



Curriculum Document				
Curriculum Code	Curriculum Title			
315201000	National Occupational Certificate: Ship's Master			
Development Quality Partner	Name	E-mail	Phone	Logo
	Transport Education Training Authority	Victor@teta.org.za	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

315201: Ship's Master

1.2 Occupation or Specialisation Addressed by this Curriculum

315201000: Ship's Master

1.3 Alternative Titles used by Industry

- Dredge Master
- Harbour Pilot
- Master Mariner
- Tug Master
- Skipper
- Fishing Vessel Skipper
- Master near Coastal

2. Curriculum Information

2.1 Curriculum Structure

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

Knowledge Modules:

- 315201000-KM-01, Chartwork, NQF Level 6, Learning Contract Time 24 days, Credits: 18
- 315201000-KM-02, Celestial Navigation, NQF Level 6, Learning Contract Time 24 days, Credits: 12
- 315201000-KM-03, Electronic Navigation Systems, NQF Level 6, Learning Contract Time 20 days, Credits: 14
- 315201000-KM-04, Naval Architecture, NQF Level 6, Learning Contract Time 18 days, Credits: 12
- 315201000-KM-05, Naval Architecture (Fishing), NQF Level 5, Learning Contract Time 17 days, Credits: 5
- 315201000-KM-06, Cargo and / or Catch (Fish) Handling and Stowage, NQF Level 6, Learning Contract Time 14 days, Credits: 8
- 315201000-KM-07, Ship Power Plants, NQF Level 6, Learning Contract Time 10 days, Credits: 10
- 315201000-KM-08, Personnel Management & Ship Masters Business, NQF Level 6, Learning Contract Time 21 days, Credits: 10
- 315201000-KM-09, Personnel Management and Ship Master's Business (Fishing), NQF level 5, Learning contract time 10 days, Credits: 8
- 315201000-KM-10, Marine Environmental Studies, NQF Level 6, Learning Contract Time 24 days, Credits: 10
- 315201000-KM-11, Ship Manoeuvring and Handling, NQF Level 6, Learning Contract Time 8 days, Credits: 3
- 315201000-KM-12, Emergency Procedures, NQF Level 6, Learning Contract Time 2 days, Credits: 3

- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10days, Credits: 7
 - 315201000-KM-14, Applied Marine Science & Maths, NQF Level 4, Learning Contract Time 22 days, Credits: 10
 - 315201000-KM-15, Survival Craft & Rescue Boats, NQF Level 3, Learning Contract Time 3 days, Credits: 3
 - 315201000-KM-16, Medical Care, NQF Level 5, Learning Contract Time 5 days, Credits: 8
 - 315201000-KM-17, Advanced Fire Fighting, NQF Level 4, Learning Contract Time 3 days, Credits: 4
 - 315201000-KM-18, Fishing Safety, NQF Level 3, Learning contract time 2 days, Credits: 2
 - 315201000-KM-19, Security Awareness, NQF Level 3, Learning contract time 1 day, Credits: 1
- Total number of credits for Knowledge Modules: 192 (44%)

Practical Skill Modules:

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level , NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

Total number of credits for Practical Skill Modules: 96 (22%)

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

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

Total number of credits for Work Experience Modules: 150 (34%)

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.

A specific requirement for entry into the workplace component of the Skipper <24m, is valid certification against the following ancillary courses:

- Personal Survival Techniques
- Personal Safety and Social Responsibility
- Medical First Aid
- Fire Prevention and Firefighting
- Safety Familiarisation

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

4. Part Qualification Curriculum Structure

315201000#01: Ship's Master Near Coastal <200GT

A Ship's Master Near Coastal <200GT performs all management tasks required for the safety of the vessel and personnel.

Knowledge Modules:

- 315201000-KM-01, Chartwork (1 to 2), NQF Level 4, Learning Contract Time 16 days, (Credits: 14)
- 315201000-KM-03, Electronic Navigation Systems (1 to 2), NQF Level 4, Learning Contract Time 17 days, (Credits:14)
- 315201000-KM-04, Naval Architecture (1), NQF Level 4, Learning Contract Time 12 days, (Credits: 10)
- 315201000-KM-08, Personnel Management & Ship Masters Business (1 and 2), NQF Level 4, Learning Contract Time 8 days, (Credits: 4)
- 315201000-KM-10, Marine Environmental Studies (1), NQF Level 4, Learning Contract Time 14 days, (Credits: 12)
- 315201000-KM-11, Ship Manoeuvring and Handling (1), NQF Level 4, Learning Contract Time 6 days, (Credits: 4)
- 315201000-KM-12, Emergency Procedures (1), NQF Level 4, Learning Contract Time 2 days, (Credits: 2)
- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10days, (Credits: 7)
- 315201000-KM-14, Applied Marine Science & Maths, NQF Level 4, Learning Contract Time 22 days, (Credits: 18)
- Total number of credits for Knowledge Modules: 85 (26%)

Practical Skill Modules:

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

Total number of credits for Practical Skill Modules: 96 (29%)

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

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

Total number of credits for Work Experience Modules: 150 (45%)

315201000#02: Ship's Master <200GT

A Ship's Master <200GT performs all management tasks required for the safety of the vessel <200GT and personnel on near coastal voyages.

Knowledge Modules:

- 315201000-KM-01, Chartwork (1 to 5), NQF Level 4, Learning Contract Time 21 days, (Credits: 16)
- 315201000-KM-02, Celestial Navigation (1 and 2), NQF Level 5, Learning Contract Time 21 days, (Credits: 14)
- 315201000-KM-03, Electronic Navigation Systems (1 and 2), NQF Level 4, Learning Contract Time 17 days, (Credits: 14)
- 315201000-KM-04, Naval Architecture (1), NQF Level 4, Learning Contract Time 17 days, (Credits: 10)

- 315201000-KM-07, Personnel Management & Ship Masters Business (1 to 5), NQF Level 4, Learning Contract Time 8 days, (Credits: 4)
- 315201000-KM-10, Marine Environmental Studies (1 and 2), NQF Level 4, Learning Contract Time 16 days, (Credits: 12)
- 315201000-KM-11, Ship Manoeuvring and Handling (1), NQF Level 4, Learning Contract Time 6 days, (Credits: 4)
- 315201000-KM-12, Emergency Procedures (1), NQF Level 4, Learning Contract Time 2 days, (Credits: 2)
- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10days, (Credits: 7)
- 315201000-KM-14, Applied Marine Science & Maths, NQF Level 4, Learning Contract Time 22 days, (Credits: 18)

Total number of credits for Knowledge Modules: 101 (29%)

Practical Skill Modules:

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

Total number of credits for Practical Skill Modules: 96 (28%)

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

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

Total number of credits for Work Experience Modules: 150 (43%)

315201000#03: Ship's Mate <500GT

A Ship's Mate supports the Master at an operational level on vessels <500GT on unlimited voyages.

Knowledge Modules:

- 315201000-KM-01, Chartwork (1-3), NQF Level 4, Learning Contract Time 21 days, (Credits: 16)
- 315201000-KM-02, Celestial Navigation (1 and 2), NQF Level 5, Learning Contract Time 21 days,(Credits: 16)
- 315201000-KM-03, Electronic Navigation Systems (1 to 5), NQF Level 4, Learning Contract Time 18 days, (Credits: 14)
- 315201000-KM-04, Naval Architecture (1 to 5), NQF Level 4, Learning Contract Time 14 days, (Credits: 10)
- 315201000-KM-06, Cargo and / or Catch (Fish) Handling and Stowage (1 to 5), NQF Level 4, Learning Contract Time 12 days,(Credits:10)
- 315201000-KM-08, Personnel Management & Ship Masters Business (1 to 4), NQF Level 4, Learning Contract Time 8 days, (Credits:4)
- 315201000-KM-10, Marine Environmental Studies (1), NQF Level 4, Learning Contract Time 16 days, (Credits: 12)
- 315201000-KM-11, Ship Manoeuvring and Handling (1), NQF Level 4, Learning Contract Time 6 days, (Credits:4)
- 315201000-KM-12, Emergency Procedures (1), NQF Level 4, Learning Contract Time 2 days, (Credits:2)
- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10days, (Credits: 7)
- 315201000-KM-15, Survival Craft & Rescue Boats, NQF Level 3, Learning Contract Time 3 days, (Credits: 3)
- 315201000-KM-17, Advanced Fire Fighting, NQF Level 4, Learning Contract Time 3 days, (Credits: 4)

Total number of credits for Knowledge Modules: 102 (29%)

Practical Skill Modules:

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level , NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

Total number of credits for Practical Skill Modules: 96 (28%)

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

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

Total number of credits for Work Experience Modules: 150 (43%)

315201000#04: Master <500GT

A Ship's Master <500GT performs all management tasks required for the safety of the vessel <500GT and personnel.

Knowledge Modules:

- 315201000-KM-01, Chartwork(1-5), NQF Level 6, Learning Contract Time 24 days, (Credits:18)
- 315201000-KM-02, Celestial Navigation (1 to 5), NQF Level 6, Learning Contract Time 24 days, (Credits:12)
- 315201000-KM-03, Electronic Navigation Systems (1 to 4), NQF Level 6, Learning Contract Time 20 days, (Credits: 14)
- 315201000-KM-04, Naval Architecture (1 to 5), NQF Level 6, Learning Contract Time 18 days, (Credits: 12)
- 315201000-KM-06, Cargo and / or Catch (Fish) Handling and Stowage (1 to 4), NQF Level 6, Learning Contract Time 14 days, (Credits: 8)
- 315201000-KM-07, Ship Power Plants (1 and 2), NQF Level 6, Learning Contract Time 10 days, (Credits:10)
- 315201000-KM-08, Personnel Management & Ship Masters Business (1 to 9), NQF Level 6, Learning Contract Time 21 days, (Credits: 10)
- 315201000-KM-10, Marine Environmental Studies (1 to 5), NQF Level 6, Learning Contract Time 24 days, (Credits: 10)
- 315201000-KM-11, Ship Manoeuvring and Handling (1 and 2), NQF Level 6, Learning Contract Time 8 days, (Credits: 3)
- 315201000-KM-12, Emergency Procedures (1 and 2), NQF Level 6, Learning Contract Time 2 days, (Credits: 3)
- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10days, (Credits: 7)
- 315201000-KM-14, Applied Marine Science & Maths, NQF Level 4, Learning Contract Time 22 days, (Credits: 10)
- 315201000-KM-15, Survival Craft & Rescue Boats, NQF Level 4, Learning Contract Time 3 days, (Credits: 3)

- 315201000-KM-16, Medical Care, NQF Level 5, Learning Contract Time 5 days, (Credits: 8)
- 315201000-KM-17, Advanced Fire Fighting, NQF Level 4, Learning Contract Time 3 days, (Credits: 4)
- 315201000-KM-18, Fishing Safety, NQF Level 3, Learning contract time 2 days, (Credits: 2)
- 315201000-KM-19, Security Awareness, NQF Level 3, Learning contract time 1 day, (Credits: 2)

Total number of credits for Knowledge Modules: 136 (36%)

Practical Skill Modules:

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

Total number of credits for Practical Skill Modules: 96 (25%)

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

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

Total number of credits for Work Experience Modules: 150 (39%)

315201000#05: Ship's Mate Near Coastal

A Ship's Mate Near Coastal supports the Master at an operational level on vessels <500GT on limited to near coastal voyages.

Knowledge Modules:

- 315201000-KM-01, Chartwork (1-3), NQF Level 4, Learning Contract Time 21 days, (Credits: 16)
- 315201000-KM-02, Celestial Navigation (1 and 2), NQF Level 5, Learning Contract Time 21 days,(Credits: 16)
- 315201000-KM-03, Electronic Navigation Systems (1 to 5), NQF Level 4, Learning Contract Time 18 days, (Credits: 14)
- 315201000-KM-04, Naval Architecture (1 to 5), NQF Level 4, Learning Contract Time 14 days, (Credits: 10)
- 315201000-KM-06, Cargo and / or Catch (Fish) Handling and Stowage (1 to 5), NQF Level 4, Learning Contract Time 12 days,(Credits:10)
- 315201000-KM-08, Personnel Management & Ship Masters Business (1 to 4), NQF Level 4, Learning Contract Time 8 days, (Credits:4)
- 315201000-KM-10, Marine Environmental Studies (1), NQF Level 4, Learning Contract Time 16 days, (Credits: 12)
- 315201000-KM-11, Ship Manoeuvring and Handling (1), NQF Level 4, Learning Contract Time 6 days, (Credits:4)
- 315201000-KM-12, Emergency Procedures (1), NQF Level 4, Learning Contract Time 2 days, (Credits:2)
- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10days, (Credits: 7)
- 315201000-KM-15, Survival Craft & Rescue Boats, NQF Level 3, Learning Contract Time 3 days, (Credits: 3)
- 315201000-KM-17, Advanced Fire Fighting, NQF Level 4, Learning Contract Time 3 days, (Credits: 4)

Total number of credits for Knowledge Modules: 102 (29%)

Practical Skill Modules:

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level , NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

Total number of credits for Practical Skill Modules: 96 (28%)

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

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21

- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

Total number of credits for Work Experience Modules: 150 (43%)

315201000#06: Ship's Master Near Coastal

A Ship's Master Near Coastal performs all management tasks required for the safety of the vessel of <500GT limited and personnel on near coastal voyages.

Knowledge Modules:

- 315201000-KM-01, Chartwork (1 to 5), NQF Level 5, Learning Contract Time 24 days, (Credits: 16)
- 315201000-KM-02, Celestial Navigation (1 and 2), NQF Level 5, Learning Contract Time 21 days, (Credits: 16)
- 315201000-KM-03, Electronic Navigation Systems (1 to 4), NQF Level 5, Learning Contract Time 20 days, (Credits:16)
- 315201000-KM-04, Naval Architecture (1 to 5), NQF Level 5, Learning Contract Time 18 days, (Credits: 11)
- 315201000-KM-06, Cargo and / or Catch (Fish) Handling and Stowage (1 to 4), NQF Level 5, Learning Contract Time 14 days, (Credits:12)
- 315201000-KM-07, Ship Power Plants (1), NQF Level 5, Learning Contract Time 8 days, (Credits: 6)
- 315201000-KM-08, Personnel Management & Ship Masters Business (1 to 5), NQF Level 5, Learning Contract Time 10 days, (Credits:6)
- 315201000-KM-10, Marine Environmental Studies (1 and 2), NQF Level 5, Learning Contract Time 16 days, (Credits: 12)
- 315201000-KM-11, Ship Manoeuvring and Handling (1 and 2), NQF Level 5, Learning Contract Time 8 days, (Credits: 6)
- 315201000-KM-12, Emergency Procedures (1 and 2), NQF Level 4, Learning Contract Time 2 days, (Credits: 2)
- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10days, (Credits: 7)
- 315201000-KM-15, Survival Craft & Rescue Boats, NQF Level 4, Learning Contract Time 3 days, (Credits: 3)
- 315201000-KM-17, Advanced Fire Fighting, NQF Level 4, Learning Contract Time 3 days, (Credits: 4)

Total number of credits for Knowledge Modules: 117 (32%)

Practical Skill Modules:

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10

- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level , NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

Total number of credits for Practical Skill Modules: 96 (27%)

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

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

Total number of credits for Work Experience Modules: 150 (41%)

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: Ship's Master.

The likely vertical progression for this qualification is a National Occupational Qualification: Deck Officer, Mate, Master, Mate Unlimited, Master Unlimited.

This National Occupational Qualification articulates horizontally with other Ships' Master occupations with cross-cutting credits in the Knowledge Specifications, i.e. Fishing and Port Operations

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 Unit Standards 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 unit standards. 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 unit standards.

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 Ship's Master performs all management tasks required for the safety of the vessel and personnel.

2. Occupational Tasks

- Navigate vessel at a management level
- Cargo and / or Catch (Fish) handling and stowage at a management level
- Managing shipboard operations and care of personnel and vessel
- Conducting ship's master's business
- Manage ship handling and manoeuvring
- Manage Shipboard Security Procedures and Contingency Plans
- Manage human resources

3. Occupational Task Details

3.1 Navigate vessel at a management level (NQF Level 6)

Unique Product or Service:

Vessel safely arrived

Occupational Responsibilities:

The learner must be able to:

- Plan voyage and monitor passage plan
- Manage bridge team navigational activities
- Co-ordinate search and rescue operations
- Use electronic navigation systems to navigate
- Manage collision avoidance

Occupational Contexts:

The learner must be exposed to:

- ISC bridge procedures
- IAMSAR manual
- International regulations for the prevention of collisions at sea
- Mariners Handbook
- Nautical publications
- Communications procedures and publications
- Ships ISM system
- International safety communications

3.2 Handle and stow Cargo and / or Catch (Fish) at a management level (NQF Level 6)

Unique Product or Service:

Cargo and / or Catch (Fish) are safely handled and stowed

Occupational Responsibilities:**The learner must be able to:**

- Manage the planning, loading, care and unloading of Cargo and / or Catch (Fish) and / or catch (fish)
- Evaluate damage reports and tally deficiencies
- Manage stowage, segregation and lashing of hazardous and dangerous Cargo and / or Catch (Fish)

Occupational Contexts:**The learner must be exposed to:**

- Shipboard Cargo and / or Catch (Fish) handling and stowage procedures
- Cargo and / or Catch (Fish) lashing manual
- Cargo and / or Catch (Fish) stowage plan
- IMO codes related to Cargo and / or Catch (Fish) handling and stowage
- International Maritime Dangerous and Hazardous Goods legislation
- Code of Safe Working Practice for Merchant Seaman / Fishermen

3.3 Manage shipboard operations and care of personnel and vessel (NQF Level 6)**Unique Product or Service:**

Safe vessel and personnel

Occupational Responsibilities:**The learner must be able to:**

- Control compliance with legislative requirements
- Plan emergency procedures and manage the safety and security of the vessel and crew

Occupational Contexts:**The learner must be exposed to:**

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

3.4 Conduct ship's master's business (NQF Level 6)**Unique Product or Service:**

Legal and commercial compliance

Occupational Responsibilities:**The learner must be able to:**

- Maintain vessel and statutory documentation
- Manage vessel resources, commercial activities and personnel

Occupational Contexts:**The learner must be exposed to:**

- International maritime law, conventions and codes

- International trade agreements and IMO terms of carriage

3.5. Handle and manoeuvre ship at management level (NQF Level 6)

Unique Product or Service:

Safe handling and manoeuvring

Occupational Responsibilities:

The learner must be able to:

- Handle a vessel at sea
- Dock and undock a vessel
- Anchor a vessel

Occupational Contexts:

The learner must be exposed to:

- Shipboard procedures for handling a vessel
- Shipboard procedures for docking, undocking and anchoring
- International safety management system

3.6 Manage Shipboard Security Procedures and Contingency Plans (NQF Level 4)

Unique Product or Service:

Safe and secure vessel

Occupational Responsibilities:

The learner will be required to:

- Implement shipboard security procedures
- Develop and maintain security contingency plans

Occupational Contexts:

The learner must be exposed to:

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

3.7 Personnel developed and managed (NQF Level 6)

Unique Product or Service:

Optimized personnel performance

Occupational Responsibilities:

The learner must be able to:

- Manage service providers and / or personnel
- Determine performance standards for personnel
- Optimise utilization of personnel
- Compile continuous professional development plans

Occupational Contexts:**The learner must be exposed to:**

- Conditions of work environment
- Labour legislation
- Skills development guidelines
- Performance management procedures
- Ergonomics
- Shipboard Safety Procedures
- Shipboard Operational procedures
- Code of Safe Working Practices for Merchant Seaman / Fishermen
- Marine pollution legislation

SECTION 3: CURRICULUM COMPONENT SPECIFICATIONS

SECTION 3A: KNOWLEDGE MODULE SPECIFICATIONS

List of Knowledge Modules for which Specifications are included

- 315201000-KM-01, Chartwork, NQF Level 6, Learning Contract Time 24 days, Credits: 18
- 315201000-KM-02, Celestial Navigation, NQF Level 6, Learning Contract Time 24 days, Credits: 12
- 315201000-KM-03, Electronic Navigation Systems, NQF Level 6, Learning Contract Time 20 days, Credits: 14
- 315201000-KM-04, Naval Architecture, NQF Level 6, Learning Contract Time 18 days, Credits: 12
- 315201000-KM-05, Naval Architecture (Fishing), NQF Level 5, Learning Contract Time 17 days, Credits: 5
- 315201000-KM-06, Cargo Handling and Stowage, NQF Level 6, Learning Contract Time 14 days, Credits: 8
- 315201000-KM-07, Ship Power Plants, NQF Level 6, Learning Contract Time 10 days, Credits: 10
- 315201000-KM-08, Personnel Management & Ship Masters Business, NQF Level 6, Learning Contract Time 21 days, Credits: 10
- 315201000-KM-09, Personnel Management and Ship Master's Business (Fishing), NQF level 5, Learning contract time 10 days, Credits: 8
- 315201000-KM-10, Marine Environmental Studies, NQF Level 6, Learning Contract Time 24 days, Credits: 10
- 315201000-KM-11, Ship Manoeuvring and Handling, NQF Level 6, Learning Contract Time 8 days, Credits: 3
- 315201000-KM-12, Emergency Procedures, NQF Level 6, Learning Contract Time 2 days, Credits: 3
- 315201000-KM-13, Maritime Communications, NQF Level 5, Learning Contract Time 10 days, Credits: 7
- 315201000-KM-14, Applied Marine Science & Maths, NQF Level 4, Learning Contract Time 22 days, Credits: 10
- 315201000-KM-15, Survival Craft & Rescue Boats, NQF Level 3, Learning Contract Time 3 days, Credits: 3
- 315201000-KM-16, Medical Care, NQF Level 5, Learning Contract Time 5 days, Credits: 8
- 315201000-KM-17, Advanced Fire Fighting, NQF Level 4, Learning Contract Time 3 days, Credits: 4
- 315201000-KM-18, Fishing Safety, NQF Level 3, Learning contract time 2 days, Credits: 2
- 315201000-KM-19, Security Awareness, NQF Level 3, Learning contract time 1 day, Credits: 1

1. 315201000-KM-01, Chart Work Theory, NQF Level 6, 18 credits (Learning contract time 24 days)

1.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge and skills to plan and conduct a safe passage.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: Basic Coastal Navigation Methods (18%)
- KM-01-KT02: Coastal Passage Plan Preparation (18%)
- KM-01-KT03: Coastal Passage Plan Monitoring and Execution Principles (18%)
- KM-01-KT04: Advanced Coastal Navigation Methods (25%)
- KM-01-KT05: Management Principles related to Monitoring and Execution of Coastal Passage Plan (31%)

1.2 Guidelines for Topics

1.2.1 KM-01-KT01: Basic Coastal Navigation Methods (18%)

Topic elements to be covered include:

- KT0101 Methods to determine a vessels position on a chart
- KT0102 Procedures to determine safe courses between positions
- KT0103 Calculations related to converting true courses to magnetic and/or compass courses
- KT0104 Concepts of monitoring a planned passage including ETA
- KT0105 Basic tidal concepts and theories
- KT0106 Introduction to navigational charts and nautical publications

Internal Assessment Criteria

1. Identify and explain the concepts relating to determining the vessel's position on a chart
2. Define the terms: Deviation and Variation
3. Describe at least five situations requiring use of navigational charts and publications
4. Explain the broad principles and use of conventional magnetic and gyro compasses
5. List the theory properties and explain the use of the following projections: (comes from Celestial navigation)
 - 5.1 Mercator
 - 5.2 Gnomonic
 - 5.3 Equidistant

