0203 Types of internal communication systems

#### ***Internal Assessment Criteria***

1. Explain the reporting procedures when entering, working in and leaving an otherwise unmanned machinery space (UMS)
2. Discuss the importance of using internal communication systems correctly



3. List and explain the various types of internal communication systems and the necessity of its use when required  
**(Weight 33.3%)**

### **9.2.3 KM-09-KT03: Fundamentals for Understanding Safety Information Symbols, Signs and Alarm Signals (33.3%)**

#### ***Topic elements to be covered include:***

- KT0301 Communicating elementary safety matters
- KT0302 Safety information symbols, signs and alarm signals

#### ***Internal Assessment Criteria***

1. Discuss the importance of communicating with other persons on board on elementary safety matters
2. List and identify safety information symbols, signs and alarm signals
3. Discuss the importance of being able to communicate with a multinational crew
4. Explain the possible consequences of incorrect communication

**(Weight 33.3%)**

### **9.3 Provider Accreditation Requirements for the Subject**

#### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

#### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

#### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **9.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

### **9.5 Exemptions**

- None

## **10. 735101002-KM-10, Introduction to Applied Marine Science and Mathematics, NQF level 3 Learning Contract Time 2 day, Credits 2**

### **10.1 Purpose of the Knowledge Module**

The main focus of the learning in this knowledge module is to build an understanding of basic mathematical knowledge and skills in the marine industry.

The learning will enable learners to demonstrating an understanding of:

KM-10-KT01: Basic Mathematical and Scientific Principles(50%)

KM-10-KT02: Introduction to Applied Marine Science (50%)

### **10.2 Guidelines for Topics**

#### **10.2.1 KM-10-KT01: Basic Mathematical and Scientific Principles (50%)**

***Topic elements to be covered include:***

- KT0101 Mathematical terminology in the marine environment
- KT0102 Science terminology in the marine environment
- KT0103 Basics of Algebra
- KT0104 Arithmetic Fundamentals

#### ***Internal Assessment Criteria***

1. Explain why one needs a basic understanding of mathematics and science to work in the maritime industry
2. Discuss:
  - 1.1 The standard algebraic manipulations
  - 1.2 How to produce a graph
3. Provide basic explanations of:
  - 3.1 Perimeters and areas
  - 3.2 The areas of sectors and segments of a circle
  - 3.3 Surface areas and volumes
4. Explain the conversion of volume to mass using density  
***(Weight 50%)***

#### **10.2.2 KM-10-KT02: Introduction to Applied Marine Science (50%)**

***Topic elements to be covered include:***

- KT0201 Theory of machines
- KT0202 Basic formula interpretation
- KT0203 Logical reasoning for mathematics and science

#### ***Internal Assessment Criteria***

1. Describe the value of being able to identify different geometrical shapes
2. Apply basic algebraic principles to solve problems linked to these geometrical shapes
3. Discuss the application of Mechanical Advantage and Velocity Ratio when using lifting equipment  
***(Weight 50%)***

### **10.3 Provider Accreditation Requirements for the Subject**

#### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Handouts and stationery (electronic consumables, pencils/paper)
- Learning material

#### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

#### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **10.4 Critical Topics to be Assessed Externally for the Knowledge Module**

- None

### **10.5 Exemptions**

- None

## **SECTION 3B: PRACTICAL SKILL MODULE SPECIFICATIONS**

### **List of Practical Skill Module Specifications**

- 315101002-PM-01, Perform Marine Engineering Watchkeeping Duties at a Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5
- 315101002-PM-02, Assist with Bunkering and Internal Liquid Transfers at a support level, NQF Level 3, Learning Contract Time 6 days, Credits 5
- 315101002-PM-03, Contribute to the Safe Operation of the Engine-room and Care for Persons On Board at a Support level, NQF Level 3 , Learning Contract Time 6 days, Credits 5
- 315101002-PM-04, Perform Safe Electrical, Electronic and Control Engineering Duties at the Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5
- 315101002-PM-05, Provide Maintenance and Repair on Board Ship at Support Level, NQF Level 3 , Learning Contract Time 6 days, Credits 5
- 315101002-PM-06, Carry Out Security Duties and Contingency Plans at Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5

## **1. 315101002-PM-01, Perform Marine Engineering Watchkeeping Duties at a Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5**

### **1.1 Purpose of the Practical Skill Modules**

The focus of the learning in this module is on providing the learner an opportunity to be exposed to watchkeeping principles and procedures for all machinery and equipment on board a vessel

The learner will be required to:

- PM-01-PS01: Assist with the Safe Operation of the Ship's Equipment and Machinery
- PM-01-PS02: Conduct a Safe Engine-Room Watchkeeping Handover / Shift Change
- PM-01-PS03: Assist in Monitoring Operating Parameters and Institute Corrective Action
- PM-01-PS04: Record Watchkeeping Activities

### **1.2 Guidelines for Practical Skills**

#### **1.2.1. PM-01-PS01: Assist with the Safe Operation of the Ship's Equipment and Machinery**

##### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles operating procedures procedure information available, the learner must be able to:*

- PA0201 Acknowledge communication accurately regarding matters relevant to watchkeeping duties
- PA0202 Correctly identify machinery and equipment and explain procedure to ensure safe operation thereof, including:
  - a. Valves and pumps
  - b. Hoists and lifting equipment
  - c. Hatches, watertight doors, ports and related equipment
- PA0203 Use and understand basic crane, winch and hoist signals

##### ***Applied Knowledge***

- AK0201 Change over protocol
- AK0202 Loop communication practice
- AK0203 Situational awareness
- AK0204 Code of Safe Working Practices for Merchant Seaman
- AK0205 Manufacturer's operations manual
- AK0206 Marine Occupational Health and Safety Act
- AK0207 Merchant Shipping (Safe Manning, Training and Certification) Regulations and amendments
- AK0208 Terminology used in an engine-room
- AK0209 Purpose and correct use of machinery found on board the vessel
- AK02010 Safe methods of operation of machinery and equipment on board the vessel
- AK02011 Procedures to follow when operation of machinery deviates from the norm

### **Internal Assessment Criteria**

- IAC0201 Communications are clearly understood and repeated back
- IAC0202 The frequency and extent of monitoring of main propulsion and auxiliary machinery is carried out as per instructions
- IAC0203 Deviations from the norm are identified
- IAC0204 Unsafe conditions or potential hazards are promptly recognized and reported
- IAC0205 Operations are carried out in accordance with established safety practices and equipment operating instructions
- IAC0206 Basic crane, winch and hoist signals are demonstrated as per operational requirements

### **1.2.2. PM-01-PS02: Conduct a Safe Engine-Room Watchkeeping Handover / Shift Change**

#### **Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0201 Watch is handed over in accordance with laid down practices, procedures and established safety rules and regulations
- PA0202 Non-routine duties to be carried out by the next watch are clearly stated
- PA0203 The condition of machinery and plant on assuming the watch is established
- PA0204 Information or instructions received are clarified as required to ensure accurate handover, as per standing instructions

