

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Manufacturing and Assembly Processes

registered by Organising Field 06 – Manufacturing, Engineering and Technology, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and **no later than 13 August 2007**. All correspondence should be marked **Standards Setting – Manufacturing and Assembly Processes** and addressed to

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SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**Further Education and Training Certificate: Electro-Mechanical Winding**

SAQA QUAL ID	QUALIFICATION TITLE		
58861	Further Education and Training Certificate: Electro-Mechanical Winding		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
QUALIFICATION TYPE	FIELD	SUBFIELD	
Further Ed and Training Cert	6 - Manufacturing, Engineering and Technology	Manufacturing and Assembly	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	150	Level 4	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Purpose:

The purpose of the qualification is to provide learners with the standards and range of learning required to test and rectify electro-mechanical components and to use and care for the relevant equipment in a responsible manner.

This is the third qualification in a series for learners who would like to follow a career in electro-mechanical winding and focuses on specialising skills on testing and rectifying faults with components. This qualification builds on the learning undertaken in the National Certificate in electro-mechanical winding at NQF Level 3, and it is assumed that learners entering into a learning programme towards this qualification are already competent in the core skills outlined in the Level 3 qualification.

This qualification requires an understanding of advanced operational procedures and sequences and includes the ability to read and interpret workshop manuals, workshop procedures, task instructions and job cards, as well as schedule the work of a team. What learners achieve in this qualification will serve as a basis for further learning where they may engage in more complex testing of electro-mechanical components and/or supervision of team members at NQF Level 5.

On completion of this qualification, the learner will be given recognition for the following exit level outcomes:

- Work as part of a production team.
- Test electro-mechanical components.
- Rectify faults on electro-mechanical components.
- Prepare electro-mechanical components for use.

Learners will generally carry out their role within the context of:

- A fully equipped engineering workshop.
- Set maintenance and works procedures.
- Given inspection and testing procedures.
- Given Quality Assurance policies, procedures and processes.

Rationale:

This qualification in electro-mechanical winding NQF Level 4 is the third qualification in a series for learners who want to follow a career in the field of manufacturing and assembly processing. This qualification focuses on developing skills and knowledge necessary to advance such a career and provides specific learning towards testing and rectifying faults with electro-mechanical components.

There is a need for this qualification in the industry because many people who are able to wind electro-mechanical components would like to advance their skills into testing the components and preparing them for use. They will also benefit from applying fundamental skills to their job in working together as a member of a team. They will learn to wind and perform mechanical tasks to the set procedures.

People who have achieved the skills and knowledge outlined in this qualification are normally employed in the following positions:

- Electro-mechanical component tester.
- Quality supervisor.
- Electromechanical fault finder.

There is currently no qualification in electro-mechanical winding at NQF Level 5, but learners may advance from these positions by achieving generic supervisory skills and be employed in a supervisory role.

There are currently approximately 1000 people employed in the industry that are required to perform component testing and repair as would be learnt through this qualification. This implies that many learners will be able to be given Recognition of Prior Learning (RPL) for one or more unit standards making up this qualification, and that the qualification is required by industry.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED IN PLACE

This qualification assumes learners have attained the outcomes described in the National Certificate in electro-mechanical winding at NQF Level 3.

Recognition of Prior Learning:

This qualification may be obtained through a process of RPL. The learner should be thoroughly briefed prior to the assessment and support provided to assist in the process of developing a portfolio. While this is primarily a workplace-based qualification, evidence from other areas of endeavour may be introduced if pertinent to any of the exit-level outcomes.

Care should be taken to ensure that the process used provides the learner with the opportunity to demonstrate competence and is not too demanding as to prevent the learner from implementing the RPL option towards gaining the qualification.

Access to Qualification:

This qualification recognises the skills, knowledge and values relevant in the workplace and will cater for learners who:

- Have attended courses and need to apply the knowledge gained to activities in the workplace.
- Are already workers and have acquired skills and knowledge without having attended formal training.

- Are part of a learnership program which integrates structured learning and operational experience.

Candidates applying for this qualification need to demonstrate physical competence in operating equipment and should therefore be physically able to contend with the circumstances required in the workshop environment. Access for learners with physical disabilities is dependant on the following:

- Type and severity of disability.
- The nature of the process and requirements of equipment operation.

QUALIFICATION RULES

This qualification consists of a minimum of 150 credits made up as follows:

- Learners are required to achieve all 40 credits for communication from the available fundamental unit standards.
- Learners are required to achieve all 16 credits for mathematical literacy within the context of electro-mechanical winding operations.
- Learners must achieve all 68 credits from the core unit standards.
- Learners may select additional unit standards from any of the elective unit standards to achieve a minimum of 26 credits.

Note: The elective credits should be chosen in accordance with the requirements of the selected context and the interests of the learner.

EXIT LEVEL OUTCOMES

1. Work as part of a production team.
2. Test electro-mechanical components.
3. Rectify faults on electro-mechanical components.
4. Prepare electro-mechanical components for use.

Critical Cross-Field Outcomes:

This qualification addresses the following generic outcomes in an integrated manner through the application of various unit standards:

- Work effectively with others as a member of a team/group.
- Organise and manage oneself and one's activities.
- Communicate using visual, mathematical and/or language skills in modes of oral and/or written presentation.
- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Collect, analyse, organise and critically evaluate information.
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Understand the world as a set of related systems.

