



Skills Programme				
Curriculum Code	Curriculum Title			
900217-000-00-00	Mines Rescue Services Worker			
Quality Partner (QP)	Name	Website Address	Telephone Number	Logo
Mining Qualifications Authority	Jeanette De Leeuw	https://mqa.org.za/	011 547 2600	

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 - 2.2 Guidelines for Practical Skills**
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SECTION 1 CURRICULUM SUMMARY

1.1. Occupational Information

1.1.1. Associated Occupation Code and Title

541902 Emergency Service and Rescue Official

1.1.2. Skills Programme code and title

900217-000-00-00 Mines Rescue Services Worker

1.1.3. Alternative Titles

Rescue Services Worker

1.2. Curriculum Information

1.2.1. Curriculum Structure

NQF Level: 4

Credits: 24

1.2.2. Relation of this Curriculum for progression

Progression will be Shift Overseer.

1.3. Curriculum Structure

1.3.1. Knowledge Modules

900217-000-00- KM-01, Mines rescue and emergency work, NQF Level 4, 8 Credits

Total Credits: 8

1.3.2. Practical Skill Modules

900217-000-00-PM-01, Locate and evaluate the extent of the fire and apply the method of managing the fire, NQF Level 4, 10 Credits

900217-000-00-PM-02, Locate and extricate persons and monitor and evaluate rescue operations, NQF Level 4, 6 Credits

Total credits: 16

1.4. Entry Requirements

NQF Level 3

Learners must meet the following legal and medical requirements to function as a Mines Rescue Services Worker prior to registering for training and prior to reporting for the External Summative Assessment must:

- Be between 21 and 46 years of age.
- Have been declared medically fit to work underground.
- Have passed a heat tolerance test.
- Have a Competent Person A certification for the relevant mining operation and mine.

- Be able to work in hot, irrespirable environments, confined spaces and areas with limited visibility

1.5. Recognition of Prior Learning (RPL)

RPL for access to the external integrated summative assessment: Accredited providers and approved workplaces must apply the internal assessment criteria specified in the related curriculum document to establish and confirm prior learning. Accredited providers and workplaces must confirm prior learning by issuing a statement of result or certifying a work experience record.

RPL for access to the qualification: Accredited providers and approved workplaces may recognise prior learning against the relevant access requirements.

1.6. Quality Partner for Assessment

Originator/Development Quality Partner (DQP): Mining Qualifications Authority

Originating Provider/Assessment Quality Partner (AQP): Mining Qualifications Authority

Name of body: Mining Qualifications Authority

Address of body: 7 Anerley Road, Parktown 2198

Website details: <https://mqa.org.za/>

SECTION 2: OCCUPATIONAL PROFILE

1. Occupational Purpose

The purpose of this skills programme is to prepare a learner to operate as a Mines Rescue Services Worker.

A Mines Rescue Services Worker completes rescue operations, to minimise loss of life and assets by performing rescue and recovery services and managing fires underground, in accordance with statutory, regulatory, and organisational procedures, policies, codes of practice, standards and agreements.

The purpose of this qualification is to prepare a learner.

A qualified learner will be able to:

- Manage or extinguish underground fires in hostile environments.
- Locate and extricate persons from unsafe areas underground.

1.1. Occupational Tasks

1.1.1. Managing or extinguishing underground fires in hostile environments (NQF Level 4)

1.1.2. Locating and extricating persons from unsafe areas underground (NQF Level 4)

1.2. Occupational Task Details

1.2.1. **Managing or extinguishing underground fires in hostile environments (NQF Level 4)**

Unique Product or Service

- Managed or extinguished underground fires

Occupational Responsibilities

- i. Locate and evaluate the extent of the fire and apply the method of managing the fire

Occupational Contexts

- Fires in hostile environments while using breathing apparatus

1.2.2. **Locating and extricating persons from unsafe areas underground (NQF Level 4)**

Unique Product or Service

- Rescued persons or recovered bodies

Occupational Responsibilities

- i. Locate and extricate persons and monitor and evaluate rescue operations

Occupational Contexts

- Unsafe areas underground

SECTION 3 CURRICULUM SPECIFICATIONS

SECTION 3A KNOWLEDGE MODULE SPECIFICATIONS

List of Knowledge Modules.