#### **Applied Knowledge**

- AK0201 Code of Safe Working Practices for Merchant Seaman
- AK0202 Manned – and Unmanned Machinery Space Procedures and Requirements
- AK0203 Loop communication practices
- AK0204 Terminology used in an engine-room
- AK0205 Purpose and correct use of machinery found on board the vessel
- AK0206 Procedures to follow when operation of machinery deviates from the norm
- AK0207 Merchant Shipping (Safe Manning, Training and Certification) Regulations and annex 1 on engineering watchkeeping principles and arrangements
- AK0208 Manufacturer's operations manual

### **Internal Assessment Criteria**

- IAC0201 Maintenance, handover and relief of the watch is in conformity with acceptable practices and procedures

### **1.2.3. PM-01-PS03: Assist in Monitoring, Operating Parameters and Institute Corrective Action**

#### **Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0301 Assist with the monitoring main propulsion and auxiliary machinery pressures, temperatures and levels
- PA0302 Contribute to monitoring and reporting of bilge levels
- PA0303 Assist with fuelling and oil transfer operations
- PA0304 Safely use electrical equipment
- PA0305 Assist with control of engine-room spares and stores
- PA0306 React to all signals used in the engine-room
- PA0307 Assist with the operation of the ship's pumping systems

***Applied Knowledge***

- AK0301 Code of Safe Working Practices for Merchant Seaman
- AK0302 Fault finding procedures
- AK0303 Manufacturer's lubrication manual
- AK0304 MARPOL Convention
- AK0305 Technical terminology used on board the vessel
- AK0306 Purpose and correct use of machinery found on board the vessel
- AK0307 Safe methods of operation of machinery and equipment on board the vessel
- AK0308 Procedures to follow when operation of machinery deviates from the norm
- AK0309 Correct handling of stores, tools and equipment

***Internal Assessment Criteria***

- IAC0301 The frequency and extent of monitoring of main propulsion and auxiliary machinery conforms with accepted principles and procedures
- IAC0302 The condition of the boiler is monitored and assessed in accordance with operating requirements and instructions
- IAC0303 Boiler is operated in accordance with established safety rules, regulations, operating instructions and pollution control and to prevent any damage
- IAC0304 Key operating parameters on the boiler are monitored and reported to the duty officer
- IAC0305 Deviations from the norm are reported
- IAC0306 Unsafe conditions or potential hazards are promptly recognized and reported
- IAC0307 Assist with the safe function, operation and maintenance of the bilge and ballast systems, including:
  - a. Reporting Incidents and tank levels associated with transfer operations
  - b. Ability to correctly measure and report tank levels
- IAC0308 Contribute to the function and operation of fuel system and oil transfer operations, including:
  - a. Preparations for fuelling and transfer operations, including procedures for connecting and disconnecting hoses, and incidents that may arise during the operation
  - b. Procedures for connecting and disconnecting fuelling and transfer hoses
  - c. Procedures relating to incidents that may arise during fuelling or transferring operation
  - d. Securing from fuelling and transfer operations
  - e. Ability to correctly measure and report tank levels

- IAC0309 Identify and report electrical hazards and unsafe equipment
- IAC03010 Carry out stores operations in accordance with established management practices and equipment operating instructions
- IAC03011 Handle dangerous, hazardous and harmful stores in compliance with established manufacturer's safety data sheet and / or relevant safety procedures
- IAC03012 Communicate effectively within the operator's area of responsibility
- IAC03013 Identify different alarm and call signals both seen and heard in the engine-room
- IAC03014 Response on receiving such a signal is appropriate to the type of emergency.
- IAC03015 Common defects of the ship's pumping systems are explained in terms of their effect on the operation of the vessel
- IAC03016 Common defects to alternators/generators are explained in terms of their effect on the operation of the vessel

#### **1.2.4. PM-01-PS04: Record Watchkeeping Activities**

##### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0401 Monitor temperatures, pressures and fluid levels as per instruction
- PA0402 Accurately record temperatures, pressures and fluid levels
- PA0403 Report anomalies

##### ***Applied Knowledge***

- AK0401 Code of Safe Working Practices for Merchant Seaman
- AK0402 Record keeping practices and documentation
- AK0403 Merchant Shipping (Safe Manning, Training and Certification) Regulations, 2013 and annex 1 on engineering watchkeeping principles and arrangements

##### ***Internal Assessment Criteria***

- IAC0401 The required temperatures, pressures and fluid levels are observed
- IAC0402 Temperatures, pressures and fluid levels are read and noted in accordance with manufactures specifications and standard operating procedures
- IAC0403 Deviations from the norm are correctly and timeously reported as per operational requirements

### **1.3 Provider Accreditation Requirements for the Practical Skill Module**

#### ***Physical Requirements:***

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Hand-outs and stationery (electronic consumables, pencils/paper)
- Learning material
- Simulation models and equipment as described



*Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Accredited facilitators and assessors

*Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

**1.4 Critical Topics to be Assessed Externally for the Practical Skill Module**

- None

**1.5 Exemptions**

- None

## **2. 315101002-PM-02, Assist with Bunkering and Internal Liquid Transfers, NQF Level 3, Learning Contract Time 6 days, Credits 5**

### **2.1 Purpose of the Practical Skill Module**

The focus of the learning in this module is to enable the learner to assist with bunkering and internal liquid transfers.

The learner will be required to:

PM-02-PS01: Contribute to Fuelling and Oil Transfer Operations

PM-02-PS02: Assist with Ballast and Bilge Operations

### **2.2 Guidelines for Practical Skills**

#### **2.2.1 PM-02-PS01: Contribute to Fuelling and Oil Transfer Operations**

##### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner, at a support level, should be able to:*

PA0101 Prepare for fuelling and transfer operations

PA0102 Connect and disconnect fuel and transfer hoses

PA0103 Measure and record tank levels

PA0104 Test for any possible contaminants and record results

PA0105 Report potential problems and incidents during transfer operations

##### ***Applied Knowledge***

AK0101 Manufacturer's guide and instructions

AK0102 Code of Safe Working Practices for Merchant Seaman

AK0103 Procedures designed to safeguard the marine environment are observed at all times

##### ***Internal Assessment Criteria***

IAC0101 Preparations are made for fuelling and transfer operations as per instructions

IAC0102 Tank levels are correctly measured and recorded as per operational instructions

IAC0103 Fuel and transfer hoses are connected and disconnected in a simulated environment

IAC0404 Potential problems and incidents are correctly and timeously reported as per operational requirements

#### **2.2.2 PM-02-PS02: Assist with Ballast and Bilge Operations**

##### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner should be able to:*

PA0201 Measure and record tank levels

PA0202 Report potential problems and incidents during transfer operations

### **Applied Knowledge**

- AK0201 Manufacturer's guide and instructions
- AK0202 Code of Safe Working Practices for Merchant Seaman
- AK0203 Procedures designed to safeguard the marine environment are observed at all times

### **Internal Assessment Criteria**

- IAC0201 Tank levels are correctly measured and recorded as per operational instructions
- IAC0202 Potential problems and incidents are correctly and timeously reported as per operational requirements

## **2.3 Provider Accreditation Requirements for the Practical Skill Module**

### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Hand-outs and stationery (electronic consumables, pencils/paper)
- Learning material
- Simulation models and equipment as described

### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Accredited facilitators and assessors

### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

## **2.4 Critical Topics to be Assessed Externally for the Practical Skill Module**

- None

## **2.5 Exemptions**

- None

**3. 315101002-PM-03, Contribute to the Safe Operation of the Ship and Care for Persons On Board at a Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5**

**3.1 Purpose of the Practical Skill Modules**

The focus of the learning in this module is on providing the learner an opportunity to assist with shipboard operations and the care for people on board

The learner will be required to:

- PM-03-PS01: Identify and use different types of lifting equipment
- PM-03-PS02: Apply occupational health and safety precautions
- PM-03-PS03: Apply precautions and contribute to the prevention of pollution of the maritime environment

**3.2 Guidelines for Practical Skills**

**3.2.1. PM-03-PS01: Identify and Use Different Types of Lifting Equipment**

***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0101 Classify various types of lifting equipment and associated winches according to type and function (Cranes, gantries and lifting rigs)
- PA0102 Use an appropriate model incorporating a suspended load to demonstrate the principles of luffing, slewing and gantry travel
- PA0103 Demonstrate basic operational hand signals for lifting equipment
- PA0104 Reeve different purchases (including but not limited to gyn tackle, gun tackle, 2-fold & 3-fold purchase) to advantage and disadvantage

***Applied Knowledge***

- AK0101 Code of safe working practice for merchant seaman
- AK0102 International Safety Management Code
- AK0103 Maritime Occupational Health and Safety Regulations

***Internal Assessment Criteria***

- IAC0101 Lifting equipment is described according to operational requirements
- IAC0102 The principles of luffing, slewing and gantry travel are demonstrated
- IAC0103 Basic signals for safe operation of lifting equipment are demonstrated
- IAC0104 Different purchases are rove as required

**3.2.2. PM-03-PS02: Apply Occupational Health and Safety Precautions**

***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0201 Demonstrate rigging of a painting stage, scaffolding and wearing a safety harness

PA0202 Demonstrate the use of gas detection equipment and oxygen meter

**Applied Knowledge**

AK0201 Code of safe working practice for merchant seaman  
AK0202 International Safety Management Code  
AK0203 Maritime Occupational Health and Safety Regulations  
AK0204 Manufacturer's Instructions

**Internal Assessment Criteria**

IAC0201 The rigging and securing of staging and a scaffolding is demonstrated  
IAC0202 The wearing of a safety harness is demonstrated  
IAC0203 The use of gas detection equipment and oxygen meter is shown

**3.2.3. PM-03-PS03: Apply Precautions and Contribute to the Prevention of Pollution of the Maritime Environment**

**Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

PA0301 Dispose of shipboard waste according to MARPOL requirements  
PA0302 Demonstrate the use of the SOPEP kit contents in simulated environment  
PA0303 Segregate an assortment of garbage in accordance with MARPOL convention

**Applied Knowledge**

AK0301 Code of safe working practice for merchant seaman  
AK0302 International Safety Management Code  
AK0303 Maritime Occupational Health and Safety Regulations  
AK0304 MARPOL Convention

**Internal Assessment Criteria**

IAC0401 Shipboard waste and garbage is segregated and disposed of according to MARPOL requirements  
IAC0402 The SOPEP kit contents is used in simulated environment

**3.3 Provider Accreditation Requirements for the Practical Skill Module**

*Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Hand-outs and stationery (electronic consumables, pencils/paper)
- Learning material
- Simulation models and equipment as described

*Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience

- Accredited facilitators and assessors

*Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

**3.4 Critical Topics to be Assessed Externally for the Practical Skill Module**

- None

**3.5 Exemptions**

- None

#### **4. 315101002-PM-04, Perform Safe Electrical-, Electronic and Control Engineering Duties at the Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5**

##### **4.1 Purpose of the Practical Skill Module**

The focus of the learning in this module is on providing the learner an opportunity to assist the officer of the engineering watch in the conducting of the electrical-, electronic - and control duties

The learner will be required to:

- PM-04-PS01: Adhere to Safety Precautions before Commencing Work or Repair
- PM-04-PS02: Isolation of Electrical-, Electronic- and Control Equipment
- PM-04-PS03: Support with safe use of electrical-, electronic- and control equipment
- PM-04-PS04: Apply occupational health and safety procedures

##### **4.2 Guidelines for Practical Skills**

###### **4.2.1. PM-04-PS01: Adhere to Safety Precautions before Commencing Work or Repair**

###### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0101 Demonstrate a basic understanding of the risks associated with electrical-, electronic- and control equipment
- PA0102 Plan and prepare before starting work, including risks assessment
- PA0103 Identify tasks that require permit-to-work
- PA0104 Apply permit-to-work ethos
- PA0105 Apply knowledge of safe use of electrical-, electronic- and control equipment in marine engineering areas

###### ***Applied Knowledge***

- AK0101 Code of Safe Working Practices for Merchant Seaman
- AK0102 International Safety Management Code

###### ***Internal Assessment Criteria***

- IAC0101 A basic understanding of the risks associated with electrical-, electronic- and control equipment are demonstrated within a simulated environment
- IAC0102 Risks assessments are planned and prepared, before starting work
- IAC0103 Tasks are identified that require permit-to-work
- IAC0104 Permit-to-work ethos is applied
- IAC0105 Knowledge on safe use of electrical equipment is applied in marine engineering areas

#### **4.2.2. PM-04-PS02: Isolation of Electrical-, Electronic- and Control Equipment**

##### **Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0101 Isolate, tag and lock out where possible associated equipment when engaged in repair or maintenance work
- PA0102 Understand the dangers from arcs, short circuits and high – and ultra-high voltage
- PA0103 Adopt correct earthing procedures for work on high voltage equipment

##### **Applied Knowledge**

- AK0101 Code of Safe Working Practices for Merchant Seaman
- AK0102 International Safety Management Code

##### **Internal Assessment Criteria**

- IAC0101 Associated equipment is isolated, tagged and locked out when engaged in repair or maintenance work, where appropriate
- IAC0102 The dangers from arcs, short circuits and high – and ultra-high voltage are understood
- IAC0103 Correct earthing procedures are adopted for work on high voltage equipment

#### **4.2.3. PM-04-PS03: Support with Safe Use of Electrical-, Electronic- and Control Equipment**

##### **Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0201 Execute pre-checks before commencing work or repair
- PA0202 Assist in tracing and correcting earth faults on main and secondary electrical systems
- PA0203 Demonstrate recognition of factors indicating earths, e.g. broken insulation, loose equipment, signs of burning or arcing
- PA0204 Identify emergency procedures relating to various electrical faults
- PA0205 Classify causes of electric shock and precautions to be observed to prevent shock

##### **Applied Knowledge**

- AK0201 Code of Safe Working Practices for Merchant Seaman
- AK0202 International Safety Management Code
- AK0203 IMDG Code
- AK0204 Relevant IMO cargo handling, stowage and securing codes
- AK0205 Vessel's cargo lashing and securing manual

##### **Internal Assessment Criteria**

- IAC0201 Pre-checks are executed before commencing work or repair



- IAC0202 Tracing and correcting earth faults on main and secondary electrical systems support provided
- IAC0203 Recognition of factors indicating earths, e.g. broken insulation, loose equipment, signs of burning or arcing, are demonstrated
- IAC0204 Emergency procedures relating to various electrical faults are identified
- IAC0205 Causes of electric shock and precautions to be observed to prevent shock are classified