ASSOCIATED ASSESSMENT CRITERIA

Associate Assessment Criteria for Exit Level Outcome 1:

- 1.1 Communication is maintained and adapted as required to promote effective interaction in a work context.
- 1.2 Work outputs facilitate effective achievement of group goals.

- 1.3 Personal relations are developed to maximise team output.
- 1.4 Responsibilities of different team members and the impact of poor workmanship in any area are explained in terms of the team output.
- 1.5 Work activity reports are completed in company required format within acceptable timeframes.

Associate Assessment Criteria for Exit Level Outcome 2:

- 2.1 Test equipment is set up and operated in accordance with manufacturer specifications.
 - Range: Test equipment includes megger, multimeter, ammeter, ductor, rissati, thermal imagers, vibration tester.
- 2.2 Components to be tested are identified from work instructions.
- 2.3 Consequences of testing incorrect components are explained in terms of work schedules and customer satisfaction.
- 2.4 Test results are interpreted to give an indication of the status of the component.
- 2.5 Test reports are completed in accordance with organisation requirements.

Associate Assessment Criteria for Exit Level Outcome 3:

- 3.1 Faults are identified that will prevent the component operating as required.
- 3.2 Potential methods of repairing the fault are identified and explained in terms of the procedure and expected result of repair.
- 3.3 The most suitable repair method is selected and applied to ensure compliance of the component with manufacturer specifications.
- 3.4 The repair is conducted in accordance with accepted timeframes and with minimum wastage.

Associate Assessment Criteria for Exit Level Outcome 4:

- 4.1 Sub components are checked for condition and assembled according to manufacturer specifications.
- 4.2 A logical assembly sequence is adhered to throughout the process.
- 4.3 Tools and equipment are used in accordance with their designed purpose.
- 4.4 The component is prepared for use in an acceptable time frame.
- 4.5 Applicable documentation is completed and submitted to relevant personnel in accordance with organisational requirements.

Integrated Assessment:

Because assessment practices must be open, transparent, fair, valid, reliable and ensure that no learner is disadvantaged in any way whatsoever, an integrated assessment approach is incorporated into the qualification. Assessment must take place according to the detailed specifications indicated in the unit standards associated with each exit level outcome.

Over and above the achievement of the specified unit standards, evidence of integration will be required within the context of an active learning environment. Assessors should note that the evidence of integration could well be presented by candidates when being assessed against the unit standards-thus there should not necessarily be separate assessments for each unit standard and then further assessment for integration. Well designed assessments should make it possible to gain evidence against each unit standard while at the same time gain evidence of integration.

INTERNATIONAL COMPARABILITY

As a starting point, this series of qualifications in electro-mechanical winding was compared to other, similar outcomes-based qualifications, certifications or skills standards in English speaking countries of the world. There were no unit standards based qualifications found to be

comparable to this qualification, but the training courses and qualifications used formed the basis of comparison for this qualification.

The major roleplayers in South Africa all have international standing and conduct work in other African countries as well as in Europe. Work is conducted in accordance with international best practice, and these practices were used as the starting point in determining the requirements of the unit standards for this qualification.

This qualification was compared to the following countries as follows:

UK, Germany and USA:

Allocation of work is fragmented and learners specialise in one particular aspect of the trade. Learning is modular and there is no qualification for an electro-mechanical winder. The complete aspect of electro-mechanical winding will be conducted through a number of people performing specific tasks. South African qualified electro-mechanical winders are in great demand due to their broad knowledge and skills.

New Zealand and Australia:

There is no level 2 qualification for electro-mechanical winding. A learner may undergo a generic certificate in electrical engineering, and then progress to a NQF level 4 qualification in motor rewinding and repair through a three-year apprenticeship programme.

Switzerland:

There is currently no standard training program for winder education. Years ago there used to be an apprenticeship possibility for "Electrical Machines Winder". This apprenticeship was a 4 year educational programme. Currently it is quite difficult to get skilled winders in Switzerland (and also in Central Europe). Companies that require these skills employ qualified winders who in turn train other workers on the specific skills requirements on the job.

Africa:

Countries such as Kenya, Kuwait, Nigeria, Tanzania, Zambia and Zimbabwe have contracts with South African companies (which may be based in the local country as well) to maintain their electro-mechanical components. Training of employees in these countries is conducted according to company standards, which are the same as what was used for determining these unit standards.

It is anticipated that this qualification will be welcomed in these countries and may form the basis for similar local qualifications.

ARTICULATION OPTIONS

This qualification builds on the National certificate in electro-mechanical winding at Level 3 and leads to the National certificate in electro-mechanical winding at Level 5.

Learners who have achieved this qualification have achieved generic skills that would enable them to follow a career in electrical or mechanical engineering. This qualification articulates with the following qualifications:

- ID 48474: Further Education and Training Certificate: Electrical Engineering, Level 4.
- ID 22871: Further Education and Training Certificate: Engineering Fabrication, Level 4.
- ID 23275: Further Education and Training Certificate: Mechanical Engineering: Fitting, Level 4.

MODERATION OPTIONS

- Anyone assessing a learner against this qualification must be registered as an assessor with the relevant ETQA.
- Any institution or learning provider offering learning towards the achievement of this qualification should be accredited as a provider with the relevant ETQA.
- Moderation of assessment should be overseen by the relevant ETQA according to the moderation guidelines provided for in this qualification as well as the agreed ETQA procedures.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by the relevant ETQA:

- Appropriate qualification and a minimum of 3 years experience in the field of manufacturing or a similar environment. The subject matter experience of the assessor can be established by recognition of prior learning.
- Appropriate experience and understanding of assessment theory, processes and practices.
- Good interpersonal skills and the ability to balance the conflicting requirements of:
 - Maintaining national standards.
 - The interests of the learner.
 - The need for transformation and redressing the legacies of the past.
 - The cultural background and language of the learner.
- Registration as an assessor with the relevant SETA ETQA.
- Any other criteria required by the relevant SETA ETQA.