(Weight 18%)

1.2.2 KM-01-KT02: Coastal Passage Plan Preparation (18%)

Topic elements to be covered include:

- KT0201 Methods to determine a safe port or anchorage approach
- KT0202 Coastal passage plans for clear and restricted visibility
- KT0203 Principles of magnetic compass repeaters
- KT0204 Calculations to determine compass errors
- KT0204 Harbour entry plans via buoyed channels

Internal Assessment Criteria

1. Identify and explain at least five factors one would consider to determine a safe course
2. Describe the principles and use of the flux-gate compass and magnetic compass repeaters
3. Determine compass and/gyro error, using deviation and/or gyro error using transit bearings
4. Explain the coastal plan and entry into harbour

(Weight 18%)

1.2.3 KM-01-KT03: Coastal Passage Plan Monitoring and Execution Principles (18%)

Topic elements to be covered include:

KT0301	Effects of current and leeway on course to steer
KT0302	Methods to determine vessels position on a chart
KT0303	Fundamentals of passage planning and use of clearing lines
KT0304	Calculations related to time and height of tides at Standard ports

Internal Assessment Criteria

1. Determine the following:
 - 1.1 The effect of current and leeway on course and speed
 - 1.2 The course to steer to make good a certain track (making due allowance for current and leeway),
 - 1.3 The distance at which a vessel will pass off a given point given the set and rate of a current
2. Describe at least 5 methods to determine the vessel's position on a chart:
3. Explain and use dipping distances of lights and distances of sighting points of land of known height to determine the vessels position
4. Define the following concepts:
 - 4.1 Passage planning and execution
 - 4.2 The use of clearing marks and horizontal and vertical sextant danger angles
5. Calculate the time and height of high and low water at Standard Ports using Admiralty Tide Tables Vol. 2

(Weight 18%)

1.2.4 KM-01-KT04: Advanced Coastal Navigation Methods (25%)

Topic elements to be covered include:

KT0401	Calculations of time and height of tides at Secondary ports
KT0402	Advanced coastal navigation chart plotting techniques
KT0403	Principles of operation of magnetic and gyro compasses
KT0404	Procedures related to building and maintaining bridge teamwork

Internal Assessment Criteria

1. Compute and define the following calculations:
 - 1.1 The time and height of high and low water at Secondary Ports by tidal differences, using the Admiralty Tide Tables, Volumes I and II
 - 1.2 The time the tide reaches a specified height or the height of a tide at a given time using tables and tidal curves
 - 1.3 The approximate correction to be applied to soundings or to chartered heights of shore objects
2. Describe the relationship between tides and the phases of the moon
3. Determine the vessel's position on a chart using:

4. Bearings of one or more objects with the run between allowing for a current
5. Position lines obtained by any method, including terrestrial position lines and circles of position
6. Define and explain:
 - 6.1 The earth's magnetic field, poles, equator, angle of dip and variation.
 - 6.2 Deviation, its cause and effect
7. Explain:
 - 7.1 The principle of the free gyroscope
 - 7.2 Precession and gyroscope inertia
 - 7.3 Correction for latitude, course and speed error
 - 7.4 Care and maintenance of different types of compasses
8. Determine the compass error, deviation and/or gyro error using the bearing of a heavenly body
9. Discuss effective bridge team work procedures

(Weight 25%)

1.2.5 KM-01-KT05: Management Principles related to Monitoring and Execution of Coastal Passage Plan (31%)

Topic elements to be covered include:

- | | |
|--------|---|
| KT0501 | Management principles related to an ocean passage plan for all conditions (ECDIS) |
| KT0502 | Advanced principles of magnetic and gyro compasses |
| KT0503 | Bridge resource, human element, leadership and management principles and procedures |

Internal Assessment Criteria

1. Define acceptable methods of planning a voyage and navigation for all conditions taking into account:
 - 1.1 Restricted waters
 - 1.2 Meteorological conditions
 - 1.3 Ice
 - 1.4 Restricted visibility
 - 1.5 Traffic separation schemes
 - 1.6 Areas of extensive tidal effects
2. Discuss the use of ECDIS at management level
3. Deliberate the following theory:
 - 3.1 The earth's magnetic field, poles and equator. The earth's total magnetic force, angle of dip, horizontal and vertical components
 - 3.2 The effect of semi-permanent and induced magnetic fields on the deviation of the compass
 - 3.3 The means used to compensate for these effects
 - 3.4 Constructing a table of deviation following the swinging of a magnetic compass
4. Define the terms:
 - 4.1 The principle of the free gyroscope
 - 4.2 Tilt and drift
 - 4.3 Precession, control and damping. Correction for latitude, course and speed error
5. Principles of ship routeing in accordance with General Principles on Ship's Routeing
6. Explain vessel traffic management services and vessel reporting systems and the ability to report in accordance with the Guidelines and Criteria for Vessel Reporting Systems

7. Define the following terms: (comes from celestial navigation)
 - 7.1 Collision avoidance
 - 7.2 Knowledge and application of the use of routing charts in passage planning
 - 7.3 Traffic separation schemes

(Weight 31%)

1.3 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
- Type approved simulation, where necessary

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 Module

- None

1.5 Exemptions

- None

2. 315201000-KM-02, Celestial Navigation, NQF Level 6, Credits 12 (Learning contract time 24 days)

2.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge to fix the vessel's position by celestial means.

The learning will enable learners to demonstrate an understanding of:

KM-02-KT01: Theory of Celestial Navigation (42%)

KM-02-KT02: Methods of Determining Position by Celestial Means (29%)

KM-02-KT03: Principles related to the Celestial Sphere (29%)

2.2 Guidelines for Topics

2.2.1 KM-02-KT01: Theory of Celestial Navigation (42%)

Topic elements to be covered include:

KT0101 Elements of terrestrial spheroid

KT0102 Principles related to the relationship between time and longitude

KT0103 Gyro and compass error assessment by celestial means

KT0104 Calculation of position lines by celestial means

KT0105 Sextant error identification and correction

Internal Assessment Criteria

1. Explain the relationship between GMT, LMT, longitude, zone time and standard time.
2. Determine the vessels time relating to a given longitude
3. Compute the following:
 - 3.1 Gyro and compass errors
 - 3.2 Latitude by meridian altitude of the Sun or Venus
 - 3.3 From a sextant-observation of a heavenly body out of the meridian, the direction of the position line
 - 3.4 The vessel's position using position lines obtained from two or more celestial observations, with or without a run
4. Pre-compute the following:
 - 4.1 The approximate time (to the nearest minute) of the meridian passage of a heavenly body and the rising and setting times of the sun
 - 4.2 The approximate sextant altitude to obtain the meridian altitude of a heavenly body

(Weight: 42%)

2.2.2 KM-02-KT02: Methods of Determining Position by Celestial Means (29%)

Topic elements to be covered include:

KT0201 Calculations related to vessel's position by celestial means

KT0202 Basic pre-computing of azimuth and altitude values

KT0203 Compute times of sunrise, sunset and twilight

Internal Assessment Criteria

1. Discuss the following methods:
 - 1.1 The latitude by meridian altitude of a heavenly body, above the pole
 - 1.2 From a sextant observation of a heavenly body out of the meridian, the direction of the position line and the ITP through which it passes
 - 1.3 The vessel's position using position lines obtained from two or more celestial observations, with or without a run
 - 1.4 Ability to alter vessel's time with change of longitude
 2. Calculate the azimuth and altitude of heavenly bodies.
 3. Times of sunrise, sunset and twilight are calculated correctly
- (Weight 29%)***

2.2.3 KM-02-KT03: Principles of the Celestial Sphere (29%)

Topic elements to be covered include:

- | | |
|--------|---|
| KT0301 | Advanced elements of celestial sphere |
| KT0302 | Introduction to the position of heavenly bodies on celestial and geographical spheres |
| KT0303 | Calculations related to the equation of time and apparent sun |
| KT0304 | Inter-relationship between geographical positions and celestial position of a heavenly body |

Internal Assessment Criteria

1. Discuss the solar system and the apparent motion of heavenly bodies on the celestial sphere
2. Define the navigational terms related to the terrestrial spheroid - poles, equator, meridians, parallels of latitude, difference of latitude, difference of longitude, departure, mean latitude, difference of meridian parts, their use and the relationship between them.
3. Define the position of a heavenly body on the celestial and geographical spheres
4. Explain the following concepts:
 - 4.1 Equation of time
 - 4.2 Astronomical mean sun
 - 4.3 Apparent sun
 - 4.4 Solve practical problems of great circle and composite great circle sailings
 - 4.5 Principles and uses of Mercator and Gnomonic charts
 - 4.6 The relationship between the geographical position of a heavenly body, a circle of position, position line and intercept
 - 4.7 The correction of sextant altitudes and the use of index error, dip, refraction, semi-diameter and parallax

(Weight 29%)

2.3 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
- Type approved simulation, where necessary

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 Subject

- None

2.5 Exemptions

- None

3. 315201000-KM-03, Electronic Navigation Systems, NQF Level 6, Credits 14 (Learning contract time 20 days)

3.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge to utilise electronic navigation systems to enhance safe navigation.

The learning will enable learners to demonstrate an understanding of:

- KM-03-KT01: Basic Principles of Electronic Navigation (29%)
- KM-03-KT02: Operational Procedures for Electronic Navigational Systems (29%)
- KM-03-KT03: Management Procedures for Electronic Navigational Systems (29%)
- KM-03-KT04: Advanced Principles of Gyro and Magnetic Compasses (13%)

3.2 Guidelines for Topics

3.2.1 KM-03-KT01: Basic Principles of Electronic Navigation (29%)

Topic elements to be covered include:

- KT0201 Basic procedures of Electronic Navigation equipment
- KT0202 Limitations and Accuracy of Electronic Navigation equipment
- KT0203 Radar plotting techniques
- KT0204 Basic principles of Electromagnetic propagation
- KT0205 Basic principles and operational guidelines for radar and ARPA
- KT0206 Basic values of identification systems, tracking systems and data recorders
- KT0207 Concepts of logs and echo sounders

Internal Assessment Criteria

1. List the operation of Electronic Navigation Equipment
2. Discuss the broad principles and limitations of electronic navigation equipment, the possible accuracy and errors affecting the accuracy of such systems.
3. Explain shipboard care and maintenance (if any) of electronic navigation equipment
4. Interpret and analyse information obtained from radar, including the following:
 - 4.1 Factors affecting performance and accuracy
 - 4.2 Setting up and maintaining displays
 - 4.3 Detection and misrepresentation of information, false echoes, sea return, racons and SARTs, etc
5. Explain the basic principles of electromagnetic propagation and why most navigational aids use electromagnetic energy
6. Describe frequency, wavelength and Doppler Effect
7. Name the basic principles of Automatic Identification Systems, Voyage Data Recorders and Long Range Identification and Tracking systems
8. Describe the basic purpose of these and can program AIS with appropriate data. Understands the limitations of each system and the reasons for their introduction. Purpose of the Admiralty List of Radio Signals, Volume II
9. Explain the basic principles of ship-borne echo sounders with specific reference to types in use at sea; the principle components of general purpose navigational echo sounding equipment; and precautions to be observed in use and accuracy to be expected
10. List the basic principles of ship-borne logs sounders with specific reference to types in use at sea; the principle components of general-purpose logs; and precautions to be observed in use and accuracy to be expected

11. Explain the basic principles of radar:
 - 11.1 Identify controls
 - 11.2 Understand factors affecting performance and accuracy. Relative and true motion concepts
12. Define the basic principles of satellite navigation systems
13. Explain the principles and construction of a radar plot by using the following:
 - 13.1 Use of plotting aids
 - 13.2 Use of a plot to obtain information about targets
 - 13.3 Assessment of collision risk
 - 13.4 Effect of alteration of courses and speed in relation to collision avoidance
 - 13.5 Radar reporting procedures
 - 13.6 Application of International Regulations for the Prevention of Collisions at Sea in restricted visibility

(Weight 29%)

3.2.2 KM-03-KT02: Operational Procedures for Electronic Navigational Systems (29%)

Topic elements to be covered include:

- | | |
|--------|--|
| KT0201 | Fundamentals of hyperbolic navigation systems |
| KT0202 | Principles of magnetic and gyro compass |
| KT0203 | Navigation aids and instruments at operational level |
| KT0204 | Radar plotting aids and ECDIS procedures |

Internal Assessment Criteria

1. Describe the basic principles of hyperbolic navigation with reference to:
 - 1.1. The difference between systems which utilise the measurement of time difference and of phase difference
2. Explain the siting of the magnetic compass with reference to proximity of magnetic material and electrical appliances and the precautions to be taken with electric wiring in the vicinity of the compass
3. Discuss the following statements:
 - 3.1 The earth's magnetic field, poles, equator, angle of dip and variation
 - 3.2 Deviation, its cause and effect
 - 3.3 The principle of the free gyroscope
 - 3.4 Correction for latitude, course and speed error
 - 3.5 The maintenance of different types of compasses
4. Explain the essential principles, use and operation of aids to navigation and navigation instruments which are installed in a high proportion of merchant vessels
5. Identify the effects of systematic and random errors in position fixing by any means
6. Define the principle and operation of EPIRB's in the maritime GMDSS
7. Discuss the theory of satellite orbits, types of orbits and satellites in maritime use and integrated navigation displays
8. Define the following:
 - 8.1 The basic principles, operation and use of ECDIS
 - 8.2 The relationship of ECDIS and a high accuracy radio navigation system.
 - 8.3 The use of radar picture and chart overlays
 - 8.4 Describes the principles of operation of ARPA equipment

(Weight 29%)

3.2.3 KM-03-KT03: Management Procedures for Electronic Navigational Systems (29%)

Topic elements to be covered include:

- KT0301 Information from radar, ARPA and navigation systems
- KT0302 Management of watchkeeping procedures
- KT0303 Management of search and rescue operations
- KT0304 High accuracy electronic navigation information systems for management decision making

Internal Assessment Criteria

1. Explain the use of and in the operation of the full range of navigation equipment including radar and ARPA
2. Describe the principles of keeping a safe navigation watch, chartwork and passage planning
3. List the basic techniques of:
 - 3.1 Blind pilotage
 - 3.2 Parallel indexing
4. Plan an effective bridge team making use of bridge teamwork procedures.
5. Describe the procedures contained in the IAMSAR manual
6. Define the following theory principles:
 - 6.1. Velocity, distance and depth-measuring instruments
 - 6.2. Marine radar and secondary radar systems
 - 6.3. Short-range high accuracy survey system
 - 6.4. Gyro compasses
 - 6.5. Differential systems
 - 6.6. GMDSS
 - 6.7. Position lines
 - 6.8. The effects of observational errors on position lines
7. Explain the basic theory and use of:
 - 7.1 Satellite systems
 - 7.2 Integrated navigation Systems
 - 7.3 Dynamic positioning systems
 - 7.4 Vessel traffic management systems
8. Describe in broad outline other systems and systems under development, such as:
 - 8.1 Laser beams and infrared techniques
 - 8.2 The global navigation satellite system (GNSS)
 - 8.3 Automatic ship identification transponder system
 - 8.4 Radar target enhancers
 - 8.5 Channel guidance
 - 8.6 Gyroscopes
9. Explain a broad outline of the functions of IMO and IALA w.r.t. radio navigation
10. List the accuracy, availability, reliability, update rate and integrity of such systems such as, GPS, DGPS and Glonass

(Weight 29%)

3.2.4 KM-03-KT04: Advanced Principles of Gyro and Magnetic Compasses (13%)

Topic elements to be covered include:

- KT0401 Advanced theory of magnetic compass
- KT0402 Advanced theory of gyro compass
- KT0403 Definitions magnetic compass corrections

Internal Assessment Criteria

1. Describe the following theory in relation to magnetic compass and associated equipment:
 - 1.1 Siting, care and maintenance of compasses
 - 1.2 Causes of deviation
 - 1.3 Production of a table of deviations
 - 1.4 Co-efficient A, B, C and E, approximate evaluation from given data and relationship with deviation
 - 1.5 Effects of permanent and induced magnetism
 - 1.6 Principles and methods of compass adjustments
 - 1.7 Effects of heeling error, Gaussin error and retentive error
 - 1.8 Effect of change of latitude on the deviation
2. Explain the following terms in relation to the gyro compass and associated equipment:
 - 2.1 Principles of operation
 - 2.2 Principal parts, and fundamental differences in the construction and operation of better-known gyro compasses
 - 2.3 Causes of latitude, course and speed errors and their correction
 - 2.4 Relationship between ballistic deflection and change of speed error
 - 2.5 Rolling error, minimization

(Weight 13%)

3.3 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
- Type approved simulation, where necessary

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

3.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

3.5 Exemptions

- None

4. 315201000-KM-04, Naval Architecture, NQF level 6, Credits 12 (Learning contract time 18 Days)

4.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge and understanding of the basic concepts in ship's construction, principles of flotation and transverse-, as well as longitudinal stability of a ship under various loading conditions.

The learning will enable learners to demonstrate an understanding of:

- KM-04-KT01: Theory of small vessel construction and stability (20%)
- KM-04-KT02: Fundamentals of ship design (20%)
- KM-04-KT03: Principles of stability and buoyancy (20%)
- KM-04-KT04: Fundamentals of hull structure, fittings and markings (20%)
- KM-04-KT05: Concepts of applied statical stability (20%)

4.2 Guidelines for Topics

4.2.1 KM-04-KT01: Theory of small vessel construction and stability (20%)

Topic elements to be covered include:

- KT0101 Definitions of Small Vessel Parts, Fittings and Systems
- KT0102 Watertight Requirements
- KT0103 Components of Regulatory Surveys and Inspections including hull, safety and port states
- KT0104 Elements of Stability
- KT0105 Features of Construction and Design
- KT0106 Basic Calculations of Tonnage Measurement of Ships

Internal Assessment Criteria

1. Name the principal parts and fittings of a small vessel including, but not limited to, bow, stern, bulwarks, hull, hatch access, rudder, propeller
2. Describe by means of a diagram:
 - 4.1 A bilge pumping system
 - 4.2 A fire main
 - 4.3 A steering system
3. List the reasons for making the deck and superstructure watertight
4. Define the purpose of watertight bulkheads and the collision bulkhead
5. Identify the reason for a hull survey, the items surveyed at the hull survey and the period between surveys for the issue of a local general safety certificate
6. Draw the propeller shaft(s) and the opening of hull fittings and the period between the inspections of these items
7. Explain the relationship between centre of gravity, centre of buoyancy and metacentric height
8. Define the conditions of a :
 - 10.1 Stiff ship
 - 10.2 Tender ship and the dangers associated with them
9. List the reasons for having efficient means of drawing water rapidly from the deck and the danger of water trapped on deck
10. Identify the reasons for stowing heavy cargo items below and lighter items on top
11. Name the purpose of load lines, free board and reserve buoyancy
12. Describe the meaning of the terms displacement, deadweight and gross tonnage

13. Identify the danger of stowing cargo on deck only with nothing below
(Weight: 20%)

4.2.2 KM-04-KT02: Fundamentals of ship design (20%)

Topic elements to be covered include:

- KT0201 Definitions of Ship Types, Dimensions and Form
KT0202 Types of Ship Stresses

Internal Assessment Criteria

1. List the names and principal parts of a ship
2. Illustrate the general arrangement of common ship types found in the merchant fleet
3. Draw an elevation and plan view of a:
 - 3.1 General cargo ship
 - 3.2 Crude oil carrier
 - 3.3 Container ship
 - 3.4 Passenger ship
 - 3.5 Roll-on roll-off
 - 3.6 Bulk carrier
 - 3.7 Liquefied gas tanker
 - 3.8 Fishing trawler
 - 3.9 Harbour tug
4. Define and illustrate the main dimensions of a ship and the terms and coefficients of design ship including amongst others: camber, rise of floor, sheer, rake, forward perpendicular (FP), length overall (LOA), base line, moulded depth, beam and draught
5. Describe in qualitative terms shear force and bending moments
6. Explain what is meant by hogging and by sagging stresses and:
 - 6.1 Loading and sea state conditions which give rise to hogging and sagging
 - 6.2 Effects on hull structure caused by hogging and sagging stresses
7. Describe racking, tensile, compressive, local and twisting stresses on a ship's hull and measures taken to reduce them
 - 7.1 Water pressure loads on the ship's hull
 - 7.2 Liquid pressure loading on the tank structures
 - 7.3 Sloshing effect and the associated stresses
 - 7.4 Describe racking stress and its causes
 - 7.5 Pounding or slamming and states which part of the ship is affected
 - 7.6 Panting and states which parts of the ship are affected
 - 7.7 The dynamical forces acting on the hull
8. Calculate the pressure at any depth below the liquid surface, given the density of the liquid

(Weight: 20%)

4.2.3 KM-04-KT03: Principles of stability and buoyancy (20%)

Topic elements to be covered include:

- KT0301 Components of Flotation and Displacement
KT0302 Definitions of Buoyancy and Reserve Buoyancy
KT0303 Calculations of Fresh Water Allowance
KT0304 Description of Forces on Ship's Structure

Internal Assessment Criteria

1. Outline the principle of Archimedes for a ship to float

2. Discuss the relationship between the mass of a ship and the volume of water displaced by the hull form and that volume changes with change in mass of ship
3. Define:
 - 3.1 Displacement (light and load displacement)
 - 3.2 Deadweight
 - 3.3 Tonnes per centimetre immersion= (TPC)
4. Calculate the displacement from density of water and volume of ship
5. Discuss how to use a:
 - 5.1 Displacement/draught curve
 - 5.2 Deadweight curve/scale
 - 5.3 TPC scale and derive the formulae for TPC
6. Define block coefficient and calculate CB and dimensions
7. Describe:
 - 7.1 Buoyancy
 - 7.2 The relationship between force of buoyancy and displacement
 - 7.3 Reserve buoyancy, its importance and the relationship between it and freeboard
8. Explain the purpose of load lines
9. Describe in detail the relationship between draught and density of seawater/dock water
10. Define fresh water (FWA) and dock allowance
11. Discuss how to use:
 - 11.1 A hydrometer to find the density of dock water
 - 11.2 The FWA and/or dock allowance to calculate the mass that can be loaded beyond the summer load line in fresh or dock water
12. Discuss the steps in reading draughts.
13. Describe the imbalance of weight and buoyancy along the length of a ship.
14. Sketch a typical weight curve.
15. Sketch a typical load curve, shear-force diagram, bending-moment diagram.
16. Sketch typical buoyancy curves when in still water, a wave crest amidships, a wave through amidships.