#### **4.2.4. PM-04-PS04: Apply Occupational Health and Safety Procedures**

##### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0401 Identify various electrical cleaning equipment and chemicals and the potential hazards associated with
- PA0402 Select personal protective equipment required
- PA0403 Participate in emergency drills relating to electrical systems
- PA0404 Adhere to electrical safety requirements
- PA0405 Describe in your own words the permit-to-work system
- PA0406 Discuss how to ensure safety in enclosed spaces by using intrinsically safe lighting equipment
- PA0407 Adhere to safety precautions for lifting equipment
- PA0408 Assist with safe operation of equipment and machinery

##### ***Applied Knowledge***

- AK0401 Code of Safe Working Practices for Merchant Seaman
- AK0402 International Safety Management Code
- AK0403 IMDG Code

##### ***Internal Assessment Criteria***

- IAC0401 Various electrical cleaning equipment and chemicals and the potential hazards associated with it, are identified
- IAC0402 Personal protective equipment required are selected
- IAC0403 Emergency drills relating to electrical systems are participated in as part of a team
- IAC0404 Electrical safety requirements are adhered to
- IAC0405 The permit-to-work system is described
- IAC0406 The importance of safe lighting equipment in enclosed spaces are discussed in own words
- IAC0407 Safety precautions for working aloft and lifting equipment, are adhered to

#### **4.3 Provider Accreditation Requirements for the Practical Skill Module**

##### ***Physical Requirements:***

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Hand-outs and stationery (electronic consumables, pencils/paper)

- Learning material
- Simulation models and equipment as described

*Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Accredited facilitators and assessors

*Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

**4.4 Critical Topics to be Assessed Externally for the Practical Skill Module**

- None

**4.5 Exemptions**

- None

## **5. 315101002-PM-05, Provide Maintenance and Repair On Board Ship at Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5**

### **5.1 Purpose of the Practical Skill Module**

The focus of the learning in this module is to enable the learner to contribute to the maintenance and repair of machinery and equipment on board.

The learner will be required to:

- PM-05-PS01: Use Painting, Lubrication and Cleaning Materials and Equipment
- PM-05-PS02: Perform Routine Maintenance and Repairs
- PM-05-PS03: Use Hand and Power Tools and Dispose of Waste Materials

### **5.2 Guidelines for Practical Skills**

#### **5.2.1 PM-05-PS01: Use Painting, Lubrication and Cleaning Materials and Equipment**

##### **Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner should be able to:*

- PA0101 Select coating according to manufacturers' recommendation and surface type
- PA0102 Prove use of a grease gun
- PA0103 Demonstrate cleaning and care of paint application equipment
- PA0104 Show how to use paint spraying equipment

##### **Applied Knowledge**

- AK0101 Manufacturer's guide and instructions
- AK0102 Code of Safe Working Practices for Merchant Seaman

##### **Internal Assessment Criteria**

- IAC0101 Appropriate preparation methods are demonstrated for different surfaces and materials
- IAC0102 Coatings are selected according to manufacturer's recommendations and types of surfaces
- IAC0103 The use of a grease gun is demonstrated
- IAC0104 The use and cleaning of paint spraying equipment is demonstrated

#### **5.2.2 PM-05-PS02: Perform Routine Maintenance and Repairs**

##### **Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner should be able to:*

- PA0201 Demonstrate routine inspections of a chain block and other lifting equipment
- PA0202 Demonstrate routine inspections of electrical, electronic and control equipment
- PA0203 Assist with maintenance and repair of pumps, purifiers and related systems
- PA0204 Provide support with the overhauling and testing of valves
- PA0205 Perform routine maintenance on steering gear
- PA0206 Perform routine maintenance on stationary equipment and machinery

- PA0207 Assist with routine maintenance and testing on emergency equipment and systems
- PA0208 Aid with maintenance and repair on a main - and auxiliary engines
- PA0209 Assist with boiler routine maintenance, repair and operating activities

**Applied Knowledge**

- AK0201 Manufacturer's guide and instructions
- AK0202 Code of Safe Working Practices for Merchant Seaman
- AK0203 Organisational and Chief Engineer standing orders

**Internal Assessment Criteria**

- IAC0201 The moving parts of blocks are lubricated
- IAC0202 Routine inspections of electrical, electronic and control equipment are demonstrated
- IAC0203 Assist with maintenance and repair of pumps, purifiers and related systems
- IAC0204 Support provided with the overhauling and testing of valves
- IAC0205 Routine maintenance performed on steering gear
- IAC0206 Routine maintenance performed on stationary equipment and machinery
- IAC0207 Routine maintenance and testing assistance provided on emergency equipment and systems
- IAC0208 Maintenance and repair aid provided on a main - and auxiliary engines
- IAC0209 Boiler routine maintenance, repair and operating assistance provided

**5.2.3 PM-05-PS03: Use Hand and Power Tools and Dispose of Waste Materials**

**Scope of Practical Skill**

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner should be able to:*

- PA0301 Demonstrate the use of hand tools
- PA0302 Demonstrate the use of power tools
- PA0303 Practice using measuring equipment, both mechanical and electrical
- PA0303 Collect surface preparation waste for disposal according to MARPOL requirements

**Applied Knowledge**

- AK0301 Code of Safe Working Practices for Merchant Seaman

**Internal Assessment Criteria**

- IAC0301 Hand and power tools are used in accordance with the manufacturers recommendations
- IAC0302 Mechanical and electrical measuring equipment is used as per required recommendations
- IAC0303 Waste material is collected and stored in compliance with MARPOL requirements

### **5.3 Provider Accreditation Requirements for the Practical Skill Module**

#### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio & visual equipment and all other equipment conducive to a learning environment)
- Hand-outs and stationery (electronic consumables, pencils/paper)
- Learning material
- Simulation models and equipment as described

#### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Accredited facilitators and assessors

#### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **5.4 Critical Topics to be Assessed Externally for the Practical Skill Module**

- None

### **5.5 Exemptions**

- None

## **6. 315101002-PM-06, Carry Out Security Duties and Contingency Plans at Support Level, NQF Level 3, Learning Contract Time 6 days, Credits 5**

### **6.1 Purpose of the Practical Skill Module**

The focus of the learning in this module is on providing the learner an opportunity to contribute to the safety and security of the vessel and crew

The learner will be required to:

- PM-06-PS01: Carry Out Engine-Room Security Duties
- PM-06-PS02: Conduct a Security Patrol in a Simulated Environment

### **6.2 Guidelines for Practical Skills**

#### **6.2.1. PM-06-PS01: Carry Out Engine-Room Security Duties**

##### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0101 Complete a security access register
- PA0102 Conduct body - and bag searches
- PA0103 Report any suspicious incidents and/or persons

##### ***Applied Knowledge***

- AK0101 ISPS Code

##### ***Internal Assessment Criteria***

- IAC0101 A security access register is completed and maintained in accordance with Ship Security plan
- IAC0102 A body and bag search is carried out in accordance with accepted practice and ISPS Code
- IAC0103 Suspicious incidents/persons reported to Duty Officer