- 900217-000-00- KM-01, Mines rescue and emergency work, NQF Level 4, 8 Credits

1. 900217-000-00- KM-01, Mines rescue and emergency work, NQF Level 4, 8 Credits

1.1. Purpose of the Knowledge Modules

The main focus of the learning in this knowledge module is to provide all the necessary legal, technical and safety information required to deal with rescue, recovery and emergency work in hostile environments underground.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: Breathing apparatus components and functions (6%)
- KM-01-KT02: Medical oxygen under pressure, cylinders and booster pumps (5%)
- KM-01-KT03: Emergency procedures relating to breathing apparatus (5%)
- KM-01-KT04: Principles for constructing fresh air bases (5%)
- KM-01-KT05: Principles and use of the life line and link line functions (5%)
- KM-01-KT06: Principles, protocols and processes of emergency work (6%)
- KM-01-KT07: Principles of mine gas detection and interpretation (5%)
- KM-01-KT08: Principles and use of ventilation instruments in emergency work (5%)
- KM-01-KT09: Principles and use of rescue communication systems (5%)
- KM-01-KT010: Principles and methods of managing and extinguishing fires (10%)
- KM-01-KT011: Body recovery procedures (5%)
- KM-01-KT012: Heat stress management (5%)
- KM-01-KT013: Resuscitation processes (6%)
- KM-01-KT014: Principles, types and use of self-contained self-rescuers (6%)
- KM-01-KT015: Briefing and debriefing processes (5%)
- KM-01-KT016: Rescue protocols (6%)
- KM-01-KT017: Hazard identification and risk assessment (5%)
- KM-01-KT018: Legislation related to mine safety (5%)

1.2. Guidelines for Topics

1.2.1. KM-01-KT01: Breathing apparatus components and functions (6%)

Topic elements to be covered include:

- KT0101 Components of breathing apparatus and their functions
- KT0102 Assembly and maintenance of components and the maintenance of the set
- KT0103 System checks and pre-use visual inspections
- KT0104 Donning, doffing, and wearing breathing apparatus
- KT0105 Cleaning and storing breathing apparatus

Internal Assessment Criteria

- IAC0101 Identify the components of breathing apparatus and describe their functions
- IAC0102 Describe the assembly and maintenance of components and the maintenance of the set
- IAC0103 Describe system checks and pre-use visual inspections of breathing apparatus
- IAC0104 Describe the donning, doffing and wearing of breathing apparatus
- IAC0105 Describe the requirements for cleaning and storing of breathing apparatus

1.2.2 KM-01-KT02: Medical oxygen under pressure, cylinders and booster pumps (5%)

Topic elements to be covered include

KT0201 Hazards related to working with oxygen under pressure
KT0202 Key components of oxygen booster pumps and their functions
KT0203 The operation of the booster pump
KT0204 Care and maintenance of oxygen cylinders and booster pumps

Internal Assessment Criteria

IAC0101 Identify and describe all the hazards related to working with oxygen under pressure
IAC0102 Identify all the key components of oxygen booster pumps and describe their functions
IAC0103 Describe the operation of the booster pump
IAC0104 Describe the care and maintenance of oxygen cylinders and booster pumps

1.2.3 KM-01-KT03: Emergency procedures relating to breathing apparatus (5%)

Topic elements to be covered include:

KT0301 Potential failures in a breathing apparatus
KT0302 Emergency procedures relating to breathing apparatus
KT0303 The use of a breathing apparatus for resuscitation

Internal Assessment Criteria

- Describe and explain all the potential failures in a breathing apparatus
- Describe the emergency procedures relating to breathing apparatus
- Describe the use of a breathing apparatus for resuscitation

1.2.4 KM-01-KT04: Principles for constructing fresh air bases (5%)

Topic elements to be covered include:

KT0401 Definition of a fresh air base
KT0402 The requirements of a fresh air base
KT0403 The process of setting up and maintaining a fresh air base

Internal Assessment Criteria

- Define a fresh air base
- Describe the requirements of a fresh air base
- Describe the process of setting up and maintaining a fresh air base

1.2.5 KM-01-KT05: Principles and use of the life line and link line functions (5%)

Topic elements to be covered include:

KT0501 The use of life and link lines

KT0502 Situations where the use of life and link lines is required

Internal Assessment Criteria

- Describe the use of life and link lines
- Describe the situations where the use of life and link lines is required