(Weight 20%)

4.2.4 KM-04-KT04: Fundamentals of hull structure, fittings and markings (20%)

Topic elements to be covered include:

- KT0401 Components of Hull Design and Construction
- KT0402 Types of Hull Fittings and Attachments
- KT0403 Rudder Types and Construction Procedures
- KT0404 Principles related to Load Lines and Draught Marks

Internal Assessment Criteria

1. Identify the structural components of a ship's hull on ship's plans and drawings. (Includes items such as frames, floors, beams, knees, brackets, shell plating, decks, bulkheads, pillars, hatch girders, coamings, bulwarks, cant beams and breast hooks)
2. Describe and illustrate standard steel sections used in ship construction
3. Identify longitudinal, transverse and combined systems of framing on transverse sections of ships
4. Describe advantages and disadvantages of the different systems and sketch the arrangement of frames, webs and transverse members for each system
5. Illustrate:
 - 5.1 Double-bottom structure for longitudinal and transverse framing
 - 5.2 Bilge structure

- 5.3 Different keel structures
- 5.4 Connection of superstructures to the hull at the ship's side
6. Sketch:
 - 6.1 Different deck edge connections
 - 6.2 Deck-freeing arrangements,
 - 6.3 A plane and corrugated bulkhead, showing connections to deck, sides and double bottom and the arrangement of stiffeners
7. Describe the stress concentration in the deck round hatch openings
8. Explain why transverse bulkheads have vertical corrugations and fore-and-aft bulkheads have horizontal ones
9. Explain compensation for loss of strength at hatch openings
10. Describe and illustrate:
 - 10.1 The purpose of bilge keels and how they are attached to the ship's side
 - 10.2 The provision of additional structural strength to withstand pounding and panting
 - 10.3 Function of the stern frame and stem
 - 10.4 The transom stern, showing the connections to the stern frame
11. Define why the shaft tunnel must be of watertight construction and how water is prevented from entering the engine-room if the tunnel becomes flooded
12. Describe and sketch
 - 11.1 A cargo ship arrangements of modern weather-deck mechanical steel hatches
 - 11.2 An oil tight hatch cover showing how watertightness is achieved at the coamings and cross joints where applicable
13. Sketch a cross-section of a shaft tunnel
14. Describe the arrangement of portable beams, wooden hatch covers and tarpaulins
15. Sketch and describe typical forecastle mooring and anchoring arrangements including the leads of moorings, rollers, multi-angle, pedestal and Panama fairleads
16. Describe:
 - 16.1 Winch to deck connection
 - 16.2 Anchor handling and securing arrangements from hawse pipe to spurling pipe, including watertightness of spurling pipe.
 - 16.3 The construction of chain lockers and securing of cables
 - 16.4 Construction and use of a cable stopper
17. Describe:
 - 17.1 The construction of masts and Sampson posts and how they are supported at the base
 - 17.2 The construction of derricks and deck cranes
18. Describe and sketch :
 - 18.1 The bilge piping system of a cargo ship, with screw-down non-return suction valves, strum boxes and sounding pipe arrangements
 - 18.2 A ballast system in a cargo ship and the necessity of fitting air pipes to ballast and fuel tanks
 - 18.3 A fire main and states what pumps may be used to pressurize it
19. Describe the arrangement of fittings and lashings for the carriage of container on deck
20. Describe and Sketch:
 - 20.1 Modern rudders: semi balanced, balanced and spade
 - 20.2 The connection of the rudder to the ship
 - 20.3 How the weight of the rudder is supported
 - 20.4 How watertight integrity is maintained about the stock/hull
21. Describe the action of the rudder in steering the ship

22. Draw to scale the load line mark and the load lines for a ship of a given summer moulded draught, displacement and tonnes per centimetre immersion in salt water
23. Define freeboard
24. Discuss
 - 24.1 Where the deck line is marked
 - 24.2 Assigned summer freeboard
 - 24.3 How freeboard is used to check that the ship is within its permitted limits of loading
25. Describe how to use the chart of zones and seasonal areas to find the applicable load line

(Weight 20%)

4.2.5 KM-04-KT05: Concepts of Applied Statical Stability (20%)

Topic elements to be covered include:

- | | |
|--------|---|
| KT0501 | Calculations related to Statical Stability Assessment |
| KT0502 | Centre of Gravity Position Evaluation |
| KT0503 | Free Surface Effects |

Internal Assessment Criteria

1. Define:
 - 1.1 Centre of gravity - centre of buoyancy
 - 1.2 Metacentre - metacentric height
 - 1.3 Righting lever - righting moment
2. Define:
 - 2.1 Stability
 - 2.2 How the value of GM is a useful guide to the stability of the ship
 - 2.3 (With the aid of diagrams) a stable and unstable ship and the position of neutral equilibrium (positive, negative and zero GM)
 - 2.4 A Stiff and Tender ship
 - 2.5 (With the aid of diagrams) the relationship between stability, the righting lever and righting moment for small and large angles of heel lever (uses the positions of G, B, M and Z)
 - 2.6 A capsizing moment
 - 2.7 The angle of Loll and the dynamics resulting in a zero moment at the angle of loll
 - 2.8 The potentially dangerous situation of a ship rolling about the angle of loll
3. Identify and use:
 - 3.1 Cross curves (KN curves)
 - 3.2 Hydrostatic curves to determine the metacentre above the keel (KM)
 - 3.3 Determine the GM given the KG
4. Derive the formula $GZ = KN - KG \sin \alpha$
5. Derive and draw a GZ curve for stable and initially unstable ships from KN. curves
6. Obtain from a given curve of statical stability:
 - 6.1 The maximum righting lever and the angle at which it occurs
 - 6.2 The angle of vanishing stability
 - 6.3 The range of stability
7. Show how lowering the position of G increases all values of the righting lever and vice versa
8. Evaluate the affect the down flooding angle has on the curve of stability
9. Explain the IMO stability requirements for a cargo ship
10. Describe (With the aid of diagrams) the movement of G mass:
 - 10.1 Is added (loaded)

- 10.2 Removed (discharged)
- 10.3 Moved within the ship or suspended (from a derrick hook)
- 11. Calculate the:
 - 11.1 Shift of G (horizontally and vertically) resulting from adding, removing, moving or suspending masses
 - 11.2 Change in KG during a passage resulting from:
 - 11.2.1 Consumption of fuel and stores
 - 11.2.2 Absorption of water by a deck cargo
 - 11.2.3 Accretion of ice on decks and superstructures given the masses and their positions
- 12. Record (with the aid of a diagram) the effect on the centre of gravity (G) when the liquid in a partly filled tank moves during rolling (free surface effect)
- 13. Explain:
 - 13.1 That the increase in KG is affected mainly by the breadth of the free surface and is not dependent upon the mass of liquid in the tank
 - 13.2 List the ship construction measures that are taken to reduce the effects of free surface
 - 13.3 The procedure for ballasting tanks when the ship is at an angle of loll or when she has a small positive GM

(Weight 20%)

4.3 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
- Type approved simulation, where necessary

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 Subject

- None

4.5 Exemptions

- None

5. 315101000-KM-05, Naval Architecture (Fishing), NQF Level 5, Learning Contract Time 17 days (Credits: 5)

5.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge of vessel design, construction and operational stability.

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01: Theory of Small Vessel Construction and Stability (25%)
- KM-02-KT02: Basic Vessel Construction (25%)
- KM-02-KT03: Vessel Stability (25%)
- KM-02-KT04: Vessel Design, Construction and Fittings (25%)

2.2 Guidelines for Topics

5.2.1 KM-05-KT01: Theory of Small Vessel Construction and Stability (25%)

Topic elements to be covered include:

- KT0101 Components / parts and fittings
- KT0102 Watertight integrity and hull inspection procedures
- KT0103 Basic principles of vessel stability

Internal Assessment Criteria

1. Discuss the purpose of a vessel stability assessment
2. Explain the following:
 - 2.1 Reasons for making the deck and superstructure watertight
 - 2.2 Purpose of watertight bulkheads and the collision bulkhead
 - 2.3 Reason for a hull survey, the items surveyed at the hull survey and the period between surveys for the issue of a local general safety certificate
 - 2.4 Drawing the propeller shaft(s) and the opening of hull fittings and the period between the inspect of these items
 - 2.5 Relationship between centre of gravity, centre of buoyancy and metacentric height;
 - 2.6 Conditions of:
 - 2.6.1 Stiff ship
 - 2.6.2 Tender ship
 - 2.6.3 Free surface effect and the dangers associated with them
 - 2.7 Reasons for having efficient means of drawing water rapidly from the deck and the danger of water trapped on deck
 - 2.8 Reasons for stowing heavy Cargo and / or Catch (Fish) items below and lighter items on top
 - 2.9 Purpose of free board and reserve buoyancy
 - 2.10 Meaning of the terms displacement, deadweight and gross tonnage
3. Compile a document required by the surveyor to assess the stability of the vessel
(Weight: 25%)

5.2.2 KM-05-KT02: Basic Vessel Construction (25%)

Topic elements to be covered include:

- KT0201 Definitions and characteristics of fishing vessels
- KT0202 Procedures for bilge and fire pumping systems
- KT0203 Fundamentals of drainage and water-tight integrity

Internal Assessment Criteria

1. List the names and principal parts of a fishing vessel
2. Explain the general arrangement of common vessel types found in the fishing fleet
 - 2.1 Stern trawler
 - 2.2 Fishing vessel
3. Draw the following
 - 3.1 A bilge pumping system
 - 3.2 A fire main
 - 3.3 A steering system
4. Record the need to maintain the watertight integrity of the vessel and can describe the methods of maintaining the following:
 - 4.1 Hatch covers
 - 4.2 Watertight doors
 - 4.3 Sounding pipes and vents
 - 4.4 Offal chutes
 - 4.5 Scuppers and freeing ports

(Weight 25%)

5.2.3 KM-05-KT03: Basic Vessel Stability (25%)

Topic elements to be covered include:

- | | |
|--------|--|
| KT0301 | Theory of floatation, displacement and tonnage |
| KT0302 | Concepts related to buoyancy and freeboard |
| KT0303 | Basic principles of stability |
| KT0304 | Definitions and characteristics of position of centre of gravity |

Internal Assessment Criteria

1. Discuss the stability theory and the purpose of a stability book
2. Describe principal design features of small vessels related to stability and watertight integrity

(Weight 25%)

5.2.4 KM-05-KT04: Vessel Design, Construction and Fittings (25%)

Topic elements to be covered include:

- | | |
|--------|--|
| KT0401 | Advanced theory of vessel design and construction |
| KT0402 | Fundamentals of watertight integrity of deck openings |
| KT0403 | Mooring and anchoring procedures |
| KT0404 | Components of bilge, ballast and fire main pumping systems |
| KT0405 | Construction of rudders |

Internal Assessment Criteria

1. Discuss the principal design features of a fishing vessel
2. Discuss the process of constructing fishing vessels in relation to its design and fittings
3. Explain the importance of developing and maintaining effective planning documentation
4. Discuss how time to complete the tasks is estimated, measured and calculated
5. Explain the importance of planning for future maintenance and repair

(Weight 25%)

5.3 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
- Type approved simulation, where necessary

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 Subject

- None

5.5 Exemptions

- None

6. 315201000-KM-06, Cargo and / or Catch (Fish) Handling and Stowage, NQF Level 6, Credits 8 (Learning contract time 14 days)

6.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge of handling and stowage of all Cargo and / or Catch (Fish).

The learning will enable learners to demonstrating an understanding of:

- KM-06-KT01: Theory of Loading, Stowage, Securing and Care of Cargo and / or Catch (Fish) (25%)
- KM-06-KT02: Cargo and / or Catch (Fish) Handling Spaces and Associated Equipment Inspection (25%)
- KM-06-KT03: Requirements for Pollution Prevention and Vessel Stability (25%)
- KM-06-KT04: Procedures for Loading, Stowage, Securing and Care of Cargo and / or Catch (Fish) (25%)

6.2 Guidelines for Topic

6.2.1 KM-06-KT01: Theory of Loading, Stowage, Securing and Care of Cargo and / or Catch (Fish) (25%)

Topic elements to be covered include:

- KT0101 Fundamentals of loading and unloading of Cargo and / or Catch (Fish)
- KT0102 Stowage, securing and care of Cargo and / or Catch (Fish) procedures
- KT0103 Handling and stowage procedures for hazardous Cargo and / or Catch (Fish)
- KT0104 Communicate effectively to ensure safe Cargo and / or Catch (Fish) handling

Internal Assessment Criteria

1. Describe the following Cargo and / or Catch (Fish) handling, stowage and securing principles:
 2. Effect of Cargo and / or Catch (Fish) including heavy lifts on the seaworthiness and stability of the vessel
 3. Safe handling, stowage and securing of Cargo and / or Catch (Fish) including dangerous, hazardous and harmful Cargo and / or Catch (Fish) and their effect on the safety of life and of the vessel
 4. Establish and maintain effective communications during loading and unloading
- (Weight 25%)***

6.2.2 KM-06-KT02: Cargo and / or Catch (Fish) Handling Spaces and Associated Equipment Inspection (25%)

Topic elements to be covered include:

- KT0201 Theory of Cargo and / or Catch (Fish) space inspection for damage and defects
- KT0202 Procedures for Cargo and / or Catch (Fish) space inspection
- KT0203 Procedures for identifying and preventing corrosion

Internal Assessment Criteria

1. Explain where to look for damage and defects most commonly encountered due to:
 - 1.1 Loading and unloading operations
 - 1.2 Corrosion
 - 1.3 Severe weather conditions

2. List which parts of the vessel shall be inspected each time in order to cover all parts within a given period of time
3. Identify those elements of the ship structure which are critical to the safety of the vessel
4. List the causes of corrosion in Cargo and / or Catch (Fish) spaces and ballast tanks and how corrosion can be identified and prevented
5. Describe how the inspections shall be carried out and how to ensure reliable detection of defects and damages
6. Define the purpose of the “enhanced survey programme”

(Weight 25%)

6.2.3 KM-06-KT03: Requirements for Pollution Prevention and Vessel Stability (25%)

Topic elements to be covered include:

- | | |
|--------|--|
| KT0301 | Procedures for pollution-prevention compliance |
| KT0302 | Theory of seaworthiness of the vessel |
| KT0303 | Concepts of stability of the vessel |

Internal Assessment Criteria

1. Explain the prevention of pollution of the marine environment and antipollution procedures
2. List the precautions to be taken to prevent pollution of the marine environment
3. Describe the anti-pollution procedures and all associated equipment
4. Define the following terms
 - 4.1 Vessel stability and the application of stability
 - 4.2 Trim and stress tables
 - 4.3 Diagrams
 - 4.4 Stress-calculating equipment
5. Explain the fundamental actions to be taken in the event of partial loss of intact buoyancy
6. List the fundamentals of watertight integrity and vessel construction
7. Name the principal structure members of a vessel and the proper names for the various parts

(Weight 25%)

6.2.3 KM-06-KT04: Procedures for Loading, Stowage, Securing and Care of Cargo and / or Catch (Fish) (25%)

Topic elements to be covered include:

- | | |
|--------|---|
| KT0301 | Cargo and / or Catch (Fish) plan development including stability & trim, stresses |
| KT0302 | Procedure for Cargo and / or Catch (Fish) handling |
| KT0303 | Methods and types of Cargo and / or Catch (Fish) handling, securing and lashing equipment |
| KT0304 | International codes and regulations |
| KT0305 | Fundamentals of tanker and liquid Cargo and / or Catch (Fish) operations |
| KT0306 | Fundamentals of bulk carriers and bulk Cargo and / or Catch (Fish) operations |
| KT0307 | Effective communication with shore based personnel |
| KT0308 | Carriage and handling of dangerous goods |

Internal Assessment Criteria

1. Explain the use of stability and trim diagrams and stress-calculating equipment, including automatic data-based (ADB) equipment, and knowledge of loading Cargo and / or Catch (Fish) and ballasting in order to keep hull stress within acceptable limits

2. Describe stowage and securing of Cargo and / or Catch (Fish) on board vessels, including Cargo and / or Catch (Fish)-handling gear, securing and lashing equipment
3. Loading and unloading operations, with special regard to the transport of Cargo and / or Catch (Fish) identified in the Code of Safe Practice for Cargo and / or Catch (Fish) Stowage and Securing
4. Describe tankers and tanker operations
5. List the operational and design limitations of bulk carriers
6. Name the use of all available shipboard data related to loading, care and unloading of bulk Cargo and / or Catch (Fish)
7. Identify procedures for safe Cargo and / or Catch (Fish) handling in accordance with the provisions of the relevant instruments such as IMSBC Code, IMDG Code, MARPOL 73.78, annexes III and V and other relevant information
8. Explain the basic principles for establishing effective communications and improving working relationship between vessel and terminal personnel
9. List the limitations on strength of the vital constructional parts of a standard bulk carrier and ability to interpret given figures for bending moments and shear forces
10. Explain how to avoid the detrimental effects on bulk carriers of corrosion, fatigue and inadequate Cargo and / or Catch (Fish) handling
11. Name the International regulations, standards, codes and recommendations on the carriage of dangerous Cargo and / or Catch (Fish), including the International Maritime Dangerous Goods (IMDG) Code and the International Maritime Solid Bulk Cargo and / or Catch (Fish) (IMSBC) Code
12. Discuss the carriage of dangerous, hazardous and harmful Cargo and / or Catch (Fish); precautions during loading and unloading and care during the voyage

(Weight 25%)

6.3 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
- Type approved simulation, where necessary

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. 315201000-KM-07, Ship Power Plants, NQF Level 6, Credits 10 (Learning contract time 24 days)

7.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge subject is to equip qualifying learners with basic knowledge and understanding of ship power plants.

The learning will enable learners to demonstrating an understanding of:

KM-07-KT01: Concepts of the Design and Operation of Marine Power Plants (33%)

KM-07-KT02: Elements of Functioning and Controls of Marine Engines and Equipment (67,7%)

7.2 Guidelines for Topics

7.2.1 KM-07-KT01: Concepts of the Design and Operation of Marine Power Plants (33%)

Topic elements to be covered include:

KT0101	Marine engineering theory
KT0102	Definitions and characteristics of diesel engines
KT0103	Propellers and tail shafts principles
KT0103	Definition of fresh-water systems
KT0104	Components of pumps and pumping systems
KT0105	Fundamentals of steering Gears
KT0106	Characteristics of generators, alternators and electrical distribution
KT0107	Concepts related to air conditioning and Ventilation
KT0108	Types of sewage treatment plants and incinerators
KT0109	Components of oily-water separators and oil filtering equipment
KT0110	Fundamentals of deck machinery
KT0111	Hydraulic systems procedures

Internal Assessment Criteria

Marine engineering terms:

1. List the correct engineering terms when describing and explaining the operation of the machinery and equipment
2. Discuss the construction and operation of the following:
 - 2.1 Marine Power Plants
 - 2.2 Diesel Engines
3. Describe the 2-stroke diesel cycle
4. Define the 4-stroke diesel engine
5. List the methods of supercharging
6. Describe the fuel oil system from bunker tank to injection
7. Discuss the lube oil system
8. Define the engine cooling-water systems
9. Explain the need for gearing with medium-speed diesels
10. List the arrangement of clutch and gears
11. Define how a diesel engine is prepared for stand-by
12. List the method of starting and reversing a diesel engine
13. Discuss how the number of starts is limited by the capacity of the starting air reservoir
14. Identify the setting up, starting and stopping of a small diesel engine
15. Discuss the construction and operation of the propeller
16. Explain the arrangement of thrust shaft, intermediate shaft and tail shaft

17. Describe how propeller thrust is transmitted to the hull
18. Identify how the propeller shaft is supported between the thrust and the stern tube
19. Draw and tabulate the oil-lubricated stern-tube bearing
20. List how the propeller is secured to the tail shaft
21. Sketch a propeller labelling the boss, back, cone, rake, face and skew.
22. Define the arrangement and operation of a controllable pitch propeller (CPP).
23. Name the precautions to be taken with a CPP before:
 - 23.1 Starting the main engines
 - 23.2 Going to sea
 - 23.3 Entering harbour or enclosed waters
24. State that changing control positions and the use of emergency hand control of pitch and engine revolutions should be exercised with caution

Auxiliaries

1. Discuss the construction and operation of the Distillation and Fresh-water Systems
2. Explain the operation of a reverse osmosis water treatment system
3. Describe the treatment of fresh water for drinking
4. Define a domestic water system

Pumps and Pumping Systems

1. Classify pumps as displacement, axial-flow or centrifugal
2. Explain the operation of a reciprocating pump
3. Describe a rotary displacement pump and state a typical application
4. Identify a screw pump and state possible uses.
5. Define an axial-flow pump and state possible applications
6. Identify a centrifugal pump and state the typical applications
7. List the need to prime a centrifugal pump
8. Explain the head losses in a pumping system and how they are expressed
9. Describe a typical bilge and ballast system for a dry Cargo and / or Catch (Fish) vessel

Steering Gears

1. Identify a telemotor control system
2. How the change from remote to local control in the engine-room is made
3. Define a ram-type hydraulic steering gear
4. Describe a rotary-vane steering gear
5. Explain how hydraulic power is provided by variable delivery pumps
6. List the requirements for emergency control of the steering gear

Generators, alternators and electrical distribution

1. Define the operation of an alternator
2. List the functions of induction motors
3. Draw a navigation light circuit with indicators and alarms, showing an alternative power supply
4. Name the characteristics of lead-acid batteries and of alkaline batteries
5. Explain the maintenance of batteries
6. List the safety precautions to be observed for battery compartments
7. Outline the starting requirements for emergency generating sets
8. List the services to be supplied from the emergency generator

Air conditioning and Ventilation

1. Explain an air-conditioning plant
2. Describe a ventilation system for accommodation

Sewage treatment plants

1. Identify the operation of a chemical sewage treatment plant
2. Describe the operation of a biological sewage treatment plant

3. State the regulations regarding the discharge from sewage plants

Incinerators

1. Describe the functioning of a waste incinerator

Oily-water separators and oil filtering equipment

1. List the construction and operation of oily-water separators
2. Describe the construction and operation of oil filtering equipment
3. Explain why oily-water separators, even if well maintained and correctly operated, may not function properly
4. List the functions of an oil-content meter
5. Define an oil discharge monitoring and control system

Deck Machinery

1. State that the design and performance of anchor windlasses is subject to approval by a classification society
2. Identify an anchor windlass
3. Define a Cargo and / or Catch (Fish) winch
4. Sketch and describe a slewing deck crane, its motors and its controls
5. Explain the lubrication of deck machinery
6. Describe a spooling device to distribute the wire evenly on the drum of a mooring winch

Hydraulic Systems

1. State at least 5 characteristics of a hydraulic system (10)

(Weight 33%)

7.2.2 KM-07-KT02: Elements of Functioning and Controls of Marine Engines and Equipment (67,7%)

Topic elements to be covered include:

KT0201	Marine diesel engine theory
KT0202	Propeller theory
KT0203	Bridge control systems
KT0204	Definitions of steam turbines
KT0205	Fundamentals of auxiliary boilers
KT0206	Steering gears theory
KT0207	Characteristics of refrigeration, air conditioning and ventilation theory
KT0208	Distillation theory
KT0209	Concepts of stabilizers
KT0210	Mooring equipment and winches
KT0211	Hydraulic systems theory
KT0212	Fundamentals of fuel quality, consumption and economy

Internal Assessment Criteria

Marine engineering terms:

1. Define mass, force, work, power, energy, pressure, stress, strain and heat and state the units in which each is measured
2. Explain what is meant by the efficiency of a machine
3. Describe an indicator diagram and the information obtainable from it
4. Identify indicated power, shaft power, propeller power and thrust
5. Describe the slow-speed diesel engine
6. Methods of scavenging in 2-stroke engines
7. List the causes of scavenge fire and how they are dealt with

Propeller

1. Define pitch, slip and efficiency of a propeller

2. Calculate the percentage of apparent propeller slip from given data
3. Calculate the vessel's speed, given the engine revolutions per minute, mean pitch and percentage slip