#### **6.2.1. PM-06-PS02: Conduct a Security Patrol in a Simulated Environment**

##### ***Scope of Practical Skill***

*Given work instructions, checklists, work area, case study, activity documents, any templates, forms, safety and quality principles and standard operating procedures procedure information available, the learner must be able to:*

- PA0101 Nature of security threat is communicated to Duty Officer
- PA0102 Activate the Ship Security Alert System as per instructions
- PA0103 Call emergency stations as per orders
- PA0104 Start emergency shut-down of main engines as per instructions
- PA0105 Follow evacuate plan, if necessary

##### ***Applied Knowledge***

- AK0101 ISPS Code

### ***Internal Assessment Criteria***

- IAC0101 Nature of security threat is communicated to Duty Officer
- IAC 0102 The Ship Security Alert System is activated as per instructions
- IAC 0103 Emergency stations are called as per orders
- IAC 0104 Emergency shut-down of main engines procedures are followed
- IAC 0105 The ship's evacuation plan is executed, if necessary

### **6.3 Provider Accreditation Requirements for the Practical Skill Module**

#### *Physical Requirements:*

- Classroom furniture (chairs and tables, audio and visual equipment and all other equipment conducive to a learning environment)
- Hand-outs and stationery (electronic consumables, pencils/paper)
- Learning material

#### *Human Resource Requirements:*

- Facilitator/learner ratio 1 to 20
- Relevant qualifications/experience
- Achieved accreditation for both facilitators and courseware from SAMSA

#### *Legal Requirements:*

- Accredited with the South African Maritime Safety Authority
- Accredited as per QCTO requirements

### **6.4 Critical Topics to be Assessed Externally for the Practical Skill Module**

- None

### **6.5 Exemptions**

- None

## **SECTION 3C: WORK EXPERIENCE MODULE SPECIFICATIONS**

### **List of Work Experience Module Specifications**

- 735101002-WM-01: Following Marine Engineering Processes at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-02: Adhering to Bunkering and Internal Liquid Transfer Operational Procedures at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-03: Adhering to Engine-Room Operational Responsibilities and Care For Persons On Board At The Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-04: Conforming to Safe Electrical, Electronic and Control Engineering Processes at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-05: Complying with Maintenance and Repair Procedures at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)
- 735101002-WM-06: Following Security Procedures and Contingency Plans at Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)



## **1. 735101002-WM-01: Following Marine Engineering Duties at the Support Level NQF level 3, Learning Contract Time 60 days (Credits: 12)**

### **1.1 Purpose of the Work Experience Module**

The focus of the work experience is on providing the learner an opportunity to gain exposure to carrying out a marine engineering watch routine appropriate to the duties of a rating forming part of an engine-room watch under close supervision and monitoring by qualified engineer officers and adequately documented in an approved training record book

The learner will be required to be exposed to:

- WM-01-WE01 Carry out a watch routine appropriate to the duties of a rating forming part of an engine-room watch
- WM-01-WE02 Maintain the correct levels and steam pressures (for keeping a boiler watch)
- WM-01-WE03 Operate emergency equipment and apply emergency procedures
- WM-01-WE04 Contribute to a safe engineering watch
- WM-01-WE05 Comply with monitoring and controlling practices during an engine-room watch
- WM-01-WE06 Abide by fueling and oil transfer operating procedures at the support level
- WM-01-WE07 Comply with safe bilge and ballast operating processes at the support level
- WM-01-WE08 Adhere to safety processes for equipment and machinery

### **1.2 Guidelines for Work Experiences**

#### **1.2.1 WM-01-WE01: Carry Out a Watch Routine Appropriate to the Duties of a Rating Forming Part of an Engine-Room Watch**

##### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0201 Use correct terms in machinery spaces and names of machinery and equipment
- WA0202 Conduct engine-room watchkeeping procedures
- WA0203 Use safe working practices as related to engine-room operations
- WA0204 Practice basic environmental protection procedures
- WA0205 Use of appropriate internal communication system
- WA0206 Test engine-room alarm systems and demonstrate ability to distinguish between the various alarms, with special reference to fire extinguishing gas alarms

##### ***Supporting evidence***

- SE0101 Submission of completed training record book

### **1.2.2 WM-01-WE02: Monitor the Correct Levels and Steam Pressures (for keeping a boiler watch)**

#### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0301 Monitor the quantity and quality of the water of the boiler, where appropriate
- WA0302 Confirm the steam pressure of the plant
- WA0303 Check the level, temperature and purity of the hot-well water
- WA0304 Check feed pump for inconsistencies
- WA0305 Identify and report possible leaks and contaminations
- WA0306 Implement and record routine corrective action to normal operational deviations
- WA0307 Report and address further inconsistencies under supervision as required

#### ***Supporting evidence***

- SE0201 Submission of completed training record book

### **1.2.3 WM-01-WE03: Operate Emergency Equipment and Apply Emergency procedures**

#### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0301 Participate in emergency drills as per operating procedures
- WA0302 Demonstrate emergency duties
- WA0303 Use escape routes from machinery spaces
- WA0304 Demonstrate familiarity with the location and use of firefighting equipment in the machinery spaces
- WA0305 Apply appropriate emergency evacuation procedures linked to various alarm signals

#### ***Supporting evidence***

- SE0301 Submission of completed training record book

### **1.2.4 WM-01-WE04: Contribute to a Safe Engineering Watch**

#### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0401 Ability to understand orders and to communicate with the officer of the watch in matters relevant to watchkeeping duties
- WA0402 Procedures for the relief, maintenance and handover of a watch
- WA0403 Information required to maintain a safe watch

#### ***Supporting evidence***

- SE0401 Submission of completed training record book

### **1.2.5 WM-01-WE05: Comply with Monitoring and Controlling Practices during an Engine-Room Watch**

#### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0501 Engage in rounds as per standing orders
- WA0502 Use all human senses (hear, see, smell, touch) to check for deviations of the main propulsion and auxiliary machinery against standard operating procedures
- WA0503 Report deviations as per operating guidelines and standing orders
- WA0504 Record findings in engine-room logbook
- WA0505 Report corrective actions (if required) in engine-room workbook

***Supporting Evidence***

- SE0501 Submission of completed training record book

**1.2.6 WM-01-WE06: Abide by Fueling and Oil Transfer Operating Procedures at the Support Level**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0601 Prepare for fuelling and transfer operations and record on checklist
- WA0602 Connect and disconnect fuelling and transfer hoses
- WA0603 Identify incidents that may arise during fuelling and transfer operations
- WA0604 Secure from fuelling and transfer operations
- WA0605 Correctly measure and report tank levels
- WA0606 Report incidents associated with transfer operations

***Supporting Evidence***

- SE0601 Submission of completed training record book

**1.2.7 WM-01-WE07: Comply with Safe Bilge and Ballast Operating Processes at the Support Level**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0701 Correctly measure and report tank levels and conditions against national and international standing
- WA0702 Follow written instruction procedure in relation to additional removal or transfer of ballast water
- WA0703 Record evidence that safety requirements have been followed for bilge and ballast operations
- WA0704 Respond to and record actions taken during emergency procedures as per written instruction
- WA0705 Report all deviations as per operating procedures