NOTES

Learners will be assessed against this qualification in a work context appropriate to their needs. This may mean that only certain equipment is available in their workplace, but the requirements of the unit standards must then be matched to that type of equipment where possible. Where specific requirements cannot be met due to unavailability of equipment, the learner will have to undergo training in a different workplace to be exposed to the required equipment prior to assessment.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	9923	Assemble complex components	Level 3	25
Core	9890	Anticipate and troubleshoot machine functioning	Level 4	16
Core	244665	Balance rotating components	Level 4	6
Core	244663	Conduct advanced tests on electro-mechanical components	Level 4	10
Core	14474	Plan and schedule workflow	Level 4	3
Core	119257	Produce and maintain work activity reports	Level 4	8
Elective	116937	Use a Graphical User Interface (GUI)-based spreadsheet application to create and edit spreadsheets	Level 2	4
Elective	117924	Use a Graphical User Interface (GUI)-based word processor to format documents	Level 2	5
Elective	12429	Develop a personal financial plan	Level 3	2
Elective	116714	Lead a team, plan, allocate and assess their work	Level 3	4
Elective	9905	Change and set tooling	Level 4	16
Elective	13254	Contribute to the implementation and maintenance of business processes	Level 4	10
Elective	116292	Demonstrate an understanding of the principles of manufacturing and assembly logistics planning	Level 4	12
Elective	12414	Diagnose and repair faults on low voltage transformers and equipment	Level 4	6
Elective	114877	Formulate and implement an action plan to improve productivity within an organisational unit	Level 4	8
Elective	113880	Inspect, test and maintain Medium / High Voltage transformers	Level 4	6

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	13235	Maintain the quality assurance system	Level 4	5
Elective	13224	Monitor the application of safety, health and environmental protection procedures	Level 4	4
Elective	9925	Perform general grinding operations	Level 4	14
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Fundamental	12155	Apply comprehension skills to engage written texts in a business environment	Level 4	5
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Fundamental	119462	Engage in sustained oral/signed communication and evaluate spoken/signed texts	Level 4	5
Fundamental	9016	Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4
Fundamental	119471	Use language and communication in occupational learning programmes	Level 4	5
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Fundamental	12153	Use the writing process to compose texts required in the business environment	Level 4	5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Dismantle basic components and sub-assemblies*

SAQA US ID	UNIT STANDARD TITLE		
244664	Dismantle basic components and sub-assemblies		
ORIGINATOR		PROVIDER	
SGB Manufacturing and Assembly Processes			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Engineering and Related Design	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

SPECIFIC OUTCOME 1

Plan to dismantle components and sub-assemblies.

SPECIFIC OUTCOME 2

Prepare tools and the work area to dismantle components and sub-assemblies.

SPECIFIC OUTCOME 3

Dismantle and mark components and sub-assemblies.

SPECIFIC OUTCOME 4

Complete and report on the dismantling process.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Conduct advanced tests on electro-mechanical components***

SAQA US ID	UNIT STANDARD TITLE		
244663	Conduct advanced tests on electro-mechanical components		
ORIGINATOR			PROVIDER
SGB Manufacturing and Assembly Processes			
FIELD			SUBFIELD
6 - Manufacturing, Engineering and Technology			Manufacturing and Assembly
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	10

SPECIFIC OUTCOME 1

Plan to test electro-mechanical components.

SPECIFIC OUTCOME 2

Prepare tools and the work area to test electro-mechanical components.

SPECIFIC OUTCOME 3

Test electro-mechanical components.

SPECIFIC OUTCOME 4

Complete and report on the tests conducted.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Balance rotating components***

SAQA US ID	UNIT STANDARD TITLE		
244665	Balance rotating components		
ORIGINATOR			PROVIDER
SGB Manufacturing and Assembly Processes			
FIELD			SUBFIELD
6 - Manufacturing, Engineering and Technology			Manufacturing and Assembly
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Plan to balance rotating components.

SPECIFIC OUTCOME 2

Prepare tools and the work area to balance rotating components.

SPECIFIC OUTCOME 3

Add or remove mass to balance components.

SPECIFIC OUTCOME 4

Complete and report on the balancing process undertaken.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Life Skills

registered by Organising Field 07 – Human and Social Studies, publishes the following Unit Standards for public comment.

This notice contains the title, field, sub-field, NQF level, credits, and purpose of the Unit Standards. The full Unit Standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Unit Standards should reach SAQA at the address below and **no later than 13 August 2007**. All correspondence should be marked **Standards Setting – Life Skills** and addressed to:

The Director: Standards Setting and Development
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DIRECTOR, STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify causes of stress in own life and indicate techniques to manage it*

SAQA US ID	UNIT STANDARD TITLE		
244564	Identify causes of stress in own life and indicate techniques to manage it		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

SPECIFIC OUTCOME 1

Describe stress and its effect on daily life.

SPECIFIC OUTCOME 2

Identify the causes of stress in own life.

SPECIFIC OUTCOME 3

Identify reactions to stress in own life.