Bridge Control

1. Describe a bridge control system for the main engine
2. Define bridge control of controllable pitch propellers
3. List the indicators and alarms provided with bridge control
4. Describe the arrangement and operation of lateral thrusters
5. Define the bridge control and indicators for lateral thrusters
6. List controllers, actuators and regulators

Steam Turbines

1. Describe the turbine, the fuel system and the boiler as a system
2. Explain the workings of an impulse turbine
3. List the workings of a reaction turbine
4. Define a steam turbine installation and its gearing
5. Identify open and closed systems
6. Name the main features of a modern water-tube boiler
7. Describe in outline the procedure for rising steam
8. List the principle boiler mountings and explain their purpose
9. Define the procedure for warming through before manoeuvring

Auxiliaries

Auxiliary Boilers

1. Distinguish between water-tube and fire-tube boilers.
2. Define auxiliary boilers
3. Describe a water-heat boiler
4. Explain exhaust-gas heat exchangers
5. Identify steam-to-steam generators and explain where and why they are used
6. Describe a boiler fuel oil supply system
7. The effect of dissolved salts in the feed water and how it is treated
8. What is meant by priming
9. Explain that carry-over of water may cause serious damage to turbine blades and steam cylinders

Steering gears

1. Describe the requirements for auxiliary steering gears and how they are met by ram-type and rotary vane steering gears
2. List the requirements for testing steering gear and for drills

Refrigeration, air conditioning and ventilation

1. Describe a vapour-compression-cycle refrigeration plant
2. Name desirable properties of a refrigerant
3. State the properties of commonly used refrigerants
4. Define the use of secondary refrigerants for cooling compartments
5. Explain the coefficient of performance of a refrigeration plant
6. Identify a ventilation system of a vessel's hold
7. Describe the monitoring systems for refrigerant Cargo and / or Catch (Fish) spaces

Distillation and Fresh-water Systems

1. Describe a distillation system
2. Explain the operation of a flash evaporator

Stabilizers

1. Explain the construction and operation of fin stabilizers
2. Describe the arrangement and operation of a flume stabilizer

Deck machinery

1. Name a windlass driving two de-clutchable cable lifters and warping drums
2. List the gearing necessary between the prime mover and the cable lifters
3. Define an arrangement that uses two mooring winches to drive windlass units
4. Explain the arrangement of vertical anchor capstans with driving machinery below decks
5. Define the working of self-tensioning winches
6. State the workings of steam, electric and hydraulic drive for mooring winches and capstan

Hydraulic systems

1. Distinguish between open and closed systems
2. Describe a live-line circuit supplied by a centralized hydraulic power system
3. Define radial-piston and axial-piston variable-stroke pumps
4. Explain how the variable-stroke pump can act as a controller and a power supply
5. Sketch a simple spool valve with shutoff and control of flow direction
6. List rotary and rotary-vane actuators
7. Describe a hydraulic accumulator and explain its purpose

Fuel consumption

1. List the Admiralty coefficient (AC)
2. Explain the fuel coefficient (FC)
3. Describe fuel consumption over a given time
4. State voyage fuel consumption
5. Given data for previous performance, calculate
 - 5.1 Daily consumption at service speed
 - 5.2 The bunker fuel required for a given voyage
 - 5.3 The speed for a given daily consumption
 - 5.4 The reduced speed required to complete a voyage with a given consumption
6. Explain that for fuel economy the actual speed at any
7. stage of a voyage should be as near as practicable to the required average speed
8. Explain how the condition of the hull affects the fuel coefficient and the fuel consumption
9. Explain that keeping the leading edges and tips of propeller blades dressed and polished improves propeller efficiency and reduces fuel consumption
10. Explain the need and advantages of different fuel grades
11. Explain the need to test fuel samples

(Weight 67%)

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
- Type approved simulation, where necessary

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. 315201000-KM-08, Personnel Management and Ship Master's Business, NQF level 6, Credits 10 (Learning contract time 21 Days)

8.1 Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to provide learners with an in-depth understanding of the effective and efficient management of vessels. This includes safe working practices.

The learning will enable learners to demonstrate an understanding of:

KM-08-KT01: Introductory Maritime Regulatory Framework (9%)

KM-08-KT02: Intermediate Maritime Regulatory Framework (9%)

KM-08-KT03: Advanced Maritime Regulatory Framework (9%)

KM-08-KT04: Fundamentals of Personnel Management (9%)

KM-08-KT05: Routine Cargo and / or Catch (Fish) Management and Ship's Command in Emergencies (9%)

KM-08-KT06: Expert Maritime Regulatory Framework (9%)

KM-08-KT07: STCW Convention (9%)

KM-08-KT08: Master's Accountability (37%)

8.2 Guidelines for Topics

8.2.1 KM-08-KT01: Introductory Maritime Regulatory Framework (9%)

Topic elements to be covered include:

KT0101 Proactive Precautions preventing Marine Environment Pollution

KT0102 Safe Working Practices

KT0103 Effective Human Relationships on Board

Internal Assessment Criteria

1. Describe:
 - 1.1 Where the Emergency Oil Spill locker is. Knows the equipment that will be found therein and what each item is for.
 - 1.2 What to do in an emergency involving an oil spill on deck or in the engine-room.
 - 1.3 The necessity of being aware at all times of preventing oils spills.
 - 1.4 That it is prohibited to throw plastics overboard anywhere in the world.
 - 1.5 Knows that there are Special areas (for the trade in which his vessel is engaged) where certain pollutants may or may not be discharged overboard.
2. List and understand the importance of maritime legislative and regulatory requirements regarding occupational health and safety
3. Discuss the role of the safety officer on board the vessel
4. List and describe the safety and protective devices available to protect against possible hazards aboard a vessel including - overalls, safety helmets, goggles, safety footwear and safety harnesses.
5. Describe the precautions to take before entering enclosed spaces including - the permit-to-work system, duties of standby man and a safe to work certificate.
6. Describe your own understanding of:
 - 6.1 Importance of maintaining good human and working relationships on board vessel
 - 6.2 Employment conditions, working hours and rest periods
 - 6.3 Individual rights and obligations in terms of the disciplinary code and grievance procedures

- 6.4 Dangers of drug and alcohol abuse in terms of their effects to health and safety of others
- 6.5 Drug and alcohol policies as applied by shipping companies.
- 6.6 Basic conditions and terms of his or her contact of employment

(Weight 9%)

8.2.2 KM-08-KT02: Intermediate Maritime Regulatory Framework (9%)

Topic elements to be covered include:

- KT0201 Pollution Emergency Procedures
- KT0202 Garbage and Waste Disposal Management
- KT0203 Emission Control Areas (designated maritime environmental zones – burning of fuels, NOx and Sox emissions)
- KT0204 Application of Safe Working Practices
- KT0205 Human Resources Management On Board Ships
- KT0206 Organise Human Resources
- KT0207 Training and Development On Board Vessels

Internal Assessment Criteria

1. Describe the shipboard contingency plan for an oil spill
2. Know the zones regarding the disposal of garbage and other waste at sea
3. List the principles of controlling subordinates and maintaining good relationships.
4. Identify the procedures related to hearings of personnel.
5. Describe in your own words how to organise staff and to allocate duties and tasks
6. Discuss the importance of familiarisation and ongoing training at sea

(Weight 9%)

8.2.3 KM-08-KT03: Advanced Maritime Regulatory Framework (9%)

Topic elements to be covered include:

- KT0301 Regulations pertaining to the shipping environment
- KT0302 Structure related to oil pollution and prevention
- KT0303 Maritime occupational safety regulation application

Internal Assessment Criteria

1. Discuss the basic legal implications of rules, regulations and codes emanating from such organisations as IMO, ILO, classification societies and government agencies.
2. Provide a brief description of emergency pollution action and duties
3. Draw a diagram to show full knowledge of the equipment in the Emergency Oil Spill Locker and how each item is used.
4. List the action steps if called upon to rapidly organise an emergency team to tackle an oil spill / pollution hazard
5. Discuss the contents of the MARPOL Convention and its relevance to your work environment

(Weight 9%)

8.2.4 KM-08-KT04: Fundamentals of Personnel Management (9%)

Topic elements to be covered include:

- KT0401 Components Human Resources Management
- KT0402 On Board Training and Development Interventions
- KT0403 Principles related to Lead, Manage and Team Building
- KT0404 Basic Concepts of Bridge/Engine-room Resource Management

Internal Assessment Criteria

1. Discuss your understanding of the:
 - 1.1 Manning requirements on board vessel;
 - 1.2 Contracts of employment between company/manning agency and crew;
 - 1.3 Crews rights and responsibilities;
 - 1.4 Principles of general industrial relations.
 - 1.5 Requirements of the IMO, ILO and ITF as they affect vessel's crews.
2. Define:
 - 2.1 Training methods;
 - 2.2 Training planning;
 - 2.3 Why training and assessment on board must be conducted, monitored, evaluated and supported by suitably trained persons
 - 2.4 The relevance of the STCW Convention to training
3. Discuss the steps involved in task and workload management, including:
 - 3.1 Planning and co-ordination
 - 3.2 Personnel assignment
 - 3.3 Time and resource constraints
 - 3.4 Prioritization
4. Describe you understanding of effective resource management in relation to:
 - 4.1 Allocation, assignment, and prioritization of resources
 - 4.2 Effective communication onboard and ashore
 - 4.3 Decisions reflect consideration of team experiences
 - 4.4 Assertiveness and leadership, including motivation
 - 4.5 Obtaining and maintaining situational awareness
5. Describe how to apply decision-making techniques:
 - 5.1 Situation and risk assessment
 - 5.2 Identify and consider generated options
 - 5.3 Selecting course of action
 - 5.4 Evaluation of outcome effectiveness
6. Describe Bridge/Engine-room resource management principles:
 - 6.1 Allocation, assignment, and prioritization of resources\
 - 6.2 Effective communication
 - 6.3 Assertiveness and leadership
 - 6.4 Obtaining and maintaining situational awareness
 - 6.5 Consideration of team experience

(Weight 9%)

8.2.5 KM-08-KT05: Routine Cargo and / or Catch (Fish) Management and Ship's Command in Emergencies (9%)

Topic elements to be covered include:

- KT0501 Components of Cargo and / or Catch (Fish) Documentation
- KT0502 Background Knowledge of Organisations Concerned with Shipping
- KT0503 Change of Command in Emergency Procedures

Internal Assessment Criteria

1. Describe:
 - 1.1 Cargo and / or Catch (Fish) documentation
 - 1.2 Mate's receipts;
 - 1.3 B/Ls;

- 1.4 Waybills;
 - 1.5 Manifests;
 - 1.6 Charter parties;
 - 1.7 Relevant international regulations and codes, e.g. The IMDG Code, the IBC Code and the IMSBC Code
2. Provide a broad description of the organisations concerned with shipping - including IMO (and their publications), BIMCO, ICS, ITF and The Baltic Exchange.
 3. Discuss the procedure required when assuming command after the death of the master or when the master is temporarily incapacitated.

(Weight 9%)

8.2.6 KM-08-KT06: Expert Maritime Regulatory Framework (9%)

Topic elements to be covered include:

- | | |
|--------|---|
| KT0601 | IMO Conventions and regulations in respect of oil pollution prevention and safety equipment |
| KT0602 | Pollution Liability Management |
| KT0603 | Full Knowledge of Maritime Occupational Safety Regulations |
| KT0604 | Strategic and Operational Management On Board |

Internal Assessment Criteria

1. Provide an overall discussion of the requirements of the SOLAS and MARPOL Conventions and the regulations concerning Lifesaving, Fire Fighting Appliances and Oil Pollution Prevention.
2. Discuss the requirements of the International Convention on Load Lines 1966, International Health Regulations and other international instruments and legislation affecting the safety of the vessel, passengers, crew and Cargo and / or Catch (Fish).
3. List the Chief Mate's or second engineer's duties (as applicable) and discuss the vessel's liability regarding pollution at sea and able to ensure that the crew are fully trained in emergency oil spill procedures and the Oil Pollution locker is fully equipped in accordance with requirements.
4. Discuss in full the contents and implications of the Maritime Occupational Safety Regulations.
5. Discuss and compare various strategies around managing personnel, commercial activities and shipboard operations at strategic level.

(Weight 9%)

8.2.7 KM-08-KT07: STCW Convention (9%)

Topic elements to be covered include:

- | | |
|--------|---|
| KT0701 | Full knowledge of the STCW Convention 1978 as amended |
|--------|---|

Internal Assessment Criteria

1. Discuss the STCW Convention and its impact on the maritime industry
2. Explain the role required of governments, owners, operators and training institutions - and full understanding of the role required of, seafarers and training officers.
3. Discuss how the code affects training requirements on board.

(Weight 9%)

8.2.8 KM-08-KT08: Master's Accountability (37%)

Topic elements to be covered include:

- | | |
|--------|--|
| KT0801 | Command of a Vessel on Unlimited Voyages |
|--------|--|

KT0802	Relationship to Pilot
KT0803	Official log book and law relating to entries
KT0804	Maritime Labour Relations Management
KT0805	Customs Procedure
KT0806	Legalities of Seaworthiness
KT0807	Safety of the vessel and assistance to other vessels in distress
KT0808	Law relating to navigation, marine casualties, marine enquiries, territorial waters.
KT0809	In-depth Knowledge of Organisations Connected with Shipping
KT0810	Monitor and control compliance with legislation to ensure protection of the marine environment
KT0811	Vessel Traffic Services
KT0812	Commercial Shipping Practice
KT0813	Marine Insurance, Procedures and Associated Surveys

Internal Assessment Criteria

1. Discuss in detail the action to be taken on assuming command
2. List the certificates and other documents required to be carried on board vessels; their use, legal significance how they may be obtained, period of validity
3. Describe the handover of command requirements
4. Discuss the relationship between master and pilot.
5. Provide your understanding of:
 - 5.1 Official log book and the law relating to entries.
 - 5.2 Offences relating to misconduct, endangering the vessel and against persons onboard.
 - 5.3 Chapter 4 of the Merchant Shipping Act (engagements, discharges, etc.).
6. Provide an overview of your understanding of:
 - 6.1 Civil liability for certain offences.
 - 6.2 The operation and functions of the International Labour Organisation (ILO) and International Transport Federation (ITF). ITF Blue Cards.
 - 6.3 Conduct meetings as chairman.
 - 6.4 Co-ordination of an Operational plan and the evaluation of such a plan.
7. Discuss the:
 - 7.1 Custom House procedure for entering and clearing ships;
 - 7.2 Role of ship's agents.
8. Provide a discussion on your understanding of the:
 - 8.1 The term Seaworthiness and the term Sub-standard vessel
 - 8.2 Implications of Port State Inspections and the responsibility of the master.
9. List:
 - 9.1 The duties and obligations of the master in respect of safety of the vessel, crew and passengers.
 - 9.2 Assistance protocol to vessels in distress
 - 9.3 Stranding, collision, casualty, towage, salvage, Lloyds Standard Form of Salvage Agreement, roles of the SCR, the meaning of SCOPIC, and discuss the legal implications thereof.
10. Describe the relevance of each of the following in the Maritime Industry:
 - 10.1 The law relating to navigation including the prevention of collisions;
 - 10.2 The requirements to report dangers to navigation;
 - 10.3 The use of Maritime Safety information;
 - 10.4 The requirements to report maritime casualties;
 - 10.5 Powers of courts of marine enquiry and courts of survey

- 10.6 Powers of an officer appointed to conduct a preliminary enquiry.
- 11. Define the terms and its use in the law of the Sea Convention:
 - 11.1 Territorial waters;
 - 11.2 Internal waters;
 - 11.3 Right of innocent passage;
 - 11.4 International straits;
 - 11.5 Exclusive economic zones;
 - 11.6 Continental shelf; and
 - 11.7 High seas
- 12. Describe your understanding of:
 - 12.1 Organisations concerned with shipping, including IMO (and their publications), ILO, BIMCO, International Salvage Union ICS, ITF and the Baltic Exchange
 - 12.2 Safety conventions, national legislation
 - 12.3 The implementation of conventions
 - 12.4 Classification societies and their significance
 - 12.5 The ISM Code
 - 12.6 The ISPS Code
- 13. List:
 - 13.1 The Master's duties and vessel's liability regarding pollution at sea
 - 13.2 What records are to be maintained on board ship and the emergency action and response to an oil spill / pollution emergency
- 14. Explain Vessel Traffic Services and Mandatory - and Voluntary Ship Reporting Systems
- 15. Define:
 - 15.1 Shipping practice and documents;
 - 15.2 The general principles of the law of contract;
 - 15.3 Charter parties;
 - 15.4 Bills of lading including waybills;
 - 15.5 The clauses in a contract of affreightments;
 - 15.6 The terms, lay-days, demurrage and despatch;
 - 15.7 The vessel owner's liabilities and responsibilities in a contract of affreightment;
 - 15.8 The master as owners/charterers agent;
 - 15.9 Protest
 - 15.10 Cargo and / or Catch (Fish) surveys
- 16. Outline knowledge of expressed and implied conditions and statutory terms in a contract of marine insurance
- 17. Define:
 - 17.1 Particular and general average
 - 17.2 The procedure at a port of refuge
 - 17.3 The functions and necessity of P&I clubs
 - 17.4 The functions of hull and machinery underwriters;
 - 17.5 The reasons for and principals of
 - 17.5.1 Owners/charter surveys
 - 17.5.2 On hire/off hire

(Weight 37%)

8.3 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
- Type approved simulation, where necessary

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. 315201000-KM-09, Personnel Management and Ship Master's Business (Fishing), NQF level 5 (Credits: 8) (Learning contract time 10 Days)

9.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge module is to provide learners with an in-depth understanding of the effective and efficient management of vessels in the fishing industry.

The learning will enable learners to demonstrate an understanding of:

KM-09-KT01:	Introductory Maritime Regulatory Framework (12.5%)
KM-09-KT02:	Intermediate Maritime Regulatory Framework (12.5%)
KM-09-KT03:	Advanced Maritime Regulatory Framework (12.5%)
KM-09-KT04:	Fundamentals of Personnel Management (12.5%)
KM-09-KT05:	Expert Maritime Regulatory Framework (12.5%)
KM-09-KT06:	Master's Accountability (37.5%)

9.2 Guidelines for Topics

9.2.1 KM-09-KT01: Introductory Maritime Regulatory Framework (12.5%)

Topic elements to be covered include:

KT0201	Proactive precautions preventing Marine Environment Pollution
KT0202	Safe Working Practices
KT0103	Policies and Procedures related to Effective Human Relationship on Board

Internal Assessment Criteria

1. Explain:
 - 1.1 What to do in an emergency involving an oil spill on deck or in the engine-room;
 - 1.2 The necessity of being aware at all times of preventing oils spills;
 - 1.3 That it is prohibited to throw plastics overboard anywhere in the world;
 - 1.4 That there are special areas (for the trade in which his/her vessel is engaged) where certain pollutants may or may not be discharged overboard.
(Candidates will only be required to know that pollution regulations apply to vessels)
2. List and understand the importance of maritime legislative and regulatory requirements regarding occupational health and safety for fishermen
3. Discuss the role of the safety officer on board the vessel
4. List and describe the safety and protective devices available to protect against possible hazards aboard a vessel including - overalls, safety helmets, goggles, safety footwear and safety harnesses.
5. Describe the precautions to take before entering enclosed spaces including - the permit-to-work system, duties of standby man and a safe to work certificate.
6. Describe your own understanding of:
 - 6.1 Importance of maintaining good human and working relationships on board ship
 - 6.2 Employment conditions, working hours and rest periods
 - 6.3 Individual rights and obligations in terms of the disciplinary code and grievance procedures
 - 6.4 Dangers of drug and alcohol abuse in terms of their effects to health and safety of others
 - 6.5 Drug and alcohol policies as applied by shipping companies.
 - 6.6 Basic conditions and terms of his or her contact of employment

(Weight 12.5%)

9.2.2 KM-09-KT02: Intermediate Maritime Regulatory Framework (12.5%)

Topic elements to be covered include:

KT0201	Pollution Emergency Procedures
KT0202	Garbage and Waste Disposal Management
KT0203	Emission Control Areas (designated maritime environmental zones – burning of fuels, NOx and Sox emissions)
KT0204	Application of Safe Working Practices
KT0205	Human Resources Management On Board Ships
KT0206	Organise Human Resources
KT0207	Training and Development On Board Ships

Internal Assessment Criteria

1. Describe:
 - 1.1 The shipboard contingency plan for an oil spill
 - 1.2 Where the emergency oil spill locker is
 - 1.3 The equipment that will be found therein and what each item is for
2. Know the zones regarding the disposal of garbage and other waste at sea
3. Describe in your own words the importance of:
 - 3.1 The Maritime Occupational Health and Safety Regulations and associated Code of Safe Working Practices for Fishermen
 - 3.2 Effective liaison with the vessel's Safety Officer.
 - 3.3 The duty of the master and ship's officers to ensure that all work on board is performed to a high standard of occupational safety
4. List the principles of controlling subordinates and maintaining good relationships
5. Identify and discuss the procedures related to hearings of personnel
6. Describe in your own words how to organise staff and to allocate duties and tasks
7. Discuss the importance of familiarisation and ongoing training at sea
8. Identify what procedure is required when assuming command after the death of the master or when the master is temporarily incapacitated

(Weight 12.5%)

9.2.3 KM-09-KT03: Advanced Maritime Regulatory Framework (12.5%)

Topic elements to be covered include:

KT0301	Shipping Environment
KT0302	Oil Pollution and Prevention Structure
KT0303	Maritime Occupational Safety Regulation Application

Internal Assessment Criteria

1. Discuss the basic legal implications of rules, regulations and codes emanating from such organisations as IMO, ILO, classification societies and government agencies
2. Provide a brief description of emergency pollution action and duties
3. Draw a diagram to show full knowledge of the equipment in the Emergency Oil Spill Locker and how each item is used
4. List the action steps if called upon to rapidly organise an emergency team to tackle an oil spill / pollution hazard
5. Discuss the contents of the MARPOL Convention and its relevance to your work environment

(Weight 12.5%)

9.2.4 KM-09-KT04: Fundamentals of Personnel Management (12.5%)

Topic elements to be covered include:

- KT0401 Components Human Resources Management
- KT0402 On Board Training and Development

Internal Assessment Criteria

1. Discuss your understanding of the:
 - 1.1 Manning requirements on board vessel
 - 1.2 Contracts of employment between company/manning agency and crew;
 - 1.3 Crews rights and responsibilities
 - 1.4 Principles of general industrial relations.
 - 1.5 Effects of local labour legislation on the vessel's crews
2. Define:
 - 2.1 Training methods
 - 2.2 Training planning
 - 2.3 Why training and assessment on board must be conducted, monitored, evaluated and supported by suitably trained persons
 - 2.4 The relevance of the STCW-F Conventions to training

(Weight 12.5%)

9.2.5 KM-09-KT05: Expert Maritime Regulatory Framework (12.5%)

Topic elements to be covered include:

- KT0501 IMO Conventions and regulations in respect of oil pollution prevention and safety equipment
- KT0502 Pollution Liability Management
- KT0503 Full Knowledge of Maritime Occupational Safety Regulations

Internal Assessment Criteria

1. Provide an overall discussion of the requirements of the SOLAS and Marpol Conventions and the regulations concerning Lifesaving, Fire Fighting Appliances and Oil Pollution Prevention
2. List the Chief Mate's or second engineer's duties (as applicable) and discuss the vessel's liability regarding pollution at sea and able to ensure that the crew are fully trained in emergency oil spill procedures and the Oil Pollution locker is fully equipped in accordance with requirements

(Weight 12.5%)

9.2.6 KM-09-KT06: Master's Accountability (37.5%)

Topic elements to be covered include:

- KT0601 Command of a Vessel on Unlimited Voyages
- KT0602 Relationship to Pilot
- KT0603 Official log book and law relating to entries
- KT0604 Maritime Labour Relations Management
- KT0605 Customs Procedure
- KT0606 Legalities of Seaworthiness
- KT0607 Safety of the vessel and assistance to other vessels in distress
- KT0608 Law relating to navigation, marine casualties, marine enquiries, territorial waters.
- KT0609 In-depth Knowledge of Organisations Connected with Shipping

- KT0610 Monitor and control compliance with legislation to ensure protection of the marine environment
- KT0611 Vessel Traffic Services
- KT0612 Foreign ports
(Note: This is only applicable to candidates for the Unlimited Waters Command Endorsement.)