***Supporting Evidence***

- SE0701 Submission of completed training record book

**1.2.8 WM-01- WE08: Adhere to Safety Processes for Equipment and Machinery**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

WA0801	Communicate effectively with bridge to ensure adherence to standing orders
WA0802	Assist in all start-up and shut-down procedures, when needed
WA0803	Carefully operate valves and pumps, when needed
WA0804	Securely control hoists and lifting equipment
WA0805	Safely operate hatches, watertight doors, ports and related equipment
WA0806	Use and understand basic crane, winch and hoist signals
WA0807	Follow permit-to-work guidelines as per ISM Manual and Certificate

### **Supporting Evidence**

SE0801 Submission of completed training record book

### **1.3 Contextualised Workplace Knowledge**

1. International and national safety organisation safety requirements
2. International Convention for the Prevention of Pollution from Ships (MARPOL) requirements
3. Requirements of shipboard oil pollution plan (SOPEP) as specified in the Shipboard Marine Pollution Emergency Plans
4. Company specific policies and procedures
5. International Safety Management Code
6. Basic crane, winch and hoist signals
7. Code of Safe Working Practices for Merchant Seaman
8. Safe engineering practice requirements and maritime standards
9. Machine and equipment manufacturers' requirements
10. Standards of Training, Certification and Watchkeeping (STCW)
11. Chief Engineer Standing Orders
12. ILO Convention and Regulations

### **1.4 Criteria for Workplace Approval**

#### *Physical Requirements:*

- *Access to all unrestricted areas on a vessel in order for learner to have exposure to all aspects of occupational tasks*
- *Tools and equipment to conduct occupational tasks*
- *The physical resources in terms of tools, equipment, systems, conditions and interfaces that the workplace must have to ensure that learners can participate in all work activities.*

#### *Human Resource Requirements:*

- Minimum requirements to include an Ordinary Seafarer Engine Certificate that includes competencies related to engine-room watchkeeping, operational and maintenance tasks on board a vessel at support level and minimum qualifying service (sea time) requirements as set out in the Merchant Shipping "Safe manning, training and certification" Regulations
- Support from shipboard supervising officers
- Workplace coach/mentor: learner ratio 1 to 5

*Legal Requirements:*

- Compliant to all relevant National legislation and International Conventions and Regulations
- Accredited with relevant authority

**1.5 Assignments to be Assessed Externally**

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None

**2. 735101002-WM-02: Adhering to Bunkering and Internal Liquid Transfer Operational Procedures at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)**

**2.1 Purpose of the Work Experience Module**

The focus of the work experience is on providing the learner an opportunity to gain exposure to supporting the engineer with bunkering and internal liquid transfer operational procedures

The learner will be required to be exposed to:

- WM-02-WE01 Applying Precautions and Contributing to the Prevention of Pollution of the Marine Environment
- WM-02-WE02 Following Anti-Pollution Equipment Procedures
- WM-02-WE03 Implementing Approved Methods for Disposal of Marine Pollutants

**2.2 Guidelines for Work Experiences**

**2.2.1 WM-02-WE01: Applying Precautions and Contributing to the Prevention of Pollution of the Marine Environment**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0101 Plug and cement deck scuppers for bunkering operations
- WA0102 Participate in bunkering operations
- WA0103 Demonstrate the emergency shutdown procedure for operations " equipment liable to cause pollution
- WA0104 Understand the need to segregate waste, record amounts and land ashore for disposal
- WA0105 Seek advice if unsure of measures to take

***Supporting evidence***

- SE0101 Submission of completed training record book

**2.2.2 WM-02-WE02: Following Anti-Pollution Equipment Procedures**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0201 Participate in an emergency response exercise for controlling spillage of oil on board
- WA0202 Participate in drill for clean-up of hazardous cargo spillage
- WA0203 Collect and segregate waste and garbage
- WA0204 Operate garbage compactor unit and incinerator (where fitted)
- WA0205 Collect and segregate cargo sweepings

***Supporting evidence***

- SE0201 Submission of completed training record book

### **2.2.3 WM-02-WE03: Implementing Approved Methods for Disposal Of Marine Pollutants**

#### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0301 Comprehend that marine pollutants must be landed ashore for safe disposal in compliance with MARPOL
- WA0302 Understand there are strict rules covering disposal of oily water mixtures applicable to all ships
- WA0303 Realize there are strict rules covering disposal of noxious liquid substances applicable to ships
- WA0304 Understand there are strict rules covering disposal of harmful substances carried in packaged form applicable to ships
- WA0305 Appreciate there are strict rules covering pollution prevention by sewage applicable to ships
- WA0306 Understand there are strict rules for prevention of pollution by garbage applicable to all ships
- WA0307 Demonstrate a knowledge of the strict rules covering air pollution from ships

#### ***Supporting Evidence***

- SE0301 Submission of completed training record book

### **2.3 Contextualised Workplace Knowledge**

1. International and national safety organisation safety requirements
2. International Convention for the Prevention of Pollution from Ships (MARPOL) requirements
3. Requirements of shipboard oil pollution plan (SOPEP) as specified in the Shipboard Marine Pollution Emergency Plans
4. Company specific policies and procedures
5. International Safety Management Code
6. Code of Safe Working Practices for Merchant Seaman
7. Chief Engineer standing orders
8. Safe engineering practice requirements and maritime standards
9. Machine and equipment manufacturers' requirements
10. Standards of Training, Certification and Watchkeeping (STCW)
11. ILO Convention and Regulations
12. Loop Communication Principles

### **2.4 Criteria for Workplace Approval**

#### ***Physical Requirements:***

- Access to all unrestricted areas on a vessel in order for learner to have exposure to all aspects of occupational tasks
- Tools and equipment to conduct occupational tasks
- The physical resources in terms of tools, equipment, systems, conditions and interfaces that the workplace must have to ensure that learners can participate in all work activities.

*Human Resource Requirements:*

- Minimum requirements to include an Ordinary Seafarer Engine Certificate that includes competencies related to engine-room watchkeeping, operational and maintenance tasks on board a vessel at support level and minimum qualifying service (sea time) requirements as set out in the Merchant Shipping “Safe manning, training and certification” Regulations
- Support from shipboard supervising officers
- Workplace coach/mentor: learner ratio 1 to 5

*Legal Requirements:*

- Compliant to all relevant National legislation and International Conventions and Regulations
- Accredited with relevant authority

**2.5 Additional Assignments to be Assessed Externally**

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None



**3. 735101002-WM-03: Complying with Safe Electrical, Electronic and Control Engineering Processes at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)**

**3.1 Purpose of the Work Experience Module**

The focus of the work experience is on providing the learner an opportunity to gain exposure to supporting the engineer with safe electrical, electronic and control engineering processes

The learner will be required to be exposed to:

- WM-03-WE01 Adhere to Safety Requirements related to Electrical Equipment and Machinery
- WM-03-WE02 Assist with the Safe use of Electronic Equipment
- WM-03-WE03 Provide Assistance to Maintain Safe Control Engineering Processes