SPECIFIC OUTCOME 4

Indicate techniques to help manage stress in own life.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify the risks associated with disability in own life.*

SAQA US ID	UNIT STANDARD TITLE		
244567	Identify the risks associated with disability in own life.		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

SPECIFIC OUTCOME 1

Describe own disability and the effect of the natural limitations on own life.

SPECIFIC OUTCOME 2

Identify risks and challenges in own situation.

SPECIFIC OUTCOME 3

Investigate possibilities for personal empowerment.

SPECIFIC OUTCOME 4

Investigate ways of dealing with own disability.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate knowledge and understanding of effective study methods and techniques

SAQA US ID	UNIT STANDARD TITLE		
244568	Demonstrate knowledge and understanding of effective study methods and techniques		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

SPECIFIC OUTCOME 1

Assess own abilities and weaknesses in order to optimise learning.

SPECIFIC OUTCOME 2

Demonstrate a variety of study techniques.

SPECIFIC OUTCOME 3

Process information for a specific purpose.

SPECIFIC OUTCOME 4

Prepare for an assessment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Use Information for learning and study purposes*

SAQA US ID	UNIT STANDARD TITLE		
244569	Use information for learning and study purposes		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
ABET Level 4	Regular	Level 1	3

SPECIFIC OUTCOME 1

Demonstrate knowledge of self in a learning situation.

SPECIFIC OUTCOME 2

Demonstrate techniques to enhance memory and concentration.

SPECIFIC OUTCOME 3

Select key information for a specific purpose.

SPECIFIC OUTCOME 4

Identify learning resources in own environment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate knowledge and application of efficient study skills*

SAQA US ID	UNIT STANDARD TITLE		
244570	Demonstrate knowledge and application of efficient study skills		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	5

SPECIFIC OUTCOME 1

Analyse own abilities and lifestyle.

SPECIFIC OUTCOME 2

Demonstrate different methods of thinking.

SPECIFIC OUTCOME 3

Apply knowledge of learning theory and study techniques to develop a personal study methodology.

SPECIFIC OUTCOME 4

Synthesise information from a variety of sources.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Describe how to manage anxiety and depression in the workplace*

SAQA US ID	UNIT STANDARD TITLE		
244571	Describe how to manage anxiety and depression in the workplace		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Describe anxiety and its impact on the workplace.

SPECIFIC OUTCOME 2

Describe depression and its impact on the workplace.

SPECIFIC OUTCOME 3

Distinguish between anxiety and depression.

SPECIFIC OUTCOME 4

Investigate ways of supporting and accommodating anxiety and depression in the workplace.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Describe how to manage workplace relationships*

SAQA US ID	UNIT STANDARD TITLE		
244572	Describe how to manage workplace relationships		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Explain the need for clear structure in workplace relationships.

SPECIFIC OUTCOME 2

Explain the interrelationship between personal and professional relationships.

SPECIFIC OUTCOME 3

Identify techniques for self-management.

SPECIFIC OUTCOME 4

Explain how stereotyping affects relationships.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Apply knowledge of HIV/AIDS to a specific business sector and a workplace*

SAQA US ID	UNIT STANDARD TITLE		
244574	Apply knowledge of HIV/AIDS to a specific business sector and a workplace		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	4

SPECIFIC OUTCOME 1

Explain HIV and Aids.

SPECIFIC OUTCOME 2

Interpret current trends in the HIV/AIDS pandemic in order to explain the potential impact on an organisation or business sector.

SPECIFIC OUTCOME 3

Investigate the guidelines and assistance that are available to support workers affected by HIV/AIDS.

SPECIFIC OUTCOME 4

Explain the implications of the HIV/AIDS pandemic for the community, the economy an organisation and a specific workplace.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Describe how to manage risks associated with abuse in the workplace*

SAQA US ID	UNIT STANDARD TITLE		
244575	Describe how to manage risks associated with abuse in the workplace		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

SPECIFIC OUTCOME 1

Recognise indicators of abuse in the workplace.

SPECIFIC OUTCOME 2

Explain the potential impact of abuse on a business.

SPECIFIC OUTCOME 3

Explain how to deal with abuse in the workplace.

SPECIFIC OUTCOME 4

Investigate a case of employee abuse in order to propose a business strategy.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Describe how to support employees who are affected by a dread disease

SAQA US ID	UNIT STANDARD TITLE		
244577	Describe how to support employees who are affected by a dread disease		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Identify dread diseases that compromise performance and productivity.

SPECIFIC OUTCOME 2

Indicate the minimum legal requirements related to dread disease in a workplace.

SPECIFIC OUTCOME 3

Identify ways of providing an environment that is conducive to disclosure.

SPECIFIC OUTCOME 4

Investigate ways of accessing internal and external resources to minimise the effect of dread disease in a workplace.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Describe how to manage reactions arising from a traumatic event*

SAQA US ID	UNIT STANDARD TITLE		
244578	Describe how to manage reactions arising from a traumatic event		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Recognise reactions to post trauma stress.

SPECIFIC OUTCOME 2

Explain trauma debriefing and the referral process.

SPECIFIC OUTCOME 3

Explain possible support strategies.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Explain how to manage diversity in the workplace*

SAQA US ID	UNIT STANDARD TITLE		
244579	Explain how to manage diversity in the workplace		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Explain diversity.

SPECIFIC OUTCOME 2

Describe the role and responsibilities of an organisation in managing diversity.

SPECIFIC OUTCOME 3

Describe the role and responsibilities of the individual in creating a harmonious work environment.