Internal Assessment Criteria

1. Discuss in detail the action to be taken on assuming command
2. List the certificates and other documents required to be carried on board vessels; their use, legal significance how they may be obtained, period of validity
3. Describe the handover of command requirements
4. Discuss the relationship between master and pilot
5. Provide your understanding of:
 - 5.1 Official log book and the law relating to entries
 - 5.2 Offences relating to misconduct, endangering the vessel and against persons onboard
 - 5.3 Chapter 4 of the Merchant Shipping Act (engagements, discharges, etc.)
6. Provide an overview of your understanding of:
 - 6.1 Civil liability for certain offences
 - 6.2 Procedures for chairing meetings
7. Discuss the:
 - 7.1 Custom House procedure for entering and clearing vessels;
 - 7.2 Role of ship's agents.
8. Provide a discussion on your understanding of the:
 - 8.1 The term Seaworthiness and the term Sub-standard vessel
 - 8.2 Implications of Port State Inspections and the responsibility of the master
9. List:
 - 9.1 The duties and obligations of the master in respect of safety of the vessel, crew and passengers
 - 9.2 Assistance protocol to vessels in distress
 - 9.3 Stranding, collision, casualty, towage, salvage, Lloyds Standard Form of Salvage Agreement, and discuss the legal implications thereof
10. Describe the relevance of each of the following in the Maritime Industry:
 - 10.1 The law relating to navigation including the prevention of collisions
 - 10.2 The requirements to report dangers to navigation
 - 10.3 The use of Maritime Safety information
 - 10.4 The requirements to report maritime casualties
11. Define the terms and its use in the law of the Sea Convention:
 - 11.1 Territorial waters
 - 11.2 Internal waters
 - 11.3 Right of innocent passage
 - 11.4 International straits
 - 11.5 Exclusive economic zones
 - 11.6 Continental shelf and
 - 11.7 High seas
12. Describe your understanding of:
 - 12.1 Organisations concerned with shipping, including IMO and SAMSA
 - 12.2 Safety conventions, national legislation
13. List:

- 13.1 The Master's duties and vessel's liability regarding pollution at sea
- 13.2 What records are to be maintained on board vessel and the emergency action and response to an oil spill / pollution emergency
- 14. Explain Vessel Traffic Services
- 15. Define Foreign Ports

(Weight 37.5%)

9.3 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
- Type approved simulation, where necessary

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. 315201000-KM-10, Marine Environmental Studies, NQF Level 6, Credits 10
(Learning contract time 24 days)**

10.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge and understanding of marine and environmental issues.

The learning will enable learners to demonstrate an understanding of:

- KM-10-KT01: Shipboard Meteorological instruments and Weather Forecasting (17%)
- KM-10-KT02: Weather Routing (16%)
- KM-10-KT03: The Atmosphere and Meteorological Theory (25%)
- KM-10-KT04: Advanced Meteorology and Weather Systems, (17%)
- KM-10-KT05: Advanced Forecasting and Oceanography (25%)

10.2 Guidelines for Topics

**10.2.1 KM-10-KT01: Shipboard Meteorological Instruments and Weather Forecasting
(17%)**

Topic elements to be covered include:

- KT0101 Fundamentals of shipboard meteorological instruments
- KT0102 Basic theory of weather systems
- KT0103 Principles of forecasting

Internal Assessment Criteria

1. Describe the following concepts:
 - 1.1 Basic principles of a mercurial barometer
 - 1.2 Basic principles of an aneroid barometer
 - 1.3 Function of a hygrometer
 - 1.4 Basic principles of wind sensors
2. Record the following:
 - 2.1 Ordinary readings of wind speed
 - 2.2 The atmospheric pressure from an aneroid barometer.
 - 2.3 The temperature from a thermometer (wet and dry bulb)
3. Define wind
4. Describe the:
 - 4.1 Beaufort scale of wind force
 - 4.2 Method of estimating the strength of the wind from the appearance of the sea surface
 - 4.3 Method of estimating the wind direction from the appearance of the sea surface and demonstrates an ability to use the Beaufort scale to estimate the strength of the wind and its direction from the appearance of the sea
 - 4.4 Precipitation, rain, drizzle, hail, snow and sleet
 - 4.5 Fog, mist and haze and states that visibility is reduced by the presence of particles in the atmosphere, near the earth's surface.
 - 4.6 Methods of estimating the visibility at sea by day and by night, and the difficulties involved
5. List and describe the ten basic cloud types
6. Explain:
 - 6.1 The stages in the life cycle of a polar front depression in the southern hemisphere and the usual movement of the front

- 6.2 With the aid of a diagram, the weather experienced during the passage of a cold front in the southern hemisphere
- 6.3 A family of depressions
- 7. Define the following concepts:
 - 7.1 Currents and seasonal weather patterns on the South African coast
 - 7.2 The formation and occurrence of abnormal waves on the eastern seaboard of South Africa
 - 7.3 The local winds and their causes
- 8. State:
 - 8.1 The sources of weather information available to local shipping
 - 8.2 The appropriate local weather bulletins and their contents
 - 8.3 Services provided for local storm warnings

(Weight 17%)

10.2.2 KM-10-KT02: Weather Routeing (16%)

Topic elements to be covered include:

KT0201	Basic meteorological theory
KT0202	Shipboard Meteorological observations and coding
KT0203	Sources of meteorological information
KT0204	Fundamentals of Tropical revolving storms
KT0205	Weather routeing for ocean and coastal passages

Internal Assessment Criteria

- 1. Describe:
 - 1.1 The characteristics and location of the doldrums, inter-tropical convergence zone, trade winds, sub-tropical oceanic highs, westerlies and polar easterlies
 - 1.2 A monsoon regime and states the areas which experience a true monsoon regime
- 2. State:
 - 2.1 The regions of occurrence of anabatic and katabatic winds
 - 2.2 Examples of local winds
- 3. Explain:
 - 3.1 The organisation, functions and objectives of the World Meteorological Organisation
 - 3.2 The sources of weather information available to shipping
 - 3.3 Information flow between merchant vessels and meteorological offices
 - 3.4 Services provided for shipping by meteorological offices including the types of services provided by facsimile machine
 - 3.5 Appropriate weather bulletin and the contents of each of its sections
 - 3.6 Services provided for storm warnings
- 4. Name the areas and seasons in which:
 - 4.1 Strong winds at sea are experienced most often
 - 4.2 A high incidence of sea fog can be expected
- 5. Define:
 - 5.1 Typical weather signs of the approach of a tropical storm
 - 5.2 Area and times where tropical storms frequently occur
- 6. Describe:
 - 6.1 The pattern of a tropical revolving storm
 - 6.2 The behaviour of tropical revolving storms in individual areas and individual pressure conditions
 - 6.3 The practical manoeuvring rules for avoiding the centre of a tropical revolving storm

- 6.4 With the aid of a figure the most probable track of a tropical storm in various ocean areas
- 7 Explain:
 - 7.1 Use the Ship's Code and Decode Book to code and decode a vessel's full report and a reduced report from a shore station
 - 7.2 Interpret a vessel or shore station plot
- 8. Passage is planned in accordance with the fundamentals of weather routeing
(Weight 16%)

10.2.3 KM-10-KT03: The Atmosphere and Meteorological Theory (17%)

Topic elements to be covered include:

KT0301	Fundamentals of atmospheric pressure
KT0302	Characteristics of the atmosphere
KT0303	Fundamentals of solar influences on the atmosphere
KT0304	Theory of winds, clouds and precipitation
KT0305	Definitions of fog and visibility
KT0306	Theory of air masses and depressions
KT0307	Characteristics of local, regional, ocean wind and pressure systems
KT0308	Anticyclones and high pressure systems
KT0309	Advanced forecasting and coding

Internal Assessment Criteria

1. Explain the following theory:
 - 1.1 Pressure equals force per unit area
 - 1.2 The atmosphere exerts a pressure on any surface placed within it and that it acts in all directions
 - 1.3 The atmospheric pressure on a unit of a surface is equal to the weight of the air column extending from that surface to the outer fringes of the atmosphere
 - 1.4 The surface pressure rises if air is added to the column above the surface, and vice versa
2. Identify the following:
 - 2.1 Atmospheric pressure decreases with the height above sea level
 - 2.2 The basic unit of pressure is N/m² and that 1 millibar = 10⁻³ bar = 105 N/m²
 - 2.3 The atmospheric pressure at sea level normally varies about 940 mbar and 1 050 mbar and that the average pressure at sea level is 1 013.2 mbar
3. Define:
 - 3.1 Troposphere, tropopause, stratosphere, stratopause, mesosphere, mesopause and thermosphere
 - 3.2 Water vapour, evaporation, condensation, latent heat of vaporisation and saturated air
 - 3.3 Dew point, absolute humidity, relative humidity and vapour pressure
4. Explain:
 - 4.1 Composition of the earth's atmosphere, mentioning dry air and its constituents, water vapour and aerosols
 - 4.2 Main features of the troposphere
 - 4.3 Nature of solar radiation (scattering, reflection and absorption)
 - 4.4 Properties of water vapour in the atmosphere
 - 4.5 Processes of mixing, cooling and the evaporation of water vapour, by which a sample of air may be brought to saturation
5. List the following:

- 5.1 Importance of the sun as the principal energy source for atmospheric processes
- 5.2 Effect on insulation of a variation in latitude
- 5.3 Effect on insulation of a variation in the sun's declination
- 5.4 Effect on insulation of a variation in the length of daylight
6. Illustrate a typical vertical temperature profile through the lower 100km of the earth's atmosphere
7. Define:
 - 7.1 Buys-Ballot's Law
 - 7.2 The factors, other than the wind speed, which affect the appearance of the sea surface
8. State:
 - 8.1 Qualitatively the pressure gradient force
 - 8.2 Qualitatively the Coriolis (geostrophic) force
 - 8.3 The surface wind circulation around high and low pressure centres
9. Define the following:
 - 9.1 Insert surface wind directions on a map showing pressure distribution and indicate relative wind speeds at various places within the pressure field
 - 9.2 Differentiates between apparent and true wind
 - 9.3 Determine the true wind velocity by using a vector diagram, given the apparent wind and the vessel's course and speed
10. Explain that clouds form when air containing water vapour rises, cools adiabatically and becomes saturated
11. Describe:
 - 11.1 The need for and defines condensation nuclei
 - 11.2 That a cloud can consist of ice crystals, super cooled water droplets, or any combination of these
 - 11.3 The reason for different base heights of the ten principal cloud types
12. Explain qualitatively the:
 - 12.1 Formation of radiation fog, mentioning areas, seasons and reasons for its dispersal and the effect of pollution on its formation
 - 12.2 Formation of advection fog, mentioning areas, seasons and reasons for dispersal
 - 12.3 Conditions leading to the formation of sea smoke, and typical areas where sea smoke may be encountered
13. Discuss the concept of processes leading to super saturation to a classification of fogs as mixing, cooling or evaporation fogs
14. Define air mass, source region, depression, warm and cold fronts
15. List the formation of an air mass
16. State:
 - 16.1 The characteristics required of a source of region
 - 16.2 The source region characteristic of arctic, polar, tropical and equatorial air mass types
 - 16.3 The stages in the life cycle of a polar front depression and the usual movement of the front
 - 16.4 With the aid of a diagram, the weather experienced during the passage of an idealised warm and cold front
 - 16.5 A family of depressions
 - 16.6 The occlusion of a polar front depression
 - 16.7 The weather associated with the passage of a trough
17. Name the symbols for warm and cold fronts and identifies them on a weather map

18. Discuss previous concepts to an explanation of the weather changes experienced when a frontal depression passes with its centre on the:
 - 18.1 poleward side of an observer in the northern hemisphere and in the southern hemisphere
 - 18.2 equatorial side of an observer in the northern hemisphere and in the southern hemisphere
19. Explain:
 - 19.1 Previous concepts to a qualitative explanation of the:
 - 19.1.1 Causes of monsoon regimes
 - 19.1.2 Weather associated with the January and July monsoons of the Indian Ocean, China Sea, north coast of Australia and west coast of Africa
 - 19.2 The concept of horizontal temperature differences to a qualitative explanation of the formation of land and sea breezes
20. State:
 - 20.1 Qualitatively the monsoon type weather along the north east coast of Brazil
 - 20.2 The formation of anabatic and katabatic winds
21. List anticyclone, a ridge of high pressure and a col
22. Describe:
 - 22.1 The weather associated with anticyclones
 - 22.2 A typical weather sequence during the passage of a ridge between depressions across the observer's position
 - 22.3 The weather associated with a col
23. Explain:
 - 23.1 The need for meteorological codes
 - 23.2 How weather observations on a vessel can be used to improve the forecast derived from synoptic and prognostic charts
24. List the following:
 - 24.1 Use the Ship's Code and Decode Book to code and decode a vessel's full report and a reduced report from a shore station
 - 24.2 Use the Beaufort letter abbreviations for present and past weather and total cloud amount
 - 24.3 Interpret a vessel or shore station plot
 - 24.4 Apply previous concepts to the interpretation of symbols and isobaric patterns on weather charts and facsimile charts
 - 24.5 Apply previous concepts to the interpretation of synoptic and prognostic charts to ascertain wind directions, areas of strong winds, cloud and precipitation areas, fog areas, ice and areas of fine weather

(Weight 25%)

10.2.4 KM-10-KT04: Advanced Meteorology and Weather Systems (17%)

Topic elements to be covered include:

- | | |
|--------|---|
| KT0401 | Theory of oceanography and effects on climate |
| KT0402 | Advanced meteorological theory |
| KT0403 | Characteristics of temperature, humidity and effects on climate |
| KT0404 | Advanced theory of tropical revolving storms |

Internal Assessment Criteria

1. Describe the:
 - 1.1 Area, volume and distribution of the oceans and their importance to meteorology
 - 1.2 Bottom topography and characteristics of sea water

2. Explain the effects of pollution on the marine environment
3. Define:
 - 3.1 Lapse rate and adiabatic change
 - 3.2 Stable air, unstable air and conditionally unstable air
 - 3.3 Pressure gradient and shows how the magnitude of the gradient influences wind speed
 - 3.4 Pressure tendency and isallobars
 - 3.5 Gradient and cyclostrophic winds
 - 3.6 Geostrophic wind
4. Explain:
 - 4.1 Diurnal variation of temperature, relative humidity and pressure
 - 4.2 Temperature variation with height
 - 4.3 The vertical uplift of air, by local heating, aerographic uplift, turbulence and convergence
 - 4.4 How lapse rate and condensation level determine the formation of clouds and cloud types
5. State:
 - 5.1 What is meant by the environment lapse rate
 - 5.2 The effect of the change of pressure with height on the temperature of a rising parcel of air
 - 5.3 Dry and saturated adiabatic lapse rates and states the conditions under which each applies
 - 5.4 The effect of a temperature inversion on the vertical movement of air
 - 5.5 The effect of friction on wind direction and speed
6. List the areas and seasons in which:
 - 6.1 Strong winds at sea are experienced most often
 - 6.2 A high incidence of sea fog can be expected
7. Describe:
 - 7.1 The general distribution of sea surface temperatures over the oceans.
 - 7.2 How surface currents have a marked effect on the temperature distribution
 - 7.3 In general terms the pattern of cloud and rainfall over the oceans.
8. Identify:
 - 8.1 The atmospheric conditions necessary for a tropical storm to develop
 - 8.2 Changes in the weather along the track as the storm approaches, during passing and as it goes away
 - 8.3 The pattern of a tropical revolving storm
 - 8.4 The behaviour of tropical revolving storms in individual areas and individual pressure conditions
 - 8.5 The practical manoeuvring rules for avoiding the centre of a tropical revolving storm
 - 8.6 The aid of a figure the most probable track of a tropical storm in various ocean areas
 - 8.7 Interpret a prognostic chart of the area weather
9. Identify the regulations given in SOLAS regarding reporting a tropical revolving storm
10. State the:
 - 10.1 Importance of an early warning of a tropical storm
 - 10.2 Actions to be taken to avoid the storm centre and its vicinity
11. List the information which should be included in a report of a tropical storm

(Weight 17%)

10.2.5 KM-10-KT05: Advanced Forecasting and Oceanography (25%)

Topic elements to be covered include:

KT0501	Theory on upper atmosphere movement and its effects
KT0502	Observations and conclusions from synoptic charts
KT0503	Characteristics of ocean currents
KT0504	Principles of Sea waves
KT0505	Fundamentals of Ice
KT0506	Weather information for voyage planning

Internal Assessment Criteria

1. Describe the:
 - 1.1 Formation of the polar front and subtropical jet streams.
 - 1.2 Development of a mid-latitude depression (Cyclogenesis)
 - 1.3 Vertical structures of deep pressure systems
2. List the jet streams
3. Explain:
 - 3.1 Angular momentum with reference to wind
 - 3.2 The polar front theory (Norwegian model)
 - 3.3 Upper level convergence and divergence
 - 3.4 Defines baroclinic and barotropic
 - 3.5 States the necessary ingredients for a developing wave cyclone
4. Identify the following:
 - 4.1 A cold front, a warm front and an occlusion on a synoptic chart
 - 4.2 The air masses on a weather chart
 - 4.3 Areas of maximum waves
5. Identify the codes on a synoptic chart
6. Calculate the estimate:
 - 6.1 The probable track directions of the various air masses
 - 6.2 Wind directions from the isobars on the weather chart
 - 6.3 Expected area of precipitation or fog
 - 6.4 Expected area of icing
- 7 Calculate the wind force from the isobars on the weather chart
- 8 Demonstrate an analysis of a synoptic chart as a whole
- 9 Forecast area weather from a synoptic chart as a whole
- 10 Interpret a prognostic chart of area weather
- 11 Explain the:
 - 11.1 Interrelation between global wind systems and the current systems of the oceans
 - 11.2 Main causes of ocean currents, wind drift currents and gradient currents
 - 11.3 Effect of evaporating and the effect of a wind blowing over a coastline and how these effects influence the current
 - 11.4 Characteristics of ocean currents
 - 11.5 Reason for tidal currents and shows in which areas they are predominant
 - 11.6 Various methods of charting the currents
 - 11.7 Demonstrates the use of information sources on currents
12. Describe:
 - 12.1 How to observe ocean currents
 - 12.2 The current system of the Atlantic, Indian and Pacific Ocean
13. Define the speed, length, period, height and significant height formation of a wave
- 14 Explain:

- 14.1 The formation of waves
- 14.2 Why waves travel in groups and describes the variation in wave height within a group
- 14.3 How the decreasing depth in shallow water causes an increasing wave height and eventually breaking waves
- 14.4 Wave refraction in shallow water and the convergence of waves that occurs over a submarine ridge and their divergence over a submarine valley
- 14.4.3 Distinguishes between waves and swell
- 15. State:
 - 15.1 The relationship between the length, speed and period of simple waves
 - 15.2 How duration and fetch influence the significant wave height
 - 15.3 The danger of sailing in convergence areas and in shallow water in heavy weather
- 16. Identify:
 - 16.1 Areas where fast ice is expected
 - 16.2 The normal signs of being in an iceberg area
 - 16.3 Able to show on a plotting chart the limits and movements of pack ice and icebergs in the Arctic and Antarctic icebergs
 - 16.4 Explains the danger of sailing in ice and iceberg areas
 - 16.5 Lists the information sources regarding occurrence of ice and iceberg
 - 16.6 Describes the conditions in which accumulation of ice on vessels occurs
- 17. Explain the following:
 - 17.1 Use the information of current, prevailing wind, ice, etc to select an optimum route
 - 17.2 Analyse weather predictions:
 - 17.2.1 Wave charts to select the best route
 - 17.2.2 Warnings of tropical storms, to evaluate possible deviation from the planned route
 - 17.2.3 Describe the weather routeing services available to shipping

(Weight 25%)

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
- Type approved simulation, where necessary

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

**11. 315201000-KM-11, Ship Manoeuvring and Handling, NQF Level 6, Credits 3
(Learning contract time 8 days)**

11.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge to manoeuvre and handle a vessel in all conditions.

The learning will enable learners to demonstrate an understanding of:

KM-11-KT01: Fundamentals of Ship Manoeuvring (50%)

KM-11-KT02: Advanced Ship Handling in all Conditions (50%)

11.2 Guidelines for Topics

11.2.1 KM-11-KT01: Fundamentals of Ship Manoeuvring (50%)

Topic elements to be covered include:

KT0101	Factors affecting ship handling
KT0102	Procedures for the rescue of persons in distress
KT0103	Vessel interaction effects
KT0104	Fundamentals for anchoring and mooring
KT0105	Fundamentals of berthing and unberthing

Internal Assessment Criteria

1. Explain the following fundamentals:
 - 1.1 The effects of a single and twin propeller(s) on the turning circle of a vessel
 - 1.2 The effects of deadweight, draught, trim, speed and under-keel clearance on turning circles and stopping distances
 - 1.3 The effects of wind and current on ship handling
 - 1.4 Manoeuvres and procedures for the rescue of persons in distress and man overboard
 - 1.5 Squat, shallow-water, interaction between vessels, bank effect and similar effects
 - 1.6 Proper procedures for anchoring and mooring
 - 1.7 Basic manoeuvres and duties during berthing and unberthing and the use of the various mooring ropes when alongside

(Weight 50%)

11.2.2 KM-11-KT02: Advanced Ship Handling in all Conditions (50%)

Topic elements to be covered include:

KT0201	Ship handling in restricted waters
KT0202	Advanced interaction effects
KT0203	Advanced principles of berthing and unberthing
KT0204	Propulsion and manoeuvring systems
KT0205	Advanced principles of anchoring
KT0206	Principles of dry-docking
KT0207	Ship handling in heavy weather conditions
KT0208	Procedures for taking on board survivors
KT0209	Manoeuvring characteristics of vessels
KT0210	Ship handling in congested waters
KT0211	Ship handling in/or near ice
KT0212	Ship handling in traffic separation schemes

Internal Assessment Criteria

1. Explain manoeuvring and handling a vessel in all conditions, including:
 - 1.1 Manoeuvres when approaching pilot stations and embarking or disembarking pilots, with due regard to weather, tide, head reach and stopping distances
 - 1.2 Handling vessel in rivers, estuaries and restricted waters, having regard to the effect of current, wind and restricted water on helm response
 - 1.3 Application of constant rate of turn techniques
 - 1.4 Manoeuvring in shallow water, including the reduction in under keel clearance caused by squat, rolling and pitching
 - 1.5 Interaction between passing vessels and between own vessel and nearby banks (bank effect)
 - 1.6 Berthing and unberthing under various conditions of wind, tide and current with and without tugs
 - 1.7 Vessel and tug interaction
 - 1.8 Use of propulsion and manoeuvring systems
 - 1.9 Choice of anchorage; anchoring with one or two anchors in limited anchorages and factors involved in determining the length of anchor cable to be used
 - 1.10 Dragging anchor; clearing fouled anchors
 - 1.11 Dry-docking, both with and without damage
 - 1.12 Management and handling of vessels in heavy weather, including assisting a vessel or aircraft in distress; towing operations; means of keeping an unmanageable vessel out of trough of the sea, lessening drift and use of oil
 - 1.13 Precautions in manoeuvring to launch rescue boats or survival craft in bad weather
 - 1.14 Methods of taking on board survivors from rescue boats and survival craft
 - 1.15 Ability to determine the manoeuvring and propulsion characteristics of common types of vessels with special reference to stopping distances and turning circles at various draughts and speeds
 - 1.16 Importance of navigating at reduced speed to avoid damage caused by own vessel's bow wave and stern wave
 - 1.17 Practical measures to be taken when navigating in or near ice or in conditions of ice accumulation on board
 - 1.18 Use of and manoeuvring in and near, traffic separation schemes and in vessel traffic service (VTS) areas

(Weight 50%)

11.3 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
- Type approved simulation, where necessary

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

11.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

11.5 Exemptions

- None

12. 315201000-KM-12, Emergency Procedures, NQF level 6 (Credits: 3) (Learning contract time 2 Days)

12.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge module is to build an understanding of the various emergencies which may occur.

The learning will enable learners to demonstrate an understanding of:

KM-12-KT01: Emergencies and Distress Signals at Sea, and in Port. (50%)

KM-12-KT02: Advanced Concepts on Emergencies at Sea and in Port (25%)

KM-12-KT03: Search and Rescue Operations (25%)

12.2 Guidelines for Topics

12.2.1 KM-12-KT01: Emergencies and Distress Signals at Sea, and in Port. (50%)

Topic elements to be covered include:

KT0101 Emergency measures in protecting ship, passengers and crew

KT0102 Preliminary actions following a collision or grounding

KT0103 Initial damage assessment and control

KT0104 Emergency steering and rigging a jury rudder

Internal Assessment Criteria

1. Explain at least three measures in emergencies for the protection and safety of vessel, passengers and crew in that the candidate must be able to:-
2. Discuss in your own words actions to be taken in the event of collision or grounding
3. Describe the use the auxiliary steering and know the rigging and use of jury steering arrangements
4. Discuss the area of operation and procedures of the SASAR organization

(Weight 50%)

12.2.2 KM-12-KT02: Advanced Concepts on Emergencies at Sea and in Port (25%)

Topic elements to be covered include:

KT0201 Precautions when beaching a vessel

KT0202 Grounding and re-floating of Vessel

KT0203 Actions following a collision or hull damage

KT0204 Advanced steering and towing procedures

KT0205 Assessment of damage control

Internal Assessment Criteria

1. Provide an in-depth analysis of actions required to execute the following:
 - 1.1 Precautions when beaching a vessel;
 - 1.2 Action to be taken if grounding imminent, or after grounding;
 - 1.3 Re-floating a grounded vessel with and without assistance; and
 - 1.4 Action to be taken if collision is imminent and following a collision or impairment of the watertight integrity of the hull by any cause.
2. List the components of:
 - 2.1 Emergency steering;
 - 2.2 Emergency towing arrangements and towing procedures; and
 - 2.3 The assessment of damage control

(Weight 25%)

12.2.3 KM-12-KT03: Search and Rescue Operations (25%)

Topic elements to be covered include:

KT0301	Theory of IAMSAR
KT0302	Procedure for search and rescue
KT0303	Calculate interception course, rendezvous position and ETA
KT0304	Search and rescue theory

Internal Assessment Criteria

1. Discuss the contents of the IAMSAR Manual (Vol 3)
2. Describe the importance to determine datum, datum area, CSP (commence search point) and appropriate search and rescue pattern
3. Identify the relevance to compute an interception course, rendezvous position and ETA between two vessels underway
4. Provide a brief description of search and rescue procedures, patterns and plotting

(Weight 25%)

12.3 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
- Type approved simulation, where necessary

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

12.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

12.5 Exemptions

- None

13. 315201000-KM-13, Maritime Communications, NQF Level 5, Credits 7 (Learning contract time 10 days)

13.1 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 in relation to deck and bridge operations and management.

The learning will enable learners to demonstrating an understanding of:

KM-13-KT01: Signal Transmission, Reception and Interpretation (25%)

KM-13-KT02: IMO Standard Marine Communication (25%)

KM-13-KT03: Publications and Notices (25%)

KM-13-KT04: Distress, Urgency and Safety Communications (25%)

13.2 Guidelines for Topics

13.2.1 KM-13-KT01: Signal Transmission, Reception and Interpretation (25%)

Topic elements to be covered include:

KT0101 Transmit and receive signals

KT0102 International Code of Signals

Internal Assessment Criteria

1. Describe the use of the International Code of signals
2. Discuss importance of transmitting and receiving Morse code; at 15 characters per minute
3. Outline the relevance of understanding, maintaining, and using Aldis lamp
4. Identify and interpret the International Code of Signals, flags and principal national flags
5. Explain the meaning of flag hoists
6. Discuss how to overcome language and cultural barriers using effective communication methods

(Weight 25%)

13.2.2 KM-13-KT02: IMO Standard Marine Communication (25%)

Topic elements to be covered include:

KT0201 IMO Standard Marine Communication phrases

KT0202 Communication with watch on safety related matters

KT0203 Communication with shore stations

Internal Assessment Criteria

1. Define and interpret the messages in using IMO Standard Marine Communication Phrases with:
 - 1.1 Other ships,
 - 1.2 Coast Stations
2. Discuss the purpose of the accurate completion of log books in the English language
3. Explain the importance of the use of the phonetic alphabet in the maritime environment
4. Outline your understanding of the importance of loop communication in the safe operation of the vessel
5. Explain the importance of messages being short, concise and clear
6. Describe the purpose of IMO ships routing and separation schemes
7. Discuss the purpose of vessel traffic services and where to find reporting requirements
8. Explain the relevance of the working language of the vessel in relation to formal external communications in English

(Weight 25%)

13.2.3 KM-13-KT03: Publications and Notices (25%)

Topic elements to be covered include:

- KT0301 English nautical publications
- KT0302 Standard English nautical notices, reports and forms

Internal Assessment Criteria

1. Receive English language publications, regulations and messages relevant to the safety of the vessel, including, but not limited to:
 - 1.1 Notices to mariners
 - 1.2 Sailing directions and pilot books
 - 1.3 List of lights and fog signals
 - 1.4 Tide tables, tidal stream and current atlases
 - 1.5 Meteorological and marine safety messages
 - 1.6 Ship's routing information
 - 1.7 Nautical publications
 - 1.8 Marine notices
2. Find contextual information pertaining to broadcasting times and any other information relating to the safe navigation of the vessel publications, regulations and messages
3. Interpret and communicate information to relevant chains of command, using the relevant publications, regulations and messages

(Weight 25%)

13.2.3 KM-13-KT04: Distress, Urgency and Safety Communications (25%)

Topic elements to be covered include:

- KT0401 Receipt and transmission of different distress, urgency and safety communications
KT0402 Receipt and transmission of different MSI signals

Internal Assessment Criteria

1. Explain the difference between distress, urgency and safety messages
2. Define RT Communications and DSC Alerts
3. Define and discuss the receipt and interpretation of the following maritime safety information:
 - 3.1 Fleetnet and safety net (EGC)
 - 3.2 Navtex
 - 3.3 VHF / MF / HF
 - 3.4 Local and coastal warnings
 - 3.5 Search and rescue and distress messages
4. List the different types of MSI signals, their means of transmission, Navareas, Metareas, and the responsibility to generate navigational warnings

(Weight 25%)

13.3 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
- Type approved simulation, where necessary

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

13.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

13.5 Exemptions

- None

**14. 315201000-KM-14, Applied Marine Science and Mathematics, NQF level 4
(Credits: 10) (Learning contract time 22 Days)**

14.1 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 demonstrate an understanding of:

KM-14-KT01: Mathematics (60%)

KM-14-KT02: Applied Mathematics for Navigation (40)

14.2 Guidelines for Topics

14.2.1 KM-14-KT01: Mathematics (60%)

Topic elements to be covered include:

KT0101	Basics of algebra
KT0102	Trigonometry fundamentals
KT0103	Concepts of mensuration and geometry
KT0104	Elements of vectors
KT0105	Concepts of statistics
KT0106	Properties of ellipse and hyperbola

Internal Assessment Criteria

1. Discuss:
 - 1.1 The standard algebraic manipulations leading to the transformation of equations and their solution
 - 1.2 How to produce a graph of given or observed data and extract information from the graph
 - 1.3 How to convert between polar and rectangular co-ordinates
 - 1.4 How to interpolate quickly and accurately
 - 1.5 The properties of the ellipse
2. Define error as the observed or calculated value minus the true value
3. Explain the meaning of absolute error and relative error
4. Describe:
 - 4.1 The range of values of trigonometrical functions.
 - 4.2 The range of values of the inverse functions.
 - 4.3 The value of a radian.
5. Explain:
 - 5.1 Perimeters and areas.
 - 5.2 The areas of sectors and segments of a circle.
 - 5.3 Surface areas and volumes.
 - 5.4 Simpson's 1st, 2nd and 3rd rule.
 - 5.5 The construction of a circle through two known points when angle between the two points is known (snellius problem).
 - 5.6 The properties of figures, parallel lines and constructions.
6. Clarify:
 - 6.1 That vector quantities have direction as well as magnitude.
 - 6.2 The graphical solution of sums and differences of vector quantities.
7. Discuss:
 - 7.1 Graphical representation of data.

- 7.2 Measures of central tendency.
- 7.3 Standard deviation.
- 8. Define the properties of the ellipse and hyperbola.
(Weight 60%)

14.2.2 KM-14-KT02: Applied Mathematics for Navigation (40%)

Topic elements to be covered include:

- KT0201 Meanings of great and small circles
- KT0202 Definition of spherical triangle
- KT0203 Angles of great circles
- KT0204 Spherical triangular angles

Internal Assessment Criteria

1. Describe:
 - 1.1 The meaning of a great circle and small circle.
 - 1.2 That a spherical triangle is a figure on the surface of a sphere bounded by arcs of three great circles.
 - 1.3 That the angle between two great circles is the angle between the planes in which they lie.
 - 1.4 How the length of a side is measured as an angle.
 - 1.5 That the sum of the angles of a spherical triangle exceeds 180° but is less than 540°
 - 1.6 That no side exceeds 180°

(Weight 40%)

14.3 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
- Type approved simulation, where necessary

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

14.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

14.5 Exemptions

- None

**15. 315201000-KM-15, Proficiency in Survival Craft and Rescue Boats, NQF level 3
(Credits: 3) (Learning contract time 3 Days)**

15.1 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-15-KT01: Processes for Taking Charge of a Survival Craft or Rescue Boat (20%)
- KM-15-KT02: Concepts relating to Operating a Survival Craft Engine (20%)
- KM-15-KT03: Managing Survivors and Craft after Abandoning Vessel (20%)
- KM-15-KT04: Procedures for Locating Devices (20%)
- KM-15-KT05: Procedures and Processes relating to First Aid for Survivors (20%)

15.2 Guidelines for Topics

**15.2.1 KM-15-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 Launching and recovering survival craft and rescue boats 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-load release devices

(Weight 20%)

15.2.2 KM-15-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 Precautions for operating a survival craft engine

Internal Assessment Criteria

1. Discuss methods of starting and operating a survival craft engine
2. Describe accessories together with the use of the fire extinguisher provided
3. Explain the precautions taken prior to starting the survival craft engine

(Weight 20%)

15.2.3 KM-15-KT03: Managing Survivors and Craft After Abandoning Ship (20%)

Topic elements to be covered include:

KT0301	Survival craft handling in rough weather
KT0302	Appropriate equipment use
KT0303	Food and water rations and survivor detection
KT0304	Helicopter rescue
KT0305	Prevention methods for hypothermia
KT0306	Marshalling of life rafts and survivors
KT0307	Survival craft beaching

Internal Assessment Criteria

1. Describe handling survival craft in rough weather
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 detect ability and location of survival craft
5. Discuss the method applied during helicopter rescue
6. Name the effects of hypothermia and its prevention; use of protective covers and garments, including immersion suits and thermal protective aids
7. List the use of rescue boats and motor lifeboats for marshalling life rafts and rescue of survivors and persons in the sea
8. Discuss the procedure during beaching survival craft

(Weight 20%)

15.2.4 KM-15-KT04: Procedures for Locating Devices (20%)

Topic elements to be covered include:

KT0401	Radio lifesaving appliances
KT0402	Pyrotechnic distress signals
KT0403	Other alternative communication devices

Internal Assessment Criteria

1. Review radio lifesaving appliances carried in survival craft, including satellite EPIRBs and SARTs
2. Discuss pyrotechnic distress signals
3. Describe the use of heliograph mirror and other communicating devices

(Weight 20%)

15.2.5 KM-15-KT05: Procedures and Processes relating to First Aid for Survivors (20%)

Topic elements to be covered include:

KT0501	First aid kit
KT0502	Resuscitation techniques
KT0503	Injured persons assistance
KT0504	Prevention and treatment of medical symptoms as a result of exposure to severe weather conditions

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. Describe precautions taken to prevent medical conditions as a result of exposure
4. Explain the treatment of symptoms resulting from exposure to severe weather conditions

(Weight 20%)

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
- Type approved simulation, where necessary

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

16. 315201000-KM-16, Medical Care, NQF Level 5, Credits 8 (Learning contract time 5 days)

16.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge that equip them to take responsibility for all medical care on board a vessel.

The learning will enable learners to demonstrate an understanding of:

KM-16-KT01: Theories and Processes relating to Medical Care and Injured (75%)

KM-16KT02: Concepts relating to Medical Assistance to Vessels, (25%)

16.2 Guidelines for Topics

16.2.1 KM-16-KT01: Theories and Processes relating to Medical Care and Injured (75%)

Topic elements to be covered include:

KT0101	Theory for care of casualties
KT0102	Fundamentals of diseases
KT0103	Fundamentals of nursing
KT0104	Alcohol and drug abuse
KT0105	Gynaecological concepts, pregnancy and childbirth
KT0106	Fundamentals of disease prevention
Kt0107	Recordkeeping

Internal Assessment Criteria

1. Describe the care of casualty involving:
 - 1.1 Head and spinal injuries
 - 1.2 Injuries of ear, nose, throat and eyes
 - 1.3 External and internal bleeding
 - 1.4 Burns, scalds and frostbite
 - 1.5 Fractures, dislocations and muscular injuries
 - 1.6 Wounds, wound healing and infection
 - 1.7 Pain relief
 - 1.8 Techniques of sewing and clamping
 - 1.9 Management of acute abdominal conditions
 - 1.10 Minor surgical treatment
 - 1.11 Dressing and bandaging
2. Explain the aspects of nursing:
 - 2.1 General principles
 - 2.2 Nursing care
3. Define the following diseases, including:
 - 3.1 Medical conditions and emergencies
 - 3.2 Sexually transmitted diseases
 - 3.3 Tropical and infectious diseases
4. Identify the following medical conditions:
 - 4.1 Alcohol and drug abuse
 - 4.2 Dental care
 - 4.3 Gynaecology, pregnancy and childbirth
 - 4.4 Medical care of rescued persons
 - 4.5 Death at sea
 - 4.6 Hygiene

- 4.7 Disease prevention, including:
 - 4.7.1 Disinfection, disinfestations de-ratting
 - 4.7.2 Vaccinations
- 5. List the applicable regulations regarding the following:
 - 5.1 Keeping medical records
 - 5.2 International and national maritime medical regulation
- 6. Explain a primary survey using the following headings:
 - 6.1 Establishing level of consciousness
 - 6.2 Airway opening
 - 6.3 Determining presence of breathing and counting respiratory rate
 - 6.4 Feeling and counting the pulse
- 7. Describe a cardio pulmonary resuscitation using the following headings:
 - 7.1 The use of a pocket mask, non-rebreather and venture mask for providing oxygen to a patient
 - 7.2 A bag/valve/mask/reservoir to ventilate a patient during resuscitation
 - 7.3 The use of an automatic defibrillator
 - 7.4 Wound and bleeding techniques bandaging techniques treatment of burns with burn gel dressings or equivalent
 - 7.5 Patient immobilisation and movement with the application and use of:
 - 7.5.1 A cervical collar
 - 7.5.2 A spider harness or alternative strapping
 - 7.5.3 Head blocks or equivalent
 - 7.5.4 The stretcher
 - 7.5.5 The log roll, trauma board and scoop stretcher
 - 7.5.6 The access and movement of patients in confined spaces
 - 7.5.7 The management of the hypothermic patient
 - 7.5.8 Near drowning
 - 7.5.9 Intravenous fluid administration
 - 7.5.9.1 Identification of the correct fluid and administration equipment
 - 7.5.9.2 Correct assembly of the intravenous infusion
 - 7.5.9.3 Correct calculation of the required infusion rate
 - 7.5.9.4 Trouble shooting the infusion that will not run
 - 7.5.10 Fluid balance and output
 - 7.5.10.1 Measurement of fluid losses
 - 7.5.10.2 Preparation of a simple fluid balance chart
 - 7.5.11 Administration of drugs by the intravenous, intramuscular and oral routes

(Weight 75%)

16.2.2 KM-16-KT02: Concepts relating to Medical Assistance to Vessels, (25%)

Topic elements to be covered include:

- KT0201 Theory of external assistance.
- KT0202 Procedures relating to external assistance
- KT0203 Evacuation of casualties

Internal Assessment Criteria

- 1. Describe how to make use of external assistance:-
 - 1.1 Radio medical advice
 - 1.2 Transportation of the ill and injured, including helicopter evacuation

- 1.3 Medical care of sick seafarers involving co-operation with port health authorities or out-patient wards in port

(Weight 25%)

16.3 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
- Type approved simulation, where necessary

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

16.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

16.5 Exemptions

- None

**17. 315201000-KM-17, Advanced Fire Fighting, NQF Level 4 (Credits: 4)
(Learning contract time 3 days)**

17.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge subject is to equip qualifying learners with knowledge to manage fire prevention and firefighting

The learning will enable learners to demonstrate an understanding of:

KM-17-KT01: Theories and processes relating to fire fighting operations on board (50%)

KM-17-KT02: Advanced fire fighting principles (50%)

17.2 Guidelines for Topics

17.2.1 KM-17-KT01: Theories and processes relating to fire fighting operations on board (50%)

Topic elements to be covered include:

KT0101	Firefighting procedures at sea and in port
KT0102	Use of water for fire-extinguishing
KT0103	Communication and co-ordination during fire fighting
KT0104	Ventilation control procedures
KT0105	Fuel and electrical systems control

Internal Assessment Criteria

1. Explain fire-fighting procedures at sea and in port with particular emphases on organisation, tactics and command at sea and at port
2. Describe fire-fighting process hazards (dry distillation, chemical reactions, boiler uptake fires, etc.)
3. Explain dry distillation using the following :-
 - 3.1 The process of burning in an enclosed space with insufficient oxygen for complete combustion
 - 3.2 The hazard of a flash towards the source of oxygen for complete combustion
 - 3.3 The hazard of a flash towards the source of oxygen if enclosed space is opened
 - 3.4 Precautions to take before entering an enclosed space in which a fire is burning, such as:-
 - 3.4.1.1 Boundary cooling
 - 3.4.1.2 Entering space in crouched position behind a water screen
 - 3.4.1.3 Directing water at ceiling of the space
4. Identify chemical reactions using the following:-
 - 4.1 Action of heat, water, oil, steam, carbon dioxide, foam, sand individually or in connection with each other on various chemicals
 - 4.2 Reactions of some Cargo and / or Catch (Fish) with fire-fighting agents such as:-
 - 4.2.1 Production of acetylene when water is added to calcium carbide
 - 4.2.2 Action of steam on a coal fire
 - 4.2.3 Production of hydrogen from contact of direct reduced iron with water
 - 4.3 Oxidizing Cargo and / or Catch (Fish) which may sustain a fire even when fire is smothered by extinguishing gas
 - 4.4 Spontaneous combustion of certain Cargo and / or Catch (Fish) when exposed to air or when wet
 - 4.5 Production of methane from coal Cargo and / or Catch (Fish)

Firefighting involving dangerous goods

1. List fire precautions and hazards associated with the storage and handling of materials
2. State the fire precautions and hazards associated with storage and handling of flammable vessel's stores including matters such as :-
 - 2.1 Approved storage areas
 - 2.2 Approved handling methods
 - 2.3 Prohibited storage areas (paints, etc.)

Management and control of injured persons

1. Explain the procedures for coordination with shore based fire fighters
2. Explain the use of water for fire-extinguishing, the effect on vessel stability, including amongst others the:
 - 2.1 Precautions and corrective measures necessary
 - 2.2 Calculation the change in GM caused by the weight of extinguishing water and its free surface effect
 - 2.3 Arrangements for pumping or draining of water from affected spaces, including cutting holes in vessel's side
 - 2.4 Deliberate stranding of vessel in shallow water to allow flooding of holds or affected spaces
 - 2.5 Effects of water damage
 - 2.6 Danger to electrical systems
 - 2.7 Reaction with certain Cargo and / or Catch (Fish)
3. Define the communication and coordination during fire-fighting operations including amongst others:
 - 3.1 The necessity for the Master to coordinates all parties involved in the fire from a central control station (the bridge)
 - 3.2 The use of:-
 - 3.2.1 Hand held radios
 - 3.2.2 Telephones
 - 3.2.3 Talk-back systems
 - 3.2.4 Radio telephone and V.H.F
 - 3.2.5 Cell phone
 - 3.2.6 Loud speaker
 - 3.2.7 Ventilation control
 - 3.2.8 Smoke extraction
 - 3.3 The closing of ventilators and water/gas tight doors to exclude oxygen from fire and to contain CO₂ (if applicable to space)

Ventilation control, including smoke extraction:

1. List the preparations for controlling any renewal of fire caused by opening up the enclosed space
 - 1.1 The control of fuel and electrical systems
 - 1.2 The shutting off or isolation fuel and electrical systems in the vicinity of the fire
 - 1.3 The operation of emergency generators/emergency battery supply and emergency fire pump in event of an engine-room fire
2. Explain the control of fuel and electrical systems

(Weight 50%)

17.2.2 KM-17-KT02: Advanced fire fighting principles (50%)

Topic elements to be covered include:

- KT0201 Fire parties training
- KT0202 Fire detection and fire extinguishing systems
- KT0203 Procedure for Investigation report

Internal Assessment Criteria

1. Define the preparation of contingency plans taking into account the:
 - 1.1 Assessment of areas of high risk of fire (e.g. galley, engine-room, paint stores, pump rooms etc)
 - 1.2 Assessment of areas where fire will endanger life i.e. accommodation
 - 1.3 Assessment of areas of danger if on fire or exposed to heat (e.g. dangerous Cargo and / or Catch (Fish), fuel tanks, high pressure vessels)
 - 1.4 Availability of portable appliances in these areas to fight fires
 - 1.5 Use of fixed systems for major fires in these areas
 - 1.6 Rescue of victims from the affected area
 - 1.7 Evaluation of when to evacuate personnel from the fire
2. Discuss the composition and allocation of personnel to fire parties
3. Define the strategies and tactics for control of fires in various parts of the vessel
1. Explain the requirements for statutory and classification surveys
2. Identify the assessment of cause of incidents involving fire and compile a report of such an incident reporting on:
 - 5.1 Timetable of the fire from discovery to extinction of fire including fire watch on completion of firefighting operations
 - 5.2 Times of events and actions taken position and nature of the fire
 - 5.3 Initial actions to extinguish fire
 - 5.4 Results of actions and follow up procedures
 - 5.5 Firefighting equipment and personnel involved casualties, number and cause and nature of injuries
 - 5.6 Damage to vessel and to Cargo and / or Catch (Fish) estimating damage caused by firefighting operations
 - 5.7 Extent to which vessel or any vessel's services are affected by the fire and giving
 - 5.7.1 Analysis and discussion of the facts
 - 5.7.2 Conclusions drawn from analysis and discussion
 - 5.7.3 Recommendations on actions to avoid recurrence of incident
 - 5.7.4 Recommendations, if any, to improve fire prevention and firefighting procedures

(Weight 50%)

17.3 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
- Type approved simulation, where necessary

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

17.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

17.5 Exemptions

- None

**18. 315201000-KM-18, Fishing Safety, NQF Level 3 (Credits: 2)
(Learning contract time 2 days)**

18.1 Purpose of the Knowledge Module

The main focus of the learning in this knowledge module is to build an understanding of the safety requirements for the fishing industry.