**3.2 Guidelines for Work Experiences**

**3.2.1 WM-03-WE01: Adhere to Safety Requirements related to Electrical Equipment and Machinery**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0101 Locate and use electrical equipment, including safety precautions before commencing work or repair
- WA0102 Obtain permit-to-work when required
- WA0103 Isolate, tag and lock out where possible associated equipment when engaged in repair or maintenance work
- WA0104 Demonstrate an electric shock first aid recue
- WA0105 Demonstrate a knowledge of risk mitigating measures, including use of insulated tools, electrical insulated gloves, rubber isolation mats, etc
- WA0106 Assist in tracing and explain the use of different voltages on board
- WA0107 Demonstrate a knowledge of the causes of electric shock and precautions to be observed to prevent shock

***Supporting evidence***

- SE0101 Submission of completed training record book

**3.2.2 WM-03-WE02: Assist with the Safe Use of Electronic Equipment**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0201 Ensure that the electronic card is grounded, where necessary
- WA0202 Disable or disconnect the electronic printed circuit board (PCB) as per safety regulations
- WA0203 Ensure that the correct voltage is applied to the PCB
- WA0204 Execute fault finding activities and institute corrective action
- WA0205 Record and report all actions taken and results in logbook

### **Supporting evidence**

SE0201 Submission of completed training record book

## **2.2.3 WM-03-WE03: Provide Assistance to Maintain Safe Control Engineering Processes**

### **Scope of Work Experience**

The person will be expected to engage in the following work activities:

- WA0301 Recognise the different types of control systems, including electronic-, pneumatic-, hydraulic- and hybrid systems
- WA0302 Support with fault finding activities to ascertain which part of the system is faulty
- WA0303 Record and report to engineering officer
- WA0304 Execute corrective actions as per standing instructions

### **Supporting Evidence**

SE0301 Submission of completed training record book

## **3.3 Contextualised Workplace Knowledge**

1. International and national safety organisation safety requirements
2. International Convention for the Prevention of Pollution from Ships (MARPOL) requirements
3. Requirements of shipboard oil pollution plan (SOPEP) as specified in the Shipboard Marine Pollution Emergency Plans
4. Company specific policies and procedures
5. International Safety Management Code
6. Code of Safe Working Practices for Merchant Seaman
7. Chief Engineer standing orders
8. Safe engineering practice requirements and maritime standards
9. Machine and equipment manufacturers' requirements
10. Standards of Training, Certification and Watchkeeping (STCW)
11. ILO Convention and Regulations
12. Loop Communication Principles

## **3.4 Criteria for Workplace Approval**

### *Physical Requirements:*

- Access to all unrestricted areas on a vessel in order for learner to have exposure to all aspects of occupational tasks
- Tools and equipment to conduct occupational tasks
- The physical resources in terms of tools, equipment, systems, conditions and interfaces that the workplace must have to ensure that learners can participate in all work activities.

*Human Resource Requirements:*

- Minimum requirements to include an Ordinary Seafarer Engine Certificate that includes competencies related to engine-room watchkeeping, operational and maintenance tasks on board a vessel at support level and minimum qualifying service (sea time) requirements as set out in the Merchant Shipping “Safe manning, training and certification” Regulations
- Support from shipboard supervising officers
- Workplace coach/mentor: learner ratio 1 to 5

*Legal Requirements:*

- Compliant to all relevant National legislation and International Conventions and Regulations
- Accredited with relevant authority

**3.5 Additional Assignments to be Assessed Externally**

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None

#### **4. 735101002-WM-04: Complying with Maintenance and Repair Processes at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)**

##### **4.1 Purpose of the Work Experience Module**

The focus of the work experience is on providing the learner an opportunity to gain exposure to maintaining and repairing the ship at the support level

- WM-04-WE01    Contribute to Maintenance and Repair Processes for Shipboard Machinery and Equipment
- WM-04-WE02    Contribute to Unplanned Maintenance and Repair Processes for Shipboard Machinery and Equipment

##### **4.2 Guidelines for Work Experiences**

###### **4.2.1 WM-04-WE01: Contribute to Planned Maintenance and Repair Processes for Shipboard Machinery and Equipment**

###### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0101    Understand and execute planned maintenance and repair procedures
- WA0102    Display understanding of manufacturer's safety guidelines and shipboard instructions
- WA0103    Recognise and select appropriate tools as per request from engineer
- WA0104    Maintain and repair individually or as part of a team, supervised or unsupervised
- WA0105    Clean and store the tools in the correct manner

###### ***Supporting evidence***

- SE0101    Submission of completed training record book

###### **4.2.2 WM-04-WE02: Contribute to Unplanned Maintenance and Repair Processes for Shipboard Machinery and Equipment**

###### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0201    Assist with identification of cause of emergency
- WA0202    Record and report findings to engineering officer
- WA0203    Execute corrective action as per engineer's instructions
- WA0204    Ensure that extra safety precautions are adhered to for various environments
- WA0205    Recognise and select appropriate tools as per request from engineer
- WA0206    Maintain and repair individually or as part of a team, supervised or unsupervised
- WA0207    Clean and store the tools in the correct manner

###### ***Supporting Evidence***

- SE0201    Submission of completed training record book

### **4.3 Contextualised Workplace Knowledge**

1. International and national safety organisation safety requirements
2. International Convention for the Prevention of Pollution from Ships (MARPOL) requirements
3. Requirements of shipboard oil pollution plan (SOPEP) as specified in the Shipboard Marine Pollution Emergency Plans
4. Company specific policies and procedures
5. International Safety Management Code
6. Code of Safe Working Practices for Merchant Seaman
7. Chief Engineer standing orders
8. Safe engineering practice requirements and marine standards
9. Machine and equipment manufacturers' requirements
10. Standards of Training, Certification and Watchkeeping (STCW)
11. NRCS, Dry-docking, Load Lines, Classifications, and Statutory Body Audit Requirements
12. ILO Conventions and Regulations
13. Loop Communication Principles

### **4.4 Criteria for Workplace Approval**

#### *Physical Requirements:*

- Access to all unrestricted areas on a vessel in order for learner to have exposure to all aspects of occupational tasks
- Tools and equipment to conduct occupational tasks
- The physical resources in terms of tools, equipment, systems, conditions and interfaces that the workplace must have to ensure that learners can participate in all work activities.