SPECIFIC OUTCOME 4

Explore issues in a specific workplace in order to suggest ways of managing diversity.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Describe how to manage substance abuse and addiction in the workplace

SAQA US ID	UNIT STANDARD TITLE		
244581	Describe how to manage substance abuse and addiction in the workplace		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Recognise the signs and symptoms of substance abuse and addiction.

SPECIFIC OUTCOME 2

Describe the implications and consequences of substance abuse and addiction for the individual and the organisation.

SPECIFIC OUTCOME 3

Explain the manager's role in dealing with intoxicated and addicted employees.

SPECIFIC OUTCOME 4

Explain the recovery process and the implications for managers.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Investigate the challenges associated with the reasonable accommodation of people with disability in the workplace

SAQA US ID	UNIT STANDARD TITLE		
244582	Investigate the challenges associated with the reasonable accommodation of people with disability in the workplace		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

SPECIFIC OUTCOME 1

Identify different kinds of disability.

SPECIFIC OUTCOME 2

Explain the responsibility of organisations to the disabled.

SPECIFIC OUTCOME 3

Investigate ways of facilitating access for people with disabilities.

SPECIFIC OUTCOME 4

Identify practices required when employing disabled people.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Investigate ways of contributing towards community development***

SAQA US ID	UNIT STANDARD TITLE		
244584	Investigate ways of contributing towards community development		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	5

SPECIFIC OUTCOME 1

Explain community development and the importance of individual participation in developing a community.

SPECIFIC OUTCOME 2

Conduct a situational analysis in a specific community.

SPECIFIC OUTCOME 3

Reflect on own expertise to inform a personal contribution plan.

SPECIFIC OUTCOME 4

Design a plan for personal involvement in a specific community project.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify causes of stress and techniques to manage it in the workplace*

SAQA US ID	UNIT STANDARD TITLE		
244589	Identify causes of stress and techniques to manage it in the workplace		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Explain stress and its role in daily living.

SPECIFIC OUTCOME 2

Explain different ways in which people react to stress.

SPECIFIC OUTCOME 3

Identify stressors in the workplace and their relationship to work performance.

SPECIFIC OUTCOME 4

Identify stressors related to home and the greater environment.

SPECIFIC OUTCOME 5

Investigate techniques to manage stress in the workplace.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Design ways in which individuals in a community can contribute towards creating a caring environment for people who are vulnerable

SAQA US ID	UNIT STANDARD TITLE		
244591	Design ways in which individuals in a community can contribute towards creating a caring environment for people who are vulnerable		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

SPECIFIC OUTCOME 1

Identify the needs of vulnerable individuals in a community.

SPECIFIC OUTCOME 2

Discuss ways in which individuals in a community can help to create a caring environment.

SPECIFIC OUTCOME 3

Describe existing resources for assisting the vulnerable in the community.

SPECIFIC OUTCOME 4

Design ways in which a community, as a group, could help to create a caring environment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify ways to manage anxiety and depression in own life situation*

SAQA US ID	UNIT STANDARD TITLE		
244603	Identify ways to manage anxiety and depression in own life situation		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

SPECIFIC OUTCOME 1

Indicate causes of anxiety and depression in daily life.

SPECIFIC OUTCOME 2

Identify behaviour associated with anxiety and depression.

SPECIFIC OUTCOME 3

Indicate how to manage anxiety and depression in own life.

SPECIFIC OUTCOME 4

Indicate how an individual can support others who are suffering from anxiety or depression.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate understanding of abuse and possible coping mechanisms*

SAQA US ID	UNIT STANDARD TITLE		
244604	Demonstrate understanding of abuse and possible coping mechanisms		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

SPECIFIC OUTCOME 1

Describe different forms of abuse.

SPECIFIC OUTCOME 2

Identify indicators of abuse.

SPECIFIC OUTCOME 3

Explain available support structures.

SPECIFIC OUTCOME 4

Indicate techniques for avoiding abuse.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate ability to participate effectively in a team or group*

SAQA US ID	UNIT STANDARD TITLE		
244605	Demonstrate ability to participate effectively in a team or group		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

SPECIFIC OUTCOME 1

Investigate the advantages and disadvantages of working in a team or group.

SPECIFIC OUTCOME 2

Identify the characteristics of an effective team or group.

SPECIFIC OUTCOME 3

Identify the roles and responsibilities of individuals in a team or group.

SPECIFIC OUTCOME 4

Explore techniques to manage group dynamics.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify ways of managing relationships in own life*

SAQA US ID	UNIT STANDARD TITLE		
244606	Identify ways of managing relationships in own life		
ORIGINATOR	PROVIDER		
SGB Life Skills			
FIELD	SUBFIELD		
7 - Human and Social Studies	People/Human-Centred Development		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

SPECIFIC OUTCOME 1

Identify different types of relationships.

SPECIFIC OUTCOME 2

Demonstrate knowledge of self in relationships.

SPECIFIC OUTCOME 3

Explain the importance of communication in building relationships.

SPECIFIC OUTCOME 4

Explore ways of managing interpersonal relationships.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate ability to lead a team or group*

SAQA US ID	UNIT STANDARD TITLE		
244608	Demonstrate ability to lead a team or group		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

SPECIFIC OUTCOME 1

Identify the qualities of an effective leader.

SPECIFIC OUTCOME 2

Identify the leadership style most appropriate in own situation.

SPECIFIC OUTCOME 3

Identify basic leadership skills.