1.2.6 KM-01-KT06: Principles, protocols and processes of emergency work (6%)

Topic elements to be covered include:

KT0601 Definitions of a bona fide member and a bona fide emergency call

KT0602 Administrative requirements for emergency work

KT0603 Operational pre-requisites, e.g. medical exams, for mines rescue services workers

KT0604 Training requirements for the mines rescue services worker

KT0605 Procedures for receiving calls, and procedures to be followed on arrival at the rescue room and on arrival at the incident

KT0606 Typical steps in an emergency incident

KT0607 Principles and processes relating to teams and team work in emergency work, including duration of call out, use of back up teams and rest periods

Internal Assessment Criteria

- Define a bona fide member and a bona fide emergency call
- Describe the administrative requirements for emergency work
- Describe the operational pre-requisites for mines rescue services workers
- Describe the training requirements for the mines rescue services worker
- Describe and explain the procedures for receiving calls, and the procedures to be followed on arrival at the rescue room and on arrival at the incident
- List and describe the typical steps in an emergency incident
- Describe and explain the principles and processes relating to teams and team work in emergency work, including duration of call out, use of back up teams and rest periods

1.2.7 KM-01-KT07: Principles of mine gas detection and interpretation (5%)

Topic elements to be covered include:

KT0701 Characteristics and permissible legal limits of the most common gases related to emergencies, including oxygen, hydrogen, nitrogen, carbon monoxide, carbon dioxide and methane

KT0702 Methods of detecting the most common gases

KT0703 Actions to be taken in relation to various levels of each gas

KT0704 Interpretation of gas readings to describe the conditions of an emergency

Internal Assessment Criteria

- List and describe the characteristics and permissible legal limits of the most common gases related to emergencies
- Describe the methods of detecting the most common gases
- Describe the actions to be taken in relation to various levels of each gas
- Interpret gas readings and describe prevailing conditions

1.2.8 KM-01-KT08: Principles and use of ventilation instruments in emergency work (5%)

Topic elements to be covered include:

KT0801 Functions, pre-use checks and use of handheld gas detectors

KT0802 Calculations used to interpret the readings of handheld gas detectors

KT0803 Functions, pre-use checks and use of other ventilation instruments used to measure vent flow, pressure, temperature and visibility

Internal Assessment Criteria

- Describe the functions, pre-use checks and use of handheld gas detectors
- Describe the calculations used to interpret the readings of handheld gas detectors
- Describe the functions, pre-use checks and use of other ventilation instruments used to measure vent flow, pressure, temperature and visibility

1.2.9 KM-01-KT09: Principles and use of rescue communication systems (5%)

Topic elements to be covered include:

KT0901 Functions and components of the various communication systems, such as two-way radios and sub-strata radios

KT0902 Protocols used for communicating on radio

KT0903 Installation and testing of substrata radios

KT0904 Pre-operational checks performed on rescue communication equipment and systems

KT0905 Battery charging and changing procedures

Internal Assessment Criteria

- Describe the functions and components of the various rescue communication systems
- Describe the protocols used for communicating on radio
- Describe the process of installing and testing substrata radios
- Describe the pre-operational checks performed on rescue communication equipment and systems
- Describe battery charging and changing procedures

1.2.10 KM-01-KT010: Principles and methods of managing and extinguishing fires (10%)

Topic elements to be covered include:

KT1001 The fire triangle

KT1002 Causes of underground fires

KT1003 Methods of managing fires and the reasons for each

KT1004 Purpose and function of the equipment used for fire management methods

KT1005 The classification of fires

Internal Assessment Criteria

- Describe the fire triangle
- Describe the various causes of underground fires
- Describe the various methods of managing fires and explain the reasons for each
- Describe the purpose and function of the equipment that is used for each fire management method
- Explain how fires are classified

1.2.11 KM-01-KT011: Body recovery procedures (5%)

Topic elements to be covered include:

KT1101 The triage system and the principles of scene management

KT1102 The use and functions of personal protective equipment used for protection from body fluids

KT1103 The procedure for reporting contact with body fluids

KT1104 Procedures for marking the positions of the body, identifying the body and recording environmental conditions