#### *Human Resource Requirements:*

- Minimum requirements to include an Ordinary Seafarer Engine Certificate that includes competencies related to engine-room watchkeeping, operational and maintenance tasks on board a vessel at support level and minimum qualifying service (sea time) requirements as set out in the Merchant Shipping "Safe manning, training and certification" Regulations
- Support from shipboard supervising officers
- Workplace coach/mentor: learner ratio 1 to 5

#### *Legal Requirements:*

- Compliant to all relevant National legislation and International Conventions and Regulations
- Accredited with relevant authority

### **4.5 Additional Assignments to be Assessed Externally**

#### Assignment description:

- None

#### Elements to be assessed:

- None

#### Evaluation criteria:

- None

**5. 735101002-WM-05: Adhering to Shipboard Operational Responsibilities and Care for Persons On Board at the Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)**

**5.1 Purpose of the Work Experience Module**

The focus of the work experience is on providing the learner an opportunity to gain exposure to assisting with ship operational responsibilities and care for persons on board

The learner will be required to be exposed to:

- WM-05-WE01 Contribute to the Handling of Stores
- WM-05-WE02 Apply Precautions and Contribute to the Prevention of Pollution to the Marine Environment
- WM-05-WE03 Apply Occupational Health and Safety Responsibilities

**5.2 Guidelines for Work Experiences**

**5.2.1 WM-05-WE01: Contribute to the Handling of Stores**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0101 Assist with receiving, checking, stowage and securing ship's stores
- WA0102 Recognise the labels that indicate stores are classified as dangerous, hazardous and harmful substances and liquids
- WA0103 Understand the reasons and need for segregation of such stores
- WA0104 Describe the procedure to follow in the event of leakage or spillage of dangerous materials
- WA0105 Understand that Material Safety Data sheets provide information and advice on segregation and stowage

***Supporting Evidence***

- SE0101 Submission of completed training record book

**5.2.2 WM-05-WE02: Apply Precautions and Contribute to the Prevention of Pollution to the Marine Environment**

***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0201 Display understanding of the proactive measures to be taken to protect the marine environment
- WA0202 Locate and use anti-pollution equipment
- WA0203 Demonstrate knowledge of approved methods to dispose of marine pollutants

***Supporting Evidence***

- SE0201 Submission of completed training record book

### **5.2.3 WM-05-WE03: Apply Occupational Health and Safety Responsibilities**

#### **Scope of Work Experience**

The person will be expected to engage in the following work activities:

- WA0301 Demonstrate working knowledge of electrical safety methods and measures
- WA0302 Follow ship's procedure for locking and tagging to manage electrical, mechanical, pneumatic and hydraulic risks
- WA0303 Apply safe working practices for mechanical equipment
- WA0304 Display an understanding of the ship's permit to work system
- WA0305 Prepare work areas in accordance with safe working practices
- WA0306 Demonstrate a knowledge of safe working practices and risks associated with working at height, overhead
- WA0307 Apply safe working practices for entry into enclosed spaces
- WA0308 Demonstrate safe working practices related to lifting techniques and methods of preventing back injury
- WA0309 Comply with health hygiene and safety requirements when handling hazardous substances, sewage treatment plant, medical waste and water ballast treatment
- WA03010 Comply with safety requirements related to chemical and biohazards
- WA03011 Seek advice to use correct personal safety equipment for the tasks in hand

#### **Supporting Evidence**

- SE0301 Submission of completed training record book

### **5.3 Contextualised Workplace Knowledge**

1. International and national safety organisation safety requirements
2. International Convention for the Prevention of Pollution from Ships (MARPOL) requirements
3. Requirements of shipboard oil pollution plan (SOPEP) as specified in the Shipboard Marine Pollution Emergency Plans
4. Company specific policies and procedures
5. International Safety Management Code
6. Code of Safe Working Practices for Merchant Seaman
7. Chief Engineer standing orders
8. Safe engineering practice requirements and marine standards
9. Machine and equipment manufacturers' requirements
10. Standards of Training, Certification and Watchkeeping (STCW)
11. ILO Conventions and Regulations
12. Loop Communication Principles

### **5.4 Criteria for Workplace Approval**

#### **Physical Requirements:**

- Access to all unrestricted areas on a vessel in order for learner to have exposure to all aspects of occupational tasks
- Tools and equipment to conduct occupational tasks
- The physical resources in terms of tools, equipment, systems, conditions and interfaces that the workplace must have to ensure that learners can participate in all work activities.

*Human Resource Requirements:*

- Minimum requirements to include an Ordinary Seafarer Engine Certificate that includes competencies related to engine-room watchkeeping, operational and maintenance tasks on board a vessel at support level and minimum qualifying service (sea time) requirements as set out in the Merchant Shipping “Safe manning, training and certification” Regulations
- Support from shipboard supervising officers
- Workplace coach/mentor: learner ratio 1 to 5

*Legal Requirements:*

- Compliant to all relevant National legislation and International Conventions and Regulations
- Accredited with relevant authority

**5.5 Additional Assignments to be Assessed Externally**

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None



## **6. 735101002-WM-06: Following Security Procedures and Contingency Plans at Support Level, NQF level 3, Learning Contract Time 60 days (Credits: 12)**

### **6.1 Purpose of the Work Experience Module**

The focus of the work experience is on providing the learner an opportunity to gain exposure to carrying out security duties

The learner will be required to be exposed to:

WM-06-WE01: Company and Shipboard Security Procedures

WM-06-WE02: Internationally Accepted Practices for Combatting Piracy and Armed Robbery

### **6.2 Guidelines for Work Experiences**

#### **6.2.1 WM-06-WE01: Company and Shipboard Security Procedures**

##### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0101 Keep an alert watch at all times at the engine-room and other access points, including careful scrutiny of the quayside and waterside area and, in particular, any movements of personnel near open decks, mooring lines fore and aft, suspicious boats etc
- WA0102 Maintain a watch for unauthorised removal of ship's equipment and stores or any suspicious packages being left on board
- WA0103 Ensure that all visitors boarding and leaving the ship are appropriately identified
- WA0104 Inform the Officer of the Watch/SSO of any instance of unauthorised persons entering or leaving the engine-room
- WA0105 Ensure used and unused visitors' passes are kept secure at all times and not left lying in the engine-room area where they can be mislaid/stolen

##### ***Supporting evidence***

- SE0101 Submission of completed training record book

#### **6.2.2 WM-06-WE02: Internationally Accepted Practices for Combatting Piracy and Armed Robbery**

##### ***Scope of Work Experience***

The person will be expected to engage in the following work activities:

- WA0201 Assist in preparing the vessel against possible armed attack as per international recommendations
- WA0202 Identify and communicate possible threats of piracy or armed robbery
- WA0203 Follow instructions as per the identified threat, as appropriate
- WA0204 Participate in attack-related drills on board

##### ***Supporting evidence***

- SE0201 Submission of completed training record book

### **6.3 Contextualised Workplace Knowledge**

1. Company specific policies and procedures
2. International Ship and Port Security Code
3. Master's standing orders
4. Ship security plan

### **6.4 Criteria for Workplace Approval**

#### *Physical Requirements:*

- Access to all unrestricted areas on a vessel in order for learner to have exposure to all aspects of occupational tasks
- Equipment to conduct occupational tasks
- The physical resources in terms of equipment, systems, conditions and interfaces that the workplace must have to ensure that learners can participate in all work activities.

#### *Human Resource Requirements:*

- Minimum requirements to include an Ordinary Seafarer Certificate that includes competencies related to engine-room watchkeeping at support level and minimum qualifying service (sea time) requirements as set out in the Merchant Shipping "Safe manning, training and certification" Regulations
- Support from shipboard supervising officers
- Workplace coach/mentor: learner ratio 1 to 5

#### *Legal Requirements:*

Compliant to all relevant National legislation and International Conventions  
Accredited with relevant authority

### **6.5 Additional Assignments to be Assessed Externally**

#### Assignment description:

- None

#### Elements to be assessed:

- None

#### Evaluation criteria:

- None