SPECIFIC OUTCOME 4

Apply leadership techniques to a specific group or team.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify risks associated with substance abuse and dependency in own life*

SAQA US ID	UNIT STANDARD TITLE		
244609	Identify risks associated with substance abuse and dependency in own life		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

SPECIFIC OUTCOME 1

Describe substance abuse and the process towards addiction.

SPECIFIC OUTCOME 2

Identify the most frequently abused substances and their short term effects.

SPECIFIC OUTCOME 3

Describe the long term effects of substance abuse on the individual and others.

SPECIFIC OUTCOME 4

Explain how to access support structures in the community.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply problem-solving techniques to make a decision or solve a problem in a real life context

SAQA US ID	UNIT STANDARD TITLE		
244611	Apply problem-solving techniques to make a decision or solve a problem in a real life context		
ORIGINATOR		PROVIDER	
SGB Life Skills			
FIELD		SUBFIELD	
7 - Human and Social Studies		People/Human-Centred Development	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

SPECIFIC OUTCOME 1

Distinguish between problems, challenges and matters requiring a decision.

SPECIFIC OUTCOME 2

Investigate techniques for solving problems and making decisions.

SPECIFIC OUTCOME 3

Identify a problem in a real life context.

SPECIFIC OUTCOME 4

Apply a problem solving process or technique to propose a possible solution or make a decision.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Maritime Defence

registered by Organising Field 08, Law Military Science and Security, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and **no later 13 August 2007**. All correspondence should be marked **Standards Setting – Maritime Defence** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D. Mphuthing

Postnet Suite 248

Private Bag X06

Waterkloof

0145

or faxed to 012 – 431-5144

e-mail: dmphuthing@saqa.org.za

DR. S. BHIKHA

DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**National Certificate: Submarine Operations**

SAQA QUAL ID	QUALIFICATION TITLE		
58840	National Certificate: Submarine Operations		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	8 - Law, Military Science and Security	Safety in Society	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	141	Level 5	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Purpose:

This qualification is aimed at people who are working within an Officer Training Programme with a view to being recognised as fully-fledged submarine warfare operations officers. Typically, they will be people in SAN training schemes, developing their skills towards this qualification.

Learners may also already be submariners who wish to develop their skills for operations management. In particular this qualification will be useful for:

- Warship Safety Officers (OOD).
- Warship Safety Officers (Submarine Bridge Watch).
- Principal Warfare Officers (Surface).

This qualification is designed to be flexible and accessible so that people are able to demonstrate the competencies required to work safely and productively in a sub-surface operations environment. Recipients of this qualification will have knowledge and skills in the areas of fundamental life skills; safety, health, environment & quality; and the knowledge and skills to direct combat operations in a submarine.

Recipients of this qualification will be able to:

- Communicate in a variety of ways.
- Manage safety on a submarine.
- Maintain a safe bridge watch.
- Manoeuvre a submarine.
- Conduct special sub-surface operations.

Submarine Warfare Officers will carry out their role within the context of:

- set SAN operational procedures.
- given administration systems.
- given Naval doctrine.
- given tactical procedures.
- the framework of the Law of Armed Conflict (LOAC) and current rules of engagement.

Rationale:

The Defence Force has taken the decision to align its training of personnel to qualifications registered on the NQF. The SA Navy (SAN) wishes to provide for the recognition of key clusters of leadership and management competencies, which coincide with SAN command requirements. The majority of the learners accessing this qualification are likely to have completed the introductory courses to warship safety management and the sub-surface elective of bridge watch-keeping within a naval context, and wish to progress within a chosen field of specialisation—in this case, submarine operations management. This qualification will give them the opportunity to develop and balance their practical skills with the essential knowledge needed to earn a formal qualification in Submarine Operations Management.

There is a critical need in the SAN to identify people from different demographic and gender backgrounds who have a sound foundation in seamanship and warship safety management, and who have begun to specialise in watch keeping at Level 4. This qualification will provide them with the opportunity to develop the specific and complex skills demanded of those who manage sub-surface operations within a safety conscious and highly regulated sector. This qualification also recognises that learners may access the qualification either as submariners with extensive experience of on-board operation, or as candidate officers without extensive practical operational knowledge and skill, and provides for this eventuality. A decision has also been made that the SAN must comply with, or exceed, international maritime standards. Traditionally, SAN training has been of a high standard in defined areas, but has not always produced people capable of working at the levels required by international maritime license requirements. The qualification recognises and makes provision for these additional requirements.

In addition, the policy of the Defence Force, as part of a broader skills development process in South Africa, wishes to provide for mobility of its personnel (Learners) and for portability of competencies and learning obtained from one qualification to another where at all possible.

A further consideration is that, for transformation purposes, large numbers of generally poorly educated and trained people need access to high quality learning and assessment opportunities if they are to meet the requirements of the maritime sector in general, and the SAN in particular. The possibilities for incremental learning, which builds on generic officer training, must be created if the SAN is to make the equitable distribution of skills a reality. This qualification will assist the SAN to meet this objective.

Finally, there are people who have been working in the SAN for some time, and who have gained the additional skills and expertise required through systematic on-the-job training. This qualification and its constituent unit standards can make an invaluable contribution to personal and SAN skills development by providing for the recognition of the skills gained in this manner, through a systematic RPL process.