KT1105 Protocols for removing and transporting bodies

KT1106 Legal requirements relating to the scene of any accident

Internal Assessment Criteria

- Describe the triage system and the principles of scene management
- Describe the use and functions of personal protective equipment used for protection from body fluids
- Describe the procedure for reporting contact with body fluids
- Describe the procedures for marking the positions of the body, identifying the body and recording environmental conditions
- Describe the protocols for removing and transporting bodies
- Describe the legal requirements relating to the scene of any accident

1.2.12 KM-01-KT012: Heat stress management (5%)

Topic elements to be covered include:

KT1201 The method and purpose of heat tolerance testing

KT1202 The effects of heat and symptoms of heat stroke

KT1203 The treatment of heat stroke

KT1204 The use and interpretation of the emergency heat stress index (EHSI) chart

KT1205 The application and use of body cooling garments

KT1206 The effects of dehydration and the purpose and process of re-hydration

Internal Assessment Criteria

- Describe the method and purpose of heat tolerance testing
- Describe the effects of heat and symptoms of heat stroke
- Describe the treatment of heat stroke
- Describe and explain the use and the interpretation of the emergency heat stress index (EHSI) chart
- Describe the application and use of body cooling garments
- Describe the effects of dehydration and explain the purpose and the process of re-hydration

1.2.14 KM-01-KT013: Resuscitation processes (6%)

Topic elements to be covered include:

KT1301 The components, function and use of resuscitators

KT1302 Resuscitation and cardio pulmonary resuscitation

KT1303 Checking and maintenance of resuscitation equipment

Internal Assessment Criteria

- Describe the components, function and use of resuscitators
- Describe the processes of resuscitation and cardio pulmonary resuscitation

- Describe the requirements for checking and maintenance of resuscitation equipment

1.2.14 KM-01-KT014: Principles, types and use of self-contained self-rescuers (6%)

Topic elements to be covered include:

KT1401 Types, components, function and use of self-contained self-rescuers (SCSR)

KT1402 Pre-use checks and tests of the self-contained self-rescuer

KT1403 Donning the self-contained self-rescuer

KT1404 Rescuing persons using a self-contained self-rescuer

Internal Assessment Criteria

- Describe the types, components, function and use of self-contained self-rescuers (SCSR)
- Describe the pre-use checks and tests of the self-contained self-rescuer
- Describe the donning of the self-contained self-rescuer
- Describe the process of rescuing persons using a self-contained self-rescuer

1.2.15 KM-01-KT015: Briefing and debriefing processes (5%)

Topic elements to be covered include:

KT1501 The importance and the purpose of briefing and debriefing

KT1502 Administrative tools required for briefing and debriefing

KT1503 Principles and processes related to briefing and debriefing

KT1504 The procedure for handing over to the relieving team and other emergency personnel

Internal Assessment Criteria

- Describe the importance and the purpose of briefing and debriefing
- Describe the administrative tools required for briefing and debriefing
- Describe the principles and the processes related to briefing and debriefing
- Describe the procedure for handing over to the relieving team and other emergency personnel

1.2.16 KM-01-KT016: Rescue protocols (6%)

Topic elements to be covered include:

KT1601 The operating procedure for entering ore passes, shafts or other steeply inclined or vertical areas for rescue and recovery

KT1602 The operating procedure for entering hot environments

KT1603 The operating procedure for entering a hazardous atmosphere

KT1604 The operating procedure following major ground movement or fall of ground

Internal Assessment Criteria

- Describe the operating procedure for entering ore passes, shafts or other steeply inclined or vertical areas for rescue and recovery
- Describe the operating procedure for entering hot environments
- Describe the operating procedure for entering a hazardous atmosphere
- Describe the operating procedure following major ground movement or fall of ground

1.2.17 KM-01-KT017: Hazard identification and risk assessment (5%)

Topic elements to be covered include:

KT1701 Legal requirements for conducting hazard identification and risk assessments (HIRA)

KT1702 HIRA processes for continuous and issue-based assessments

KT1703 Administrative processes and procedures related to HIRA

KT1704 Types of corrective actions following the HIRA process

Internal Assessment Criteria

- Describe the legal requirements for conducting hazard identification and risk assessments (HIRA)
- Describe the HIRA processes for continuous and issue-based assessments
- Describe the administrative processes and procedures related to HIRA
- Describe the various types of corrective actions following HIRA processes

1.2.18 KM-01-KT018: Legislation related to mine safety (5%)

Topic elements to be covered include:

KT1801 The employee's and employer's responsibilities in terms of the Mine Health and Safety Act

KT1802 Risk assessments in terms of the Mine Health and Safety Act

KT1803 Fires and explosions in terms of the Mine Health and Safety Act

KT1804 Requirements at the scene of an accident in terms of the Mine Health and Safety Act

KT1805 Requirements relating to rescue, first aid and emergency preparedness and response in terms of the Mine Health and Safety Act

KT1806 Requirements relating to gases, environmental conditions, ventilation and underground mine rescue plans in terms of the Mine Health and Safety Act

KT1807 Requirements relating to a competent person in terms of the Mine Health and Safety Act

KT1808 Statutory requirements for the prescribed workload test

Internal Assessment Criteria

- Describe the employee's and the employer's responsibilities in terms of the Mine Health and Safety Act
- Describe risk assessments in terms of the Mine Health and Safety Act
- Describe fires and explosions in terms of the Mine Health and Safety Act
- Describe the requirements at the scene of an accident in terms of the Mine Health and Safety Act
- Describe the requirements related to rescue, first aid and emergency preparedness and response in terms of the Mine Health and Safety Act
- Describe the requirements related to gases, environmental conditions, ventilation and underground mine rescue plans in terms of the Mine Health and Safety Act
- Describe the requirements relating to a competent person in terms of the Mine Health and Safety Act
- Describe the statutory requirements for the prescribed workload test

1.3. Provider Programme Accreditation Criteria

Physical Requirements:

Demonstrate access to:

- Actual or simulated underground mine including a measured workload test centre with required equipment as specified in terms of regulations
- Complete closed circuit breathing apparatus including oxygen cylinders and booster pumps as specified in the Mine Health and Safety Act resuscitators; hand held gas detection equipment; link lines and life lines; sub-strata radios and emergency telephones; long duration self-contained self-rescuers; water harnessing equipment; applicable documentation; CPR mannequins; ancillary rescue equipment; personal protective equipment

Human Resources Requirements:

- Two instructors per course
- Maximum facilitator to learner ratio of 15 learners to 2 instructors; 12 is recommended for a minimum of 6 learners.
- Instructors must have had at least 5 years' experience as Mines Rescue Services Workers
- Instructors must have successfully completed recognised training in instruction and assessment
- Instructors must be certified competent on the use of the breathing apparatus by the original equipment manufacturer or by an organisation accredited to perform such a function
- Instructors must have had at least five years' experience in the use of the equipment listed under Physical Requirements

Legal Requirements:

- The service provider must be compliant in terms of the Chapter 16 and Chapter 22 of the Mine Health and Safety Act 1996.

1.4. Critical Topics to be Assessed Externally for the Knowledge Module

None

SECTION 3B APPLICATION MODULE SPECIFICATIONS

List of Application Module Specifications

- 900217-000-00- PM-01: Locate and evaluate the extent of the fire and apply the method of managing the fire, NQF Level 4, 10 credits
- 900217-000-00- PM-02: Locate and extricate persons and monitor and evaluate rescue operations, NQF Level 4, 6 credits

1. 900217-000-00- PM-01: Locate and evaluate the extent of the fire and apply the method of managing the fire, NQF Level 4, 10 credits

1.1. Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to develop the skills to manage or extinguish fires in hostile environments by working with breathing equipment, performing workload drills, setting up communication systems and establishing levels of gas in hostile environments.

The learner will be required to:

- PM-01-PS01: Prepare, test, clean and store breathing apparatus
- PM-01-PS02: Use breathing apparatus
- PM-01-PS03: Fill oxygen cylinders by means of a booster pump
- PM-01-PS04: Demonstrate emergency procedures used in the event of a failure of breathing apparatus whilst operating in an irrespirable atmosphere
- PM-01-PS05: Perform workload drills
- PM-01-PS06: Perform gas readings
- PM-01-PS07: Establish, set up and use communication systems
- PM-01-PS08: Set up fresh air bases
- PM-01-PS09: Control and extinguish fires

1.2. Guidelines for Practical Skills

1.2.1. PM-01-PS01: Prepare, test, clean and store breathing apparatus

Scope of Practical Skill

Given closed circuit long duration breathing apparatus and appropriate materials and equipment, the learner must be able to:

- PA0101 Identify components of the apparatus and describe their functions
- PA0102 Dismantle and assemble breathing apparatus
- PA0103 Clean, disinfect and store breathing apparatus
- PA0104 Perform a systems check and positive leak test
- PA0105 Perform dunk test
- PA0106 Prepare and fill soda lime canister for use on breathing apparatus

Applied Knowledge

- AK0101 Original Equipment Manufacturers' (OEM) standards
- AK0102 Techniques for donning, using and doffing breathing apparatus

Internal Assessment Criteria

- IAC0101 The breathing apparatus is assembled correctly and passes the systems and leak tests
- IAC0101 The breathing apparatus is stored correctly
- IAC0101 All processes are performed according to the set procedures
- IAC0101 The breathing apparatus is handled with due care

1.2.2. **PM-01-PS02: Use breathing apparatus**

Scope of Practical Skill

Given closed circuit long duration breathing apparatus, the learner must be able to:

- PA0201 Don and doff breathing apparatus
- PA0202 Go into and come out of oxygen
- PA0203 Use the breathing apparatus in an irrespirable atmosphere

Applied Knowledge

- AK0201 Techniques for donning and doffing breathing apparatus
- AK0202 Techniques for going into, using and coming out of oxygen

Internal Assessment Criteria

- The breathing apparatus is donned and doffed in accordance with specified standards □
The breathing apparatus is used correctly

1.2.3 **PM-01-PS03: Fill oxygen cylinders by means of a booster pump**

Scope of Practical Skill

Given medical oxygen, an oxygen cylinder and associated equipment and a minimum two hundred bar booster pump, the learner must be able to:

- PA0301 Perform purity test on oxygen
- PA0302 Identify cylinder and pump components and describe their functions
- PA0303 Operate booster pump to fill cylinder to correct pressure
- PA0304 Perform close down procedure

Applied Knowledge

- AK0301 Techniques for filling oxygen cylinders

Internal Assessment Criteria

- Oxygen cylinder and booster pump are handled correctly
- All checks are performed according to standards □ The cylinder is filled to the correct pressure

1.2.4 **PM-01-PS04: Demonstrate emergency procedures used in the event of a failure of breathing apparatus whilst operating in an irrespirable atmosphere**

Scope of Practical Skill

Given closed circuit long duration breathing apparatus, the learner must be able to:

- PA0401 Resuscitate using breathing apparatus
- PA0402 Perform buddy-buddy procedure
- PA0403 Check for and repair failure of breathing apparatus whilst in use
- PA0404 Assess condition of team member who has collapsed whilst wearing breathing apparatus

Applied Knowledge

- AK0401 Techniques for performing all emergency procedures related to the breathing apparatus
- AK0402 Techniques of resuscitating using the breathing apparatus

Internal Assessment Criteria

- All faults on breathing apparatus are correctly identified and rectified
- Collapsed team member's vital signs are correctly assessed
- Cardiopulmonary resuscitation (CPR) procedures using breathing apparatus are correctly applied
- Buddy-buddy procedures are correctly applied

1.2.5 PM-01-PS05: Perform workload drills

Scope of Practical Skill

Given closed circuit long duration breathing apparatus and a workload test centre equipped for performing workload tests, the learner must be able to:

- PA0501 Perform work under load
- PA0502 Perform work in confined spaces
- PA0503 Perform sand bag drill
- PA0504 Perform pipe stick drill
- PA0505 Perform maze drill
- PA0506 Perform stoop walk drill
- PA0507 Perform ladder drill
- PA0508 Perform confined space drill
- PA0509 Identify hazards and take appropriate action

Applied Knowledge

- AK0501 Techniques for workload drills
- AK0502 Sequence of workload test activities

Internal Assessment Criteria

- All drills are completed successfully and within the prescribed time limits and temperature ranges
- All drills are completed successfully using only one oxygen cylinder
- Going into and coming out of oxygen procedures are completed correctly

1.2.6 PM-01-PS06: Perform gas readings

Scope of Practical Skill

Given a variety of gasses commonly found in mines and appropriate gas reading instruments, the learner must be able to:

- PA0601 Check and use gas reading instruments
- PA0602 Take and interpret gas readings
- PA0603 Record and report gas readings
- PA0604 Take appropriate actions in response to gas readings
- PA0605 Identify hazards and take appropriate action