The learning will enable learners to demonstrating an understanding of:

KM-22-KT01: Principles of Fishing Safety (50%)

KM-22-KT02: Procedures of Fishing Safety (50%)

18.2 Guidelines for Topics

18.2.1 KM-18-KT01: Principles of Fishing Safety (50%)

Topic elements to be covered include:

KT0101 Ship and equipment preparation procedures for fishing operations

KT0102 The process of handling fishing gear

KT0103 Stowing procedures for the catch (fish) and general safety

Internal Assessment Criteria

1. Discuss the accepted practice for repairing, replacing, maintaining and positioning of the relevant fishing gear
2. Identify irregularities, damage or defects as appropriate to the relevant fishing gear
3. Explain procedure on how to report clearly and in good time, to his/her supervisor, any irregularities, damage or defects.
4. Discuss why it is important to wear personal protective equipment at all times during fishing operations
5. Describe the processes involved in the maintenance, repair, replacement and positioning of all relevant fishing gear
6. Explain the importance of timeous reporting of any defects, damage or irregularities to supervisor
7. Discuss the safety rules applicable especially with regard to dangers caused by vessel's motion, slippery surfaces, rotating and moving equipment, ropes and wires under tension, suspended loads and fire hazards
8. Explain why irregularities are likely to occur and the action to take to protect life and property
9. List the safety rules to be followed and due diligence to be given to hazardous situations
10. Provide details on the importance of the current safety rules to the catch (fish)
11. Explain why proper catch (fish) and fishing gear stowage is important for vessel/crew safety
12. Discuss the operation of ship's valves and offal chutes and able to seal spaces from water ingress
13. Describe routine precautions and housekeeping measures to prevent damage to offal chutes, ship's valves, pumps and closing devices to ensure watertight integrity is maintained
14. Clarify the operation of bilge/factory decks pumps for removal of water from areas
15. Explain how loading/discharging operations can affect the stability of the vessel especially with regard to heeling moments from placement of gear and catch (fish)

16. Discuss different fishing vessels, their fishing methods and the associated dangers to the vessel

(Weight 50%)

18.2.2 KM-18-KT02: : Procedures of Fishing Safety (50%)

Topic elements to be covered include:

- KT0201 'Fish gear handling' safety process
- KT0202 Catch (fish) stowage process

Internal Assessment Criteria

1. Discuss the importance that sufficient and fit personnel are available to ensure safe and efficient fishing operations
2. Explain the importance that equipment checks must be made prior to the beginning of fishing operations and to ensure that operations are carried out in accordance with safety rules
3. Clarify that reports of any irregularities, damage or defects are evaluated and rectified
4. Describe that instructions are to be given to ratings involved in stowing of catch (fish) (when appropriate) to ensure that the operation is carried out in time and according to safety rules
5. Name and discuss the construction, application and purpose of deck equipment that includes, but is not limited to, trawl gallows, gantries, power blocks, pursuing blocks, winches and booms, derricks, net drums and side rollers and line and trap haulers
6. Identify the dangers associated with fishing operations such as shooting all types of fishing gear into the water, hauling fishing gear and landing the catch (fish) on board

(Weight 50%)

18.3 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
- Type approved simulation, where necessary

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

18.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

18.5 Exemptions

- None

19. 315201000-KM-19, Security Awareness, NQF Level 3 (Credits: 1), (Learning contract time 1 day)

19.1 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 demonstrate an understanding of:

KM-19-KT01: Theory of maritime security, (50%)

KM-19-KT02: Maintain shipboard security (50%)

19.2 Guidelines for Topics

19.2.1 KM-19-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 security reporting procedures and security-related contingency plans

(Weight 50%)

19.2.2 KM-19-KT02: Maintain shipboard 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 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%)

19.3 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
- Type approved simulation, where necessary

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

19.4 Critical Topics to be Assessed Externally for the Knowledge Module

- None

19.5 Exemptions

- None

SECTION 3B: PRACTICAL SKILL MODULE SPECIFICATIONS

List of Practical Skill Module Specifications

- 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-02, Handle and Stow Cargo and / or Catch (Fish) at a Management Level , NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-03, Manage Shipboard Operations and Care for Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-05, Manage Ship Handling and Manoeuvring, NQF Level 6, Learning Contract Time 100h, Credits: 10
- 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 4, Learning Contract Time 100h, Credits 10
- 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

1. 315201000-PM-01, Navigate at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10

1.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to manage the navigation of the vessel.

The learner will be required to:

- PM-01-PS01: Plan Voyage and Monitor Passage Plan
- PM-01-PS02: Manage Bridge Team Navigational Activities
- PM-01-PS03: Co-ordinate Search and Rescue Operations
- PM-01-PS04: Use Electronic Navigation Systems to Navigate
- PM 01-PS05: Manage Collision Avoidance

1.2 Guidelines for Practical Skills

1.2.1. PM-01-PS01: Plan Voyage and Monitor Plan

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 Select appropriate equipment, charts and publications
- PA0102 Approve the planned route, courses and distances
- PA0103 Identity the accuracy for position fixing, courses and distances

Applied Knowledge

- AK0101 Reference chart catalogues, routing and weather charts
- AK0102 List of chart symbols and abbreviations
- AK0103 Mariners handbook
- AK0104 Local pilot book
- AK0105 List of lights and radio signals
- AK0106 Tide tables
- AK0107 Manufacturer's instructions

Internal Assessment Criteria

- IAC0101 Equipment, charts and nautical publications required for the voyage are enumerated and appropriate to the safe conduct of the voyage
- IAC0102 Reasons for the planned route are supported by facts and statistical data obtained from relevant sources and publications
- IAC0103 Positions, courses and distances are correctly calculated within accepted accuracy standards for navigational equipment

1.2.2. PM-01-PS02: Manage Bridge Team Navigational 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:

- PA0201 Manage the bridge team according to simulated circumstances and weather conditions

- PA0202 Communicate instructions effectively in accordance with international procedures in a simulated environment
- PA0203 Manage collision avoidance in accordance with the regulations

Applied Knowledge

- AK0201 Merchant Shipping (Safe Manning, Training and Certification) Regulations 2013
- AK0202 IMO Bridge procedures guide
- AK0203 List of chart symbols and abbreviations
- AK0204 List of lights and radio signals
- AK0205 IMO Standard maritime navigational vocabulary
- AK0206 International Regulations for the Prevention of Collisions at Sea
- AK0207 Manufacturer's instructions

Internal Assessment Criteria

- IAC0201 Watchkeeping arrangements and procedures are established and maintained in compliance with accepted norms
- IAC0202 Simulated communications are effective and comply with established procedures
- IAC0203 Navigation of the vessel is managed in accordance with the collision regulations

1.2.3. PM-01-PS03: Co-ordinate Search and Rescue 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 must be able to:

- PA0301 Construct a search and rescue co-ordination plan in a simulated environment
- PA0302 Establish simulated radio and correct communication procedures
- PA0303 Apply search and rescue procedures in accordance with IAMSAR Manual in a simulated environment

Applied Knowledge

- AK0301 SOLAS Convention
- AK0302 IAMSAR Manual
- AK0303 List of lights and radio signals
- AK0304 International Code of Signals

Internal Assessment Criteria

- IAC0301 A co-ordinated search and rescue plan is developed
- IAC0302 Simulated communication procedures adhered to
- IAC0303 IAMSAR search and rescue procedures followed in a simulated environment

1.2.4. PM-01-PS04: Use Electronic Navigation Systems to Navigate

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 Interpret, evaluate and analyse information from simulated electronic navigational equipment
- PA0402 Use simulated electronic navigational equipment systems information to enhance command decision making

PA0403 Establish and apply operational procedures for simulated electronic navigational equipment

Applied Knowledge

AK0401 Manufacturer's instructions
AK0402 IMO Bridge procedures guide
AK0403 ECDIS type specific training
AK0404 Shipboard personnel management training
AK0405 Merchant Shipping (Safe Manning, Training and Certification) Regulations 2013
AK0406 International regulations for prevention of collisions at sea

Internal Assessment Criteria

IAC0401 Information obtained from electronic equipment is correctly interpreted and analysed
IAC0402 Command decisions are made correctly
IAC0403 Operational procedures are established, applied and monitored

1.2.5. PM-01-PS05: Manage Collision Avoidance

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:

PA0501 Apply the international regulations for preventing collisions at sea
PA0502 Ensure bridge team is effective in applying the regulations in a simulated environment
PA0503 Use radar and ARPA effectively to enhance collision avoidance measures in a simulated environment

Applied Knowledge

AK0501 Merchant Shipping (Safe Manning, Training and Certification) Regulations 2013
AK0502 IMO Bridge procedures guide
AK0503 International regulations for preventing collisions at sea
AK0504 Radar and ARPA manufacturer's instructions

Internal Assessment Criteria

IAC0501 International regulations are adhered to
IAC0502 Bridge team effectiveness demonstrated in an oral/written assessment
IAC0503 Radar and ARPA used effectively to avoid collision in a simulated environment

1.3 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
- Type approved simulation, where necessary

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. 315201000-PM-02, Handle and Stowe Cargo and / or Catch (Fish) at a Management Level, NQF Level 6, Learning Contract Time 100h, Credits: 10

2.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to assist the officer of the watch in the conduct of Cargo and / or Catch (Fish) handling and stowage

The learner will be required to:

- PM-02-PS01: Manage the planning, loading, care and unloading of Cargo and / or Catch (Fish)
- PM-02-PS02: Evaluate damage reports and tally deficiencies
- PM-02-PS03: Manage stowage, segregation and lashing of hazardous and dangerous goods

2.2 Guidelines for Practical Skills

2.2.1. PM-02-PS01: Manage the planning, loading, care and unloading of Cargo and / or Catch (Fish)

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 Approve Cargo and / or Catch (Fish) plan and methodology for Cargo and / or Catch (Fish) operations including stowage and lashing in a simulated environment
- PA0102 Assess the stability of the vessel under all conditions of loading and discharging
- PA0103 Assess the loading stresses during various simulated seagoing and port operations
- PA0104 Monitor freeboard, list and trim during simulated loading, discharging operations

Applied Knowledge

- AK0101 Vessels stability information
- AK0102 Code of safe working practices for merchant seaman
- AK0103 International Safety Management Code
- AK0104 Manufacturer's instructions
- AK0105 International codes of Cargo and / or Catch (Fish) operations
- AK0106 Vessel lashing and securing manual

Internal Assessment Criteria

- IAC0101 Cargo and / or Catch (Fish) plan, stowage, lashing methodology is within acceptable norms
- IAC0102 Stability calculations are accurately conducted
- IAC0103 Loading stresses are accurately calculated
- IAC0104 Freeboard, list and trim are correctly calculated using all information

2.2.2. PM-02-PS02: Evaluate damage reports and tally deficiencies

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 Monitor Cargo and / or Catch (Fish) condition deficiencies in a simulated environment
- PA0202 Assess reported damage to Cargo and / or Catch (Fish) gear and Cargo and / or Catch (Fish) spaces

PA0203 Evaluate Cargo and / or Catch (Fish) quantity and tally deficiencies

Applied Knowledge

AK0201 Code of safe working practices for merchant seaman
AK0202 Code of safe practice for Cargo and / or Catch (Fish) stowage and securing
AK0203 P&I local information

Internal Assessment Criteria

IAC0201 All reported defects are evaluated
IAC0202 Cargo and / or Catch (Fish) condition monitoring is appropriate to its nature and prevailing conditions
IAC0203 Variations in tally are promptly recognised and remedial action is taken

2.2.3. PM-02-PS03: Manage stowage, segregation and lashing of hazardous and dangerous goods

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 Establish procedures for safe handling of hazardous goods
PA0302 Approve the stowage and segregation of hazardous goods
PA0303 Identify emergency and firefighting equipment
PA0304 Ensure that containers are lashed and secured in a simulated environment

Applied Knowledge

AK0301 IMDG Code
AK0302 Lashing and securing manual

Internal Assessment Criteria

IAC0301 Cargo and / or Catch (Fish) is handled in accordance with IMDG requirements
IAC0302 Stowage and segregation is planned in accordance with IMDG Code
IAC0303 Emergency and firefighting equipment is correctly identified

2.3 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
- Type approved simulation, where necessary

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. 315201000-PM-03, Manage Shipboard Operations and Care of Personnel and Vessel, NQF Level 6, Learning Contract Time 100h, Credits 10

3.1 Purpose of the Practical Skill Modules

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

The learner will be required to:

- PM-03-PS01: Control Compliance with Legislative Requirements
- PM-03-PS02: Plan Emergency Procedures and Manage the Safety and Security of the Vessel and Crew

3.2 Guidelines for Practical Skills

3.2.1. PM-03-PS01: Control Compliance with Legislative Requirements

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 Plan renewal and extension of certificates to ensure legislative compliance in a simulated environment
- PA0102 Plan procedures to monitor legislative compliance with respect to international conventions and codes
- PA0103 Maintain records of all mandatory documentation

Applied Knowledge

- AK0101 Code of safe working practice for merchant seaman / fishermen
- AK0102 International Safety Management Code
- AK0103 Maritime Occupational Health and Safety Regulations
- AK0104 International Conventions and Codes

Internal Assessment Criteria

- IAC0101 All legislative certificates are in place and up to date in a simulated environment
- IAC0102 All International Codes and Conventions are complied with
- IAC0103 Records of mandatory documentation are maintained

3.2.2. PM-03-PS02: Plan for Emergency Procedures and Manage the Safety and Security of the Vessel and Crew

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 Confirm emergency procedures are in place in a simulated environment
- PA0202 Make sure emergency and safety equipment is maintained and kept in a state of readiness in a simulated environment
- PA0203 Guarantee ship security plan is in place and adhered to
- PA0204 Ensure medical facilities on board are in accordance with international requirements

Applied Knowledge

AK0201	Code of safe working practice for merchant seaman / fishermen
AK0202	International Safety Management Code
AK0203	Maritime Occupational Health and Safety Regulations
AK0204	ISPS Code
AK0205	SOLAS Convention
AK0205	International Medical Guide for Ships

Internal Assessment Criteria

IAC0201	Emergency procedures in place
IAC0202	Emergency and safety equipment is ready for use
IAC0203	Identify the features of a Ship Security plan
IAC0204	Medical facilities meet international requirements

3.3 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
- Type approved simulation, where necessary

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

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

- None

3.5 Exemptions

- None

4. 315201000-PM-04, Conduct Ship's Master's Business, NQF Level 6, Learning Contract Time 100h, Credits 10

4.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to conduct ship master's business

The learner will be required to:

PM-04-P'S01: Maintain Vessel and Statutory Documentation

PM-04-PS02: Manage Vessel Resources, Commercial Activities and Personnel

4.2 Guidelines for Practical Skills

4.2.1. PM-04-PS01: Maintain Vessel and Statutory Documentation

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 Ensure standards of work and required behaviour is communicated

PA0102 Ensure all statutory documentation is valid and available

PA0103 Ensure maintenance tasks are allocated to qualified crew

Applied Knowledge

AK0101 Manufacturers guide and instructions

AK0102 Code of safe working practices for merchant seaman / fishermen

AK0103 SOLAS and MARPOL Conventions

Internal Assessment Criteria

IAC0101 Standards of work and behaviour is demonstrated

IAC0102 Statutory documentation is current and available

IAC0103 Maintenance is conducted as per plan by qualified crew

4.2.2. PM-04-PS02: Manage Ships Resources, Commercial Activities and Personnel

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 Manage and communicate with Service Providers

PA0202 Prepare and conduct performance appraisals

PA0203 Maintain industrial and labour relations

PA0204 Comply with Education and Training Development (ETD) practices

Applied Knowledge

AK0201 Staff performance, agreements

AK0202 HR Appraisal procedures and policies

AK0203 Company corrective measures procedures

AK0204 Bargaining councils legislation

AK0205 Labour relations legislation

AK0206 Company policies and procedures

AK0207 Leadership theories and strategies

AK0208	Managing cultural diversity concepts and theories
AK0209	Task and workload management policies and procedures
AK02010	Team working models and conflict management styles
AK02011	Training and development legislation
AK02012	The aim of shipboard training
AK02013	Principles and methods of developing human potential
AK02014	Merchant Shipping Act
AK02015	SLA procedures
AK02016	Financial clauses
AK02017	Service Provider capability
AK02018	International Conventions and Guidelines

Internal Assessment Criteria

IAC0101	Situational and risk assessment are conducted to determine maintenance and repair requirements
IAC0202	Various safety margins are defined based on situational awareness principles
IAC0203	A list of the maintenance and repair jobs is compiled
IAC0204	Job specifications are generated in line with the job list
IAC0205	The performance of the service provider is assessed, monitored and rectified against the Service Level Agreements
IAC0206	The relevant documentation is completed to sign off on the job once finalised
IAC0207	Staff performance agreements are negotiated and signed off in accordance to the performance management policy
IAC0208	Performance appraisals are conducted and concluded in accordance with the rules as set out in the company policies and procedures
IAC0209	HR corrective measures are instituted according to company policies and procedures
IAC0210	Disciplinary hearings procedures follow company policies and procedures
IAC0211	Cultural issues are recognised and responded to, including, but not limited to cultural awareness and bias including national, organisational, departmental and personal cultural approaches
IAC0212	Effective leadership behaviours are demonstrated
IAC0213	Strategies are developed to effectively apply task and workload management in order to manage fatigue and stress
IAC0214	Team working models and conflict management styles are identified and applied within own team
IAC0215	Training reports are completed according to operational specifications

4.3 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
- Type approved simulation, where necessary

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 Practical Skill Module

- None

4.5 Exemptions

- None

5. 315201000-PM-05, Manage ship's Handling and Manoeuvring, L5, Learning Contract Time 100h, Credits 10

5.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to manage the safe mooring, towing, berthing and anchoring of a vessel

The learner will be required to:

- PM-05-PS01: Handle a Vessel at Sea
- PM-05-PS02: Dock and Undock a Vessel
- PM-05-PS03: Anchor a Vessel

5.2 Guidelines for Practical Skills

5.2.1. PM-05-PS01: Handle a Vessel at Sea

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 Discuss action to be taken and preparation for heavy weather
- PA0102 Execute procedures for handling the vessel in restricted visibility in a simulated environment
- PA0103 Describe the stresses imposed on a vessel at sea
- PA0104 Describe how to approach a disabled vessel at sea

Applied Knowledge

- AK0101 The Mariners Handbook
- AK0102 International safety management code
- AK0101 Vessels manoeuvring data

Internal Assessment Criteria

- IAC0101 Procedures for handling a vessel in heavy weather
- IAC0102 Vessel is handled in accordance with the Collision Regulations
- IAC0103 Stress calculations for the vessel in a seaway are conducted accurately
- IAC0104 Procedures for approaching a disabled vessel are followed

5.2.2. PM-05-PS02: Dock and Undock a Vessel

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 Use a model to describe the approach to and departure from a berth under various circumstances
- PA0202 Discuss the sequence of helm and engine movements to safely approach/leave the dock
- PA0203 Describe the sequence of deployment of mooring lines for docking/undocking
- PA0204 Analyse and discuss the procedures to be employed when under pilotage with /without tugs in attendance
- PA0205 Describe docking/undocking using one or more anchors

Applied Knowledge

AK0201	Code of safe working practices for merchant seaman / fishermen
AK0202	International safety management code
AK0203	Vessel manoeuvring data

Internal Assessment Criteria

IAC0201	Approach /departure to/from a berth is described using a model
IAC0202	Helm and engine movements for approaching/leaving a berth are discussed
IAC0203	Deployment /casting off mooring lines is described
IAC0204	Pilotage and tug procedures are complied with
IAC0205	The use of anchors when docking or undocking is described
IAC0206	Vessel manoeuvring data is complied with

5.2.3. PM-05-PS03: Anchor a Vessel

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	Give an account of the precautions and actions to be taken during approach to an anchorage
PA0302	List and draw helm and engine movements for a safe approach to an anchorage
PA0303	Explain the anchorage procedures and safety precautions
PA0304	Describe anchoring the vessel and state how position is verified

Applied Knowledge

AK0301	Code of safe working practices for merchant seaman / fishermen
AK0302	International safety management code
AK0303	Appropriate large scale chart
AK0304	VTS and Port requirements
AK0305	Local Pilot book

Internal Assessment Criteria

IAC0301	Actions and precautions taken during approach to an anchorage are discussed with physical examples
IAC0302	Helm and engine movements during approach are described
IAC0303	Safe anchorage procedures are explained with examples
IAC0304	Anchoring vessel safely and obtaining its position is described

5.3 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
- Type approved simulation, where necessary

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 Practical Skill Module

- None

5.5 Exemptions

- None

3. 315201000-PM-06, Manage Shipboard Security Procedures and Contingency Plans, NQF Level 3, Learning Contract Time 100h, Credits 10

6.1 Purpose of the Practical Skill Modules

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

The learner will be required to:

PM-06-PS01: Implement Shipboard Security Procedures

PM-06-PS02: Develop and Maintain Security Contingency Plans

6.2 Guidelines for Practical Skills

6.2.1. PM-06-PS01: Implement Shipboard Security 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:

PA0101 Establish port security level and comply with requirements

PA0102 Identify security threats and implement counter measures

PA0103 Investigate and report security incidents in a simulated environment

Applied Knowledge

AK0101 ISPS Code

Internal Assessment Criteria

IAC0101 Port security level is complied with

IAC0102 Counter measures taken are appropriate to the security threat IAC0103 Security incidents are investigated and reported

5.2.2. PM-05-PS02: Develop and maintain security contingency plans

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 Establish contingency plans for shipboard security based on different threat scenarios

PA0202 Conduct security drills based on contingency plans in a simulated environment

Applied Knowledge

AK0201 ISPS Code

AK0202 SOLAS Chapter XI-2

Internal Assessment Criteria

IAC0201 Contingency plans for various security threats are developed

IAC0202 Drill procedures are developed and carried out

5.3 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
- Type approved simulation, where necessary

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 Practical Skill Module

- None

5.5 Exemptions

- None

7. 315201000-PM-07, Manage, Lead and Develop Personnel, NQF Level 4, Learning Contract Time 45 days, Credits: 36

7.1 Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner with an opportunity to practice and display Human Resource Management skills within a simulated work environment.

The learner will be required to:

- PM-07-PS01: Manage Service Providers and or Personnel
- PM-07-PS02: Determine Performance Standards for Personnel
- PM-07-PS03: Optimise Utilization of Personnel
- PM-07-PS04: Compile Continuous Professional Development Plans

7.2 Guidelines for Practical Skills

7.2.1. PM-07-PS01: Manage Service Providers and / or Personnel

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 Conduct situation and risk assessment to understand the influence of a situation requiring maintenance and repairs
- PA0102 Acquire and maintain situational awareness and accidents and increase safety margins
- PA0103 Identify and report on required maintenance and repairs to machinery and equipment (job list)
- PA0104 Generate job specifications as per the job list
- PA0105 Manage the performance of the service provider against the Service Level Agreements
- PA0106 Sign job off and report to management

Applied Knowledge

- AK0101 HR policies and procedures
- AK0102 Merchant Shipping Act
- AK0103 SLA Procedures
- AK0104 Financial Clauses
- AK0105 Service Provider capability
- AK0106 International Conventions and Guidelines

Internal Assessment Criteria

- IAC0101 A situation and risk assessment are conducted to determine maintenance and repair requirements
- IAC0102 Various safety margins are defined based on situational awareness principles
- IAC0103 A list of the maintenance and repair jobs is compiled
- IAC0104 Job specifications are generated in line with the job list
- IAC0105 The performance of the service provider is assessed, monitored and rectified against the Service Level Agreements
- IAC0106 The relevant documentation is completed to sign off on the job once finalised

7.2.2. PM-07-PS02: Determine Performance Standards for Personnel

Scope of Practical Skill

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

- PA0201 Identify performance measures against best practice
- PA0202 Communicate performance measures
- PA0203 Measure performance agreement
- PA0204 Conduct performance appraisals
- PA0205 Institute corrective measures

Applied Knowledge

- AK02019 Labour legislation, Staff Performance, Agreements
- AK02020 HR Appraisal Procedures and Policies
- AK02021 Company corrective measures procedures

Internal Assessment Criteria

- IAC0201 Staff performance agreements are negotiated and signed off in accordance to the performance management policy
- IAC0202 Performance appraisals are conducted and concluded in accordance with the rules as set out in the company policies and procedures
- IAC0203 HR corrective measures are instituted according to company policies and procedures

7.2.3. PM-07-PS03: Optimise Utilization of Personnel

Scope of Practical Skill

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

- PA0301 Comply to relevant legislation
- PA0302 Conduct disciplinary hearings
- PA0303 Maintain Trade Union Related Relations
- PA0304 Recognise and respond to cultural issues
- PA0305 Demonstrate effective leadership behaviours
- PA0306 Apply the concept of task and workload management
- PA0307 Enhance team work through effective conflict management
- PA0308 Ensure updated license to practice

Applied Knowledge

- AK0301 Labour legislation
- AK0302 Company policies and procedures
- AK0303 Leadership theories and strategies
- AK0304 Managing cultural diversity concepts and theories
- AK0305 Task and workload management policies and procedures
- AK0306 Team working models and conflict management styles

Internal Assessment Criteria

- IAC0301 Industrial and Labour relations issues comply with relevant legislation and Code of good Practice i.e. Trade Unions Procedures, Code of good Practice and the role of the CCMA
- IAC0302 Disciplinary Hearings procedures follow company policies and procedures
- IAC0303 Cultural issues are recognised and responded to, including, but not limited to cultural awareness and bias including national, organisational, departmental and personal cultural approaches
- IAC0304 Effective leadership behaviours are demonstrated
- IAC0305 Strategies are developed to effectively apply task and workload management in order to manage fatigue and stress
- IAC0306 Team working models and conflict management styles are identified and applied within own team

7.2.4. PM-07-PS04: Compile Continuous Professional Development Plans

Scope of Practical Skill

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

- PA0401 Comply with training legislation
- PA0402 Conduct formal and informal shipboard training

Applied Knowledge

- AK0401 Training and development legislation
- AK0402 The aim of shipboard training
- AK0403 Principles and methods of developing human potential
- AK0404 Conditions of work environment
- AK0405 Labour legislation
- AK0406 Skills development guidelines
- AK0407 Performance management procedures
- AK0408 Ergonomics
- AK0409 Shipboard Safety Procedures
- AK04010 Shipboard Operational procedures
- AK04011 Code of Safe Working Practices for Merchant Seaman / Fishermen
- AK04012 Marine pollution legislation

Internal Assessment Criteria

- IAC0401 Impact of workplace training is assessed by means of surveys, questionnaires etc.
- IAC0402 Training reports are completed according to operational specifications

7.3 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
- Type approved simulation, where necessary

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 Practical Skill Module

- None

7.5 Exemptions

- None

SECTION 3C: WORK EXPERIENCE MODULE SPECIFICATIONS

List of Work Experience Module Specifications

- 315201000-WM-01, Following Navigational Procedures at Management Level, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-02, Complying with Cargo Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-03, Following Management and Care of Personnel and Vessel Procedures, NQF Level 6, Learning Contract Time 30 days, Credits: 24
- 315201000-WM-04, Adhering to Ship Master's Business Practices, NQF Level 6, Learning Contract Time 26 days, Credits: 21
- 315201000-WM-05, Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, Credits 16
- 315201000-WM-06: Managing Security Procedures NQF level 5, Learning contract time 10 days Credits: 8
- 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days Credits: 36

1 315201000-WM-01: Follow Navigational Procedures at Management Level, NQF level 6, Learning contract time 30 days (Credits: 24)

1.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to be in charge of the vessel, bridge, engine-room and the bridge and engine-room teams, responsible for the safety of the crew and vessel at all times

The learner will be required to be exposed to:

- WM-01-WE01: Bridge Management and Watchkeeping Procedures
- WM-01-WE02: Manage the Human Resources Onboard
- WM-01-WE03: Manage Vessel and Care for Persons On Board
- WM-01-WE04: Management of Collision Avoidance and Safe Navigation
- WM-01-WE05: Monitor, Plan and Control Emergencies
- WM-01-WE06: Practice and Implement Ship Master's Business
- WM-01-WE07: Manage Cargo and / or Catch (Fish) operations

1.2 Guidelines for Work Experiences

1.2.1 WM-01-WE01: Bridge Management and Watchkeeping Procedures

Scope of Work Experience

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

- WA0101 Manage and lead a bridge team for routine navigation and collision avoidance
- WA0102 Control the safety of the vessel and persons on board under various circumstances
- WA0103 Plan fire and security procedures and conduct appropriate drills
- WA0104 Conduct commercial and statutory negotiations and obligations
- WA0105 Supervise the safe loading of carriage and discharge of Cargo and / or Catch (Fish) under routine and abnormal situations

Supporting evidence

- SE0101 Statement of work experience

1.2.2 WM-01-WE02: Manage the Human Resources Onboard

Scope of Work Experience

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

- WA0201 Supervise the training of personnel in helm order instructions and response
- WA0202 Allocate crew members to each watch
- WA0203 Manage automatic pilot to manual steering and vice versa
- WA0204 Ensure competence of crew members on each watch

Supporting Evidence

- SE0201 Statement of work experience

1.2.3 WM-01- WE03: Manage Vessel and Care for Persons On Board

Scope of Work Experience

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

- WA0301 Control trim stability and stress
- WA0302 Manage measures to ensure safety of life at sea
- WA0303 Monitor and control compliance with legislative compliance

WA0304 Maintain operational condition of lifesaving, firefighting and other safety systems

Supporting Evidence

SE0301 Statement of work experience

1.2.4 WM-01-WE04: Management of Collision Avoidance and Safe Navigation

Scope of Work Experience

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

WA0401 Use of radar and ARPA to manage collision avoidance
WA0402 Employ passage planning techniques to improve safe navigation
WA0403 Utilise bridge team management procedures
WA0404 Apply collision regulations in managing safe navigation

Supporting evidence

SE0401 Statement of work experience

1.2.5 WM-01-WE05: Monitor, Plan and Control Emergencies

Scope of Work Experience

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

WA0501 Develop emergency and damage control plans
WA0502 Preparation of contingency plans
WA0503 Plan and conduct emergency drills
WA0504 Assess effects of emergency and compile reports

Supporting Evidence

SE0501 Statement of work experience

1.2.6 WE06: Practice and Implement Ship Master's Business

Scope of Work Experience

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

WA0601 Allocation, assignment and prioritisation of resources
WA0602 Communicate effectively on board
WA0603 Ability to apply decision making techniques
WA0604 Develop and implement standard operating procedures
WA0605 Organise and manage the provision of medical care on board

Supporting Evidence

SE0701 Statement of work experience

1.2.7 WE07: Manage Cargo and / or Catch (Fish) Operations

Scope of Work Experience

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

WA0701 Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of Cargo and / or Catch (Fish)
WA0702 Assess reported defects and damage to Cargo and / or Catch (Fish) spaces, hatch covers and ballast tanks and take appropriate action
WA0703 Compile a plan for carriage of dangerous goods

Supporting Evidence

SE0701 Statement of work experience

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. International Code of signals
7. Code of safe working practices for merchant seaman / fishermen
8. Equipment manufacturers' requirements
9. Standards of Training, Certification and Watchkeeping (STCW)
10. Annexes to Merchant Shipping (Safe manning, training and certification) Regulations
11. National and International Codes relevant to loading, handling and carriage of Cargo and / or Catch (Fish)
12. ISPS Code

1.4 Criteria for Workplace Approval

Physical Requirements:

Context 1: Deck

- *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.*

Context 2: Fishing

- *Access to all unrestricted areas on a fishing vessel in order for learner to have exposure to all aspects of occupational tasks in line with Merchant Shipping "Safe manning, training and certification" Regulations(Able Seafarer: Deck (Fishing)*
- *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.*

Context 3: Port Operations

- *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 Certificate that includes competencies related to navigational, 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

Candidates who hold a Masters' qualification who wish to migrate to a different specialisation may do so provided they attain the required workplace experience as per the Merchant Shipping "Safe manning, training and certification" Regulations

1.5 Assignments to be Assessed Externally

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None

2 315201000-WM-02: Comply with Cargo and / or Catch (Fish) Handling and Stowage Processes at Management Level, NQF Level 6, Learning Contract Time 26 days, (Credits: 21)

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 plan and ensure safe loading, stowage, securing, and care during the voyage and unloading of Cargo and / or Catch (Fish).

The learner will be required to be exposed to:

- WM-02-WE01 Cargo and / or Catch (Fish) Stowage Plan
- WM-02-WE02 Shipboard Cargo and / or Catch (Fish) Handling and Stowage Procedures
- WM-02-WE03 International Maritime Dangerous Good Code

2.2 Guidelines for Work Experiences

2.2.1 WM-02-WE01: Cargo and / or Catch (Fish) Stowage Plan

Scope of Work Experience

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

- WA0101 Plan for the receiving of Cargo and / or Catch (Fish) on board
- WA0102 Plan for the stowage and securing Cargo and / or Catch (Fish) on deck and under deck
- WA0103 Draw up Cargo and / or Catch (Fish) plan using Cargo and / or Catch (Fish) manifest, space available and discharge sequence

Supporting evidence

- SE0101 Statement of work experience

2.2.2 WM-02-WE02: Shipboard Cargo and / or Catch (Fish) Handling and Stowage Procedures

Scope of Work Experience

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

- WA0201 Control the use of appropriate Cargo and / or Catch (Fish) handling gear for Cargo and / or Catch (Fish) operations
- WA0202 Prepare Cargo and / or Catch (Fish) spaces, documentation, Cargo and / or Catch (Fish) lifting equipment , dunnaging and separation cloths for receiving Cargo and / or Catch (Fish)
- WA0203 Manage securing, lashing and tying down of Cargo and / or Catch (Fish)
- WA0204 Manage securing and lashing of containers and/ or deck Cargo and / or Catch (Fish)
- WA0205 Ensure safety procedures for danger and snap back zones are adhered to

Supporting evidence

- SE0201 Statement of work experience

2.2.3 WM-02-WE03: International Maritime Dangerous Goods Code

Scope of Work Experience

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

- WA0301 Access IMDG Code to ascertain details re the stowage and segregation of dangerous/ hazardous goods.

- WA0302 Plan stowage of containers in accordance with IMDG Code, discharge sequence and space available.
- WA0303 Obtain clearance from Port State administration prior to departure

Supporting Evidence

- SE0301 Statement of work experience

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 / fishermen
7. Machine and equipment manufacturers' requirements
8. Standards of Training, Certification and Watchkeeping (STCW) Annexes.
9. IMDG Code and IMFAG

2.4 Criteria for Workplace Approval

Physical Requirements:

- Access to Cargo and / or Catch (Fish) stowage areas and stores in order for learner to have exposure to all aspects of occupational tasks
- All equipment relevant to Cargo and / or Catch (Fish) handling and stowage to conduct occupational tasks
- The physical resources in terms of equipment, systems, conditions and interfaces that the vessel may 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 Cargo and / or Catch (Fish) handling and Cargo and / or Catch (Fish) stowage 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

2.5 Additional Assignments to be Assessed Externally

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None

3 315201000-WM-03: Follow management and care of personnel and vessel, NQF Level 6, Learning Contract Time 30 days, (Credits: 24)

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 use of leadership and managerial skills in controlling shipboard operations and care for persons on board

The learner will be required to be exposed to:

- WM-03-WE01: Shipboard Safety Procedures
- WM-03-WE02: Shipboard Operational Procedures (according to International Safety Management Code for Ships)
- WM-03-WE03: Code of Safe Working Practices for Merchant Seamen
- WM-03-WE04: Marine Pollution Prevention Procedures

3.2 Guidelines for Work Experiences

3.2.1 WM-03-WE01: Shipboard Safety Procedures

Scope of Work Experience

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

- WA0101 Manage safe use of operational lifting and hauling equipment and Cargo and / or Catch (Fish) gear
- WA0102 Compile safety schedules on lifting and Cargo and / or Catch (Fish) equipment prior to use
- WA0103 Manage the implementation of safety procedures according to international best practice

Supporting evidence

- SE0101 Statement of work experience

3.2.2 WM-03-WE02: Shipboard Operational Procedures

Scope of Work Experience

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

- WA0201 Plan and control the preparation for maintenance and operation of shipboard equipment
- WA0202 Manage the securing of the vessel including the forward and after decks and prepare vessel for inclement weather at sea
- WA0203 Plan and prepare the operations of mooring equipment including self-tensioning winches in accordance with shipboard operational procedures

Supporting Evidence

- SE0201 Statement of work experience

3.2.3 WM-03-WE03: Code of Safe Working Practices for Merchant Seamen

Scope of Work Experience

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

- WA0301 Manage permit-to-work system procedures
- WA0302 Work aloft, work over the side, entry into confined spaces and carry out electrical and hot work

- WA0303 Wear and employ correct PPE appropriate to the operation including fall arrestors and safety harnesses
- WA0304 Participate in rescue and evacuation drills and procedures
- WA0305 Monitor with transport and care for injured persons on board

Supporting evidence

- SE0301 Statement of work experience

3.2.4 WM-03-WE04: Marine Pollution Prevention Procedures

Scope of Work Experience

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

- WA0401 Compile the Vessel Garbage Disposal Plan
- WA0402 Prevent spillage of waste overboard
- WA0403 Use antipollution equipment onboard (SOPEP) where required
- WA0404 Plan a SOPEP drill
- WA0405 Manage the safe transfer of bunkers

Supporting Evidence

- SE0401 Statement of work experience

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 / fishermen
7. Machine and equipment manufacturers' requirements
8. Standards of Training, Certification and Watchkeeping (STCW)
9. The ISPS Code

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
- 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 navigation 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

3.5 Additional Assignments to be Assessed Externally

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None

4 315201000-WM-04: Adhere to Ship's Master's Business, NQF Level 6, Learning Contract Time 26 days, (Credits: 21)

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 all management functions of ship masters business related to statutory and commercial criteria

The learner will be required to be exposed to:

- WM-04-WE01 Vessel's Planned Maintenance System
- WM-04-WE02 Code of Safe Working Practice for Merchant Seaman

4.2 Guidelines for Work Experiences

4.2.1 WM-04-WE01: Vessel's Planned Maintenance System

Scope of Work Experience

- WA0101 Compile or revise predictive and preventative maintenance plans
- WA0102 Compile or revise maintenance schedules for equipment and infrastructure
- WA0103 Manage preventative maintenance onboard

Supporting evidence

- SE0101 Statement of work experience

4.2.2 WM-04-WE02: Code of Safe Working Practices for Working Seamen

Scope of Work Experience

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

- WA0201 Manage the implementation of the permit-to-work ethos
- WA0202 Ensure all required equipment to carry out safe working procedures is available to crew at all times
- WA0203 Manage the employment of safe working practices in all operational activities on board.
- WA0204 All statutory certification required related to commercial and legal compliance
- WA0205 Maintain all legal and statutory documentation and records related to officers and crew aboard

Supporting Evidence

- SE0201 Statement of work experience

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. International Code of signals
7. Code of safe working practices for merchant seaman / fishermen
8. Machine and equipment manufacturers' requirements
9. Standards of Training, Certification and Watchkeeping (STCW)

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
- 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 navigation 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

4.5 Additional Assignments to be Assessed Externally

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None

5 315201000-WM-05: Abiding by Ship Handling and Manoeuvring Procedures NQF Level 6, Learning Contract Time 20 days, (Credits 16)

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 the safe management and preparation of mooring, towing berthing and anchoring operations

The learner will be required to be exposed to:

WM-05-WE01: Processes involved in Mooring, Towing, Berthing and Anchoring a Vessel in accordance with Ship Board Procedures

5.2 Guidelines for Work Experiences

5.2.1 WM-06-WE01: Processes involved in Mooring, Towing, Berthing and Anchoring a Vessel in accordance with Ship Board Procedures

Scope of Work Experience

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

- WA0101 Plan, prepare for and monitor mooring operations
- WA0102 Plan, prepare for and monitor towing operations
- WA0103 Plan, prepare for and monitor berthing and anchoring operations

Supporting evidence

- SE0101 Statement of work experience

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. International Code of signals
7. Code of safe working practices for merchant seaman / fishermen
8. Master's standing orders
9. Safe engineering practice requirements and naval standards
10. Machine and equipment manufacturers' requirements
11. Standards of Training, Certification and Watchkeeping (STCW)

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
- 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 navigation 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

5.5 Additional Assignments to be Assessed Externally

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None

6 315201000-WM-06: Managing Security Procedures, NQF level 5, Learning contract time 10 days (Credits: 8)

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 management and preparation of carrying out security duties and drills against various contingency plans

The learner will be required to be exposed to:

WM-05-WE01: Company and Shipboard Security Procedures

WM-05-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 Receive and log reports of threats or security incidents
- WA0102 Notify the master and / or 2nd Engineer and SSO of all reports of threats and security incidents
- WA0103 Make required notifications to the facility, port and local law enforcement, as directed by the master and / or 2nd Engineer
- WA0104 Request emergency assistance from the facility, port or local law enforcement, as directed by the master and / or 2nd Engineer
- WA0105 Activate security teams, as directed by the master and / or 2nd Engineer
- WA0106 Receive routine check-in calls from security patrols
- WA0107 Receive and log changes in security levels and inform the master and / or 2nd Engineer and SSO
- WA0108 Log security training and exercises

Supporting evidence

- SE0101 Statement of work experience

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:

- WA0401 Ensure the vessel is prepared against possible armed attack as per international recommendations
- WA0402 Identify and communicate possible threats of piracy or armed robbery
- WA0403 Issue instructions as per the identified threat, as appropriate
- WA0404 Monitor and control of attack-related drills on board

Supporting evidence

- SE0101 Statement of work experience

6.3 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. International Code of signals
7. Code of safe working practices for merchant seaman / fishermen
8. Master and / or 2nd Engineer's standing orders
9. Safe engineering practice requirements and naval standards
10. Machine and equipment manufacturers' requirements
11. Standards of Training, Certification and Watchkeeping (STCW)

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 a qualified engineer or a higher qualification than the learner 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

7. 315201000-WM-07: Complying with Human Resources Policies and Procedures at the Management Level, NQF level 6, Learning Contract Time 45 days, Credits: 36

7.1 Purpose of the Work Experience Module

The focus of the work experience is on providing the learner an opportunity to gain exposure to monitoring, controlling and leading service providers and / or personnel as per legislative and regulatory compliance frameworks

The learner will be required to be exposed to:

- WM-07-WE01: Comply with Human Resources and Contractual Practices
- WM-07-WE02: Adhere to Performance Management Principles
- WM-07-WE03 Uphold Team Management Practices
- WM-07-WE04 Ensure Training and Development of all Personnel as per Operational Requirements

7.2 Guidelines for Work Experiences

7.2.1 WM-01-WE01: Comply with Human Resources and Contractual Practices

Scope of Work Experience

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

- WA0101 Statutory certification for personnel and vessel is maintained as per legal and regulatory compliance requirements
- WA0102 Risk assessment policies are followed to determine scope of maintenance and repair requirements
- WA0103 Situational awareness practices are executed to determine possible margins for error and institute safety measures
- WA0104 Job specifications are logged onto the job list
- WA0105 Contracted services aboard are managed according to terms and conditions
- WA0106 Completion report is signed off to confirm quality and allow payment

Supporting evidence

- SE0101 Statement of work experience

7.2.2 WM-07-WE02: Adhere to Performance Management Principles

Scope of Work Experience

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

- WA0201 Performance standards are identified in accordance with operational requirements
- WA0202 Agreement is reached with a member of staff on performance expectations
- WA0203 Performance is measured against operational requirements
- WA0204 Performance appraisals are conducted according to company requirements
- WA0205 Corrective measures are agreed upon and instituted

Supporting evidence

- SE0201 Statement of work experience

7.2.3 WM-07-WE03: Uphold Team Management Practices

Scope of Work Experience

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

- WA0301 Team building principles are adhered to
- WA0302 Change management requirements are complied with as and when required
- WA0303 Effective leadership behaviour is displayed

Supporting evidence

- SE0301 Statement of work experience

7.2.4 WM-07-WE04: Ensure Training and Development of all Personnel as per Operational Requirements

Scope of Work Experience

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

- WA0405 Skills gap analysis is conducted to determine training needs
- WA0406 Personal development plans are compiled
- WA0407 Onboard formal and informal shipboard training is completed

Supporting evidence

- SE0101 Statement of work experience

7.3 Contextualised Workplace Knowledge

1. The aim of shipboard training
2. Principles and methods of developing human potential
3. Conditions of work environment
4. Labour legislation
5. Skills development guidelines and legislation
6. Performance management procedures
7. Ergonomics
8. Shipboard Safety Procedures
9. Shipboard Operational procedures
10. Marine pollution legislation

7.4 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 a qualified engineer or a higher qualification than the learner 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

7.5 Additional Assignments to be Assessed Externally

Assignment description:

- None

Elements to be assessed:

- None

Evaluation criteria:

- None