In summary, the rationale for the qualifications is to:

- Describe the standard required for competent performance in the Defence Force and international arena.
- Provide clear guidelines and "targets" for SAN and other training providers, which also promotes accountability.
- Provide a recognition framework that would allow for RPL.
- Provide access and progression via coherent learning pathways for submariners and officer trainees wishing to consider a career in sub-surface warfare.
- Provide access to candidates formerly denied opportunities for a career in maritime defence, which in turn promotes personal (and thus national) skills development.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

It is assumed that learners are competent in Mathematics and Science at NQF Level 4.

The international Language in the maritime sector (Navy and merchant marine) is English and it is assumed that Learners are competent in English at NQF Level 4.

It is also assumed that learners are already competent in Surface Warship Safety Management, and Surface Bridge Watchkeeping when starting to learn towards this qualification.

In addition, with respect to submarines, learners should already be competent in the following specific areas:

- Carrying out emergency escape procedures in a submarine.
- Understanding submarine construction and operating principles.
- Understanding the mechanical systems on a submarine.
- Understanding the electrical systems on a submarine.
- Understanding basic electronic components.
- Understanding navigation equipment in the submarine Ops Room.
- Knowledge of generic 'rules of the road'.
- Identification of military and civilian aircraft and ships.
- Maintaining a safe watch alongside on a submarine.

Specific Unit Standards intended for Submarine Bridge Watchkeeping are included below:

- Identify and signal emergencies or distress on a submarine.
- Control and extinguish fires on a submarine.
- Direct battery charging operations on a submarine.
- Demonstrate knowledge of current legislative and naval procedures applicable to the Submarine Service.
- Operate the internal and external communications network on a submarine.
- Use electronic aids to navigate a passage in a submarine.
- Maintain a safe bridge watch on a submarine (surface and dived).
- Prepare to, and dive a submarine.
- Manoeuvre a submarine in a submerged state.
- Bring a submarine to periscope depth and surface.
- Detect, classify, identify and track targets by means of submarine sensor systems.
- Carry out detection evasion measures in a submarine.
- Direct berthing and-or mooring operations on a submarine.
- Use a periscope under tactical watchkeeping conditions.
- Plan and execute a photo recon exercise in a submarine.

Recognition of Prior Learning:

There is a critical need in the SAN to identify people from different demographic and gender backgrounds who have a sound foundation in seamanship and warship safety management, and who have begun to specialise in bridge watch-keeping at NQF Level 4. This qualification will provide for them the opportunity to have the specific and complex skills demanded of those who manage sub-surface operations recognised within a safety conscious and highly regulated sector.

This qualification also recognises that there may be learners who are already submariners with extensive experience of on-board operation, and who would like existing skills recognised so that they can gain access to further development opportunities, and provides for this eventuality.

Evidence can be presented in various ways, including international and/or previous local qualifications, products, reports, testimonials mentioning functions performed, work records, portfolios, videos of practice and performance records.

All such evidence will be judged in accordance with the general principles of assessment described above and the requirements for integrated assessment.

This qualification can therefore be obtained in whole or in part through a process of RPL.

Access to the Qualification:

Access to this qualification is open to all learners in possession of a National Senior Certificate with Mathematics and Science, or equivalent qualification.

It is preferable that learners first complete a Watchkeeping Certificate or a Qualification in Warship Operations Management.

QUALIFICATION RULES

Fundamental:

All unit standards in the Fundamental Component totalling 15 credits are compulsory.

Core:

All unit standards in the Core component totalling 122 credits are compulsory.

Elective:

Learners must choose unit standards from the Elective component totalling a minimum of 4 credits.

EXIT LEVEL OUTCOMES

1. Communicate in a variety of ways.
2. Carry out an operational watch.
3. Plan, prepare and evaluate missions.
4. Fight the platform and/or combined force.
5. Conduct special sub-surface operations.

Critical Cross-Field Outcomes:

This qualification addresses all the Critical Cross-Field Outcomes, as detailed in the associated unit standards.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

- A range of communication principles, strategies and processes are applied to support effective communication and enhance meaningful interaction with key personnel.
- The communications network is managed in a manner that promotes the effective transfer of information and/or instructions for the safe management of the watch.

Associated Assessment Criteria for Exit Level Outcome 2:

- The operations room watch is maintained in accordance with current legislative and naval procedures applicable to the Submarine Service.
- Available sensor equipment is used to maintain an accurate and integrated maritime situational picture.
- Emergencies are identified, managed and communicated in the prescribed manner, with a degree of urgency appropriate to the circumstances.
- Damage that constitutes a threat to the safety of the vessel or crew in surface or submerged states is managed in a manner that limits damage and promotes safety of vessel and crew.

Associated Assessment Criteria for Exit Level Outcome 3:

- Planning, execution and evaluation of missions are carried out in line with mission command principles, to contribute to continuous improvement.
- Knowledge of vessel systems is used to execute missions effectively.
- The vessel as a system is managed cost effectively and efficiently with respect to readiness.

Associated Assessment Criteria for Exit Level Outcome 4:

- The platform is manoeuvred and positioned for optimal weapons deployment, in line with mission aim, command priorities, and naval doctrine.
- Weapons and counter-measures are deployed according to operational requirements, and in a manner that is consistent with tactical appreciation and standard operating procedures.
- Joint operations with air and/or surface assets are carried out to meet the requirements of the operation in accordance with selected tactics and standard operating procedures.

Associated Assessment Criteria for Exit Level Outcome 5:

- A range of special purpose missions are executed in line with operating procedures and naval doctrine.

Integrated Assessment:

Assessment should take place within the context of:

- Given Quality Assurance policies, procedures and processes.
- A guided and supported learning environment.