Applied Knowledge

- AK0601 Techniques for gas sampling
AK0602 Techniques for checking gas sampling equipment

Internal Assessment Criteria

- Gas readings are correctly taken and recorded
- Gas readings are correctly interpreted and appropriate action is taken

1.2.7 PM-01-PS07: Establish, set up and use communication systems

Scope of Practical Skill

Given sub-strata radios and emergency telephones, the learner must be able to:

- PA0701 Select, install and test sub-strata radio systems
PA0702 Select, install and test emergency telephone systems
PA0703 Communicate using emergency radio and telephone systems

Applied Knowledge

- AK0701 Radio terminology and protocols
AK0702 Techniques for installing radio and telephone communication systems

Internal Assessment Criteria

- Installed communication system is operational
- Correct protocols are used for radio and telephone communication

1.2.8 PM-01-PS08: Set up fresh air bases

Scope of Practical Skill

Given an appropriate site and associated equipment, the learner must be able to:

- PA0801 Test for and select a safe area
PA0802 Establish a fresh air base
PA0803 Monitor the conditions of the fresh air base and take appropriate action in response to changes in conditions
PA0804 Identify hazards and take appropriate action

Applied Knowledge

- AK0801 Techniques for testing for a safe area
AK0802 Techniques for selecting a safe area

Internal Assessment Criteria

- Area selected is safe according to standard criteria
- Fresh air base is established, monitored and maintained correctly

1.2.9 PM-01-PS09: Control and extinguish fires

Scope of Practical Skill

Given an underground fire and appropriate tools, equipment and support, the learner must be able to:

- PA0901 Identify location of fire, assess severity and determine appropriate action
- PA0902 Identify hazards and take appropriate action
- PA0903 Extinguish fire using an appropriate method
- PA0904 Control fire using an appropriate method
- PA0905 Clean, pack and store fire fighting equipment

Applied Knowledge

- AK0901 Techniques for locating and assessing fires
- AK0902 Techniques for combatting fires

Internal Assessment Criteria

- Underground fire is successfully located and managed
- All hazards are correctly identified and the most appropriate actions chosen
- Correct fire fighting equipment is selected for the chosen method
- All equipment is correctly cleaned, packed and stored

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1.3. Provider Programme Accreditation Criteria

Physical Requirements:

Demonstrate access to:

- Actual or simulated underground mine including a measured workload test centre with required equipment as specified in terms of regulations
- Complete closed circuit breathing apparatus including oxygen cylinders and booster pumps as specified in the Mine Health and Safety Act resuscitators; hand held gas detection equipment; link lines and life lines; sub-strata radios and emergency telephones; long duration self-contained self-rescuers; water harnessing equipment; applicable documentation; CPR mannequins; ancillary rescue equipment; personal protective equipment

Human Resources Requirements:

- Two instructors per course
- Maximum facilitator to learner ratio of 15 learners to 2 instructors; 12 is recommended for a minimum of 6 learners.
- Instructors must have had at least 5 years' experience as Mines Rescue Services Workers
- Instructors must have successfully completed recognised training in instruction and assessment
- Instructors must be certified competent on the use of the breathing apparatus by the original equipment manufacturer or by an organisation accredited to perform such a function
- Instructors must have had at least five years' experience in the use of the equipment listed under Physical Requirements

Legal Requirements:

- The service provider must be compliant in terms of the Chapter 16 and Chapter 22 of the Mine Health and Safety Act 1996.

1.4. Exemptions

- QCTO RPL Policy

2. 900217-000-00- PM-02, Locate and extricate persons and monitor and evaluate rescue operations, NQF Level 4, 6 credits

2.1. Purpose of the Practical Skill Modules

The focus of the learning in this module is on providing the learner an opportunity to develop the skills to participate in rescue team activities and perform activities related to search and rescue.