Assessment will take place according to the detailed specifications indicated in the unit standards associated with each exit level outcome (see "associated unit standards" above).

Over and above the achievement of the specified unit standards, evidence of integration will be required as per the following broad criteria, all within the context of an active learning environment.

Assessors should note that the evidence of integration (as below) could well be presented by candidates when being assessed against the unit standards-thus there should not necessarily be separate assessments for each unit standard and then further assessment for integration. Well designed assessments should make it possible to gain evidence against each unit standard while at the same time gain evidence of integration.

Assessment should be in accordance with the following general and specific principles:

- The initial assessment activities should focus on gathering evidence in terms of the main outcomes expressed in the titles of the unit standards to ensure assessment is integrated rather

than fragmented. Where assessment at title level is unmanageable, then the assessment can focus on each specific outcome, or groups of specific outcomes. Take special note of the need for integrated assessment.

- Evidence must be gathered across the entire range specified in each unit standard, as applicable. Assessment activities should be as close to the real performance as possible, and where simulations or role-plays are used, there should be supporting evidence to prove that the candidate is able to perform in the real situation.
- All assessments should be conducted in accordance with the following universally accepted principles of assessment:
 - Use appropriate, fair and manageable methods that are integrated into real work-related or learning situations.
 - Judge evidence on the basis of its validity, currency, authenticity and sufficiency.
 - Ensure assessment processes are systematic, open and consistent.

INTERNATIONAL COMPARABILITY

Submarine qualifications are not common across the globe, and this qualification has been benchmarked against navies known to operate effective submarine services.

United States Naval Academy:

Submariner Career Path Information.

- **Submarine Officers:**

The fundamental goal of the trained submarine officer is to develop the professional skill and operational background to command a submarine. The achievement of this goal is accomplished through a definite series of professional qualifications, advanced training and operational sea experience.

- **Junior Officer Sea Tour:**

Prior to reporting to a first submarine, candidates attend a 12-week Submarine Officer Basic Course. This period of instruction them with an opportunity to learn the theory and principles of submarine operation and control, the basic administrative responsibilities of a division officer, the theory of the submerged fire control problem and weapons systems, and the basic fundamentals of submarine operations and tactics.

Upon arriving at the first submarine, candidates are typically assigned as an engineering department division officer and will begin qualification as Engineering Officer of the Watch. Additionally, candidates commence submarine qualification. This is the first of the professional qualifications, which they will complete. Normally this qualification requires 12 to 15 months of operational experience. Qualification in submarines requires qualification on each of the major officer watch stations.

Engineering Officer of the Watch, Diving Officer of the Watch, Officer of the Deck, and in-port Duty Officer. Demonstration of theoretical and practical knowledge before a board of submarine commanding officers, and an underway demonstration of operational competence culminate in this most important achievement for a submarine junior officer.

The first at-sea assignment is normally 36 months in duration. For a small number of volunteers, the opportunity exists to split tour. The split tours consist of about 2 years on an operational SSN or SSBN followed by a 2 year tour in new construction or overhaul.

Prior to going to their first shore tour, candidates are required to complete qualification as Engineer Officer of a ship. This qualification is the second important professional goal. It is achieved by passing a comprehensive technical examination administered by the Director,

Naval Propulsion Program. Candidates will normally complete their Engineer Officer qualification about the 24 months point of their JO tour. If they were trained in strategic weapons systems, candidates should attempt to also complete Strategic Weapons Officer qualification. This is not a requirement at this point, but highly desirable. Qualification is achieved by completion of a qualification card, a written examination, and a comprehensive oral board.

A few selected volunteers will rotate ashore at the 2 year point to instructor billets. These officers have normally completed the Engineer Officer qualification requirements, or will complete Engineer Officer qualification within one year of reporting to the training facility. Requirements for this duty are as follows:

- Served two years at sea; one year in the engineering department.
- Qualified in submarines.
- Prototype (waiverable on a case basis); and recommended by the Commanding Officer.

- Post Junior Officer Shore Tour:

The first shore assignment normally occurs after 2 1/2 to 3 years at sea. Many junior officers going ashore will fill shore billets at Submarine School, and group and squadron staffs. Others will fill important billets at the Naval Academy, NROTC units, recruiting districts, or will attend Naval Postgraduate School (NPGS). Other billets are available in such diverse areas as intelligence, overseas submarine staffs and major Washington area staffs including Naval Military Personnel Command, Strategic Projects and OPNAV.

These shore tours are 2 years in length and will be followed by an at-sea department head tour.

- Department Head Tour:

The second sea tour is an assignment as a department head. These assignments include:

- Engineer Officer on an SSN or SSBN.
- Navigator/Operations Officer on an SSN or SSBN.
- Weapons Officer on an SSN or SSBN.

The department head tour is preceded by duty under instruction at the Submarine Officer Advanced Course (SOAC) at the Naval Submarine School in New London, Connecticut. SOAC is a 22 week course of instruction which provides submarine qualified officers with advanced in-depth training in the following areas: Shipboard Administration, Sonar, Electronic Warfare, Navigation, Weapons Systems, Weapons Employment Systems, Advanced Submarine Tactics and Weapons Employment, ASW and ASUW Operations, Communications and Operations, Leadership and Management Education Training.

The primary emphasis is placed on instruction and practical work in the tactical employment of the submarine and associated weapons systems. Officers who attend the school are issued permanent change of station orders. Attendance at SOAC