The learner will be required to:

PM-02-PS01: Perform rescues using a long duration self-contained self-rescuer

PM-02-PS02: Perform search and reconnaissance drills

PM-02-PS03: Perform emergency first aid procedures

PM-02-PS04: Participate in briefing and debriefing sessions

PM-02-PS05: Identify hazards and evaluate risks

2.2 Guidelines for Practical Skills

2.2.1 PM-02-PS01: Perform rescues using a long duration self-contained self-rescuer

Scope of Practical Skill

Given a long duration self-contained self-rescuer, the learner must be able to:

- | | |
|--------|--|
| PA0101 | Identify and check all self-rescuer components |
| PA0102 | Don a self-rescuer |
| PA0103 | Instruct a third-party in donning a self-rescuer |
| PA0104 | Instruct a third-party in escape strategies |
| PA0105 | Perform a rescue drill |
| PA0106 | Record findings and actions taken |

Applied Knowledge

- | | |
|--------|---------------------------------------|
| AK0101 | Techniques for donning a self-rescuer |
| AK0102 | Techniques for escape |
| AK0103 | Techniques for using a self-rescuer |

Internal Assessment Criteria

- Components are correctly identified and all defects are identified
- The self-rescuer is donned in the correct sequence
- Instructions for safe escape are given to third-party according to procedures
- The rescue is performed successfully

2.2.2 PM-02-PS02: Perform search and reconnaissance drills

Scope of Practical Skill

Given a simulated mine set up with a variety of environmental and physical conditions, closed circuit breathing apparatus and rescue equipment, the learner must be able to:

- | | |
|--------|---|
| PA0201 | Navigate through mine, and determine and report environmental and physical conditions |
| PA0202 | Navigate through mine and search for missing persons |
| PA0203 | Determine and take appropriate action on search and reconnaissance findings |
| PA0204 | Record findings and actions taken |

Applied Knowledge

- AK0201 Techniques for navigating through underground mines
- AK0202 Techniques for search and recovery
- AK0203 Techniques for decision-making to determine appropriate actions

Internal Assessment Criteria

- All environmental and physical conditions are correctly identified and reported on
- Missing persons are successfully found
- All actions taken are appropriate to the situation

2.2.3 PM-02-PS03: Perform emergency first aid procedures

Scope of Practical Skill

Given a resuscitator, mannequin and basic first aid equipment, the learner must be able to:

- PA0301 Perform stretcher drill
- PA0302 Perform cardiopulmonary resuscitation (CPR)
- PA0303 Perform heat stroke management procedure
- PA0304 Perform gassing management procedure
- PA0305 Identify and check components of resuscitator
- PA0306 Use resuscitator to perform resuscitation

Applied Knowledge

- AK0301 Techniques for performing stretcher drills
- AK0302 Techniques for performing cardiopulmonary resuscitation (CPR)
- AK0303 Techniques for performing heat stroke management
- AK0304 Techniques for performing gassing management
- AK0305 Resuscitation techniques including suction

Internal Assessment Criteria

- All drills and procedures are performed successfully
- All resuscitator components are correctly identified and checked

2.2.4 PM-02-PS04: Participate in briefing and debriefing sessions

Scope of Practical Skill

Given a simulated control centre, a plan of an underground mine, a captain's note book and instruction sheets and a group of learners, the learner must be able to:

- PA0401 Participate in briefing sessions, identify potential risks and record instructions
- PA0402 Participate in debriefing sessions and report on risks identified, conditions and actions taken

Applied Knowledge

- AK0401 Recording and reporting techniques
- AK0402 Hazard identification techniques
- AK0403 Use of checklists and captain's notebook

Internal Assessment Criteria

- Findings are recorded and communicated concisely and accurately
- The briefing is interpreted correctly and the correct instructions are recorded

2.2.5 PM-02-PS05: Identify hazards and evaluate risks

Scope of Practical Skill

Given a simulated mine set up with a variety of hazards, the learner must be able to:

- PA0501 Identify, record and report hazards
- PA0502 Evaluate risks and take appropriate action

Applied Knowledge

- AK0501 Typical underground and post emergency hazards
- AK0502 Techniques for identifying underground and post emergency hazards
- AK0503 Techniques for evaluating risks and taking appropriate actions
- AK0504 Techniques for recording and reporting hazards

Internal Assessment Criteria

- All set up hazards are correctly identified, recorded and reported
- Appropriate action to deal with each hazard is implemented

2.2. Provider Programme Accreditation Criteria

Physical Requirements:

Demonstrate access to:

- Actual or simulated underground mine including a measured workload test centre with required equipment as specified in terms of regulations
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Legal Requirements:

- The service provider must be compliant in terms of the Chapter 16 and Chapter 22 of the Mine Health and Safety Act 1996.

2.3. Exemptions

- QCTO RPL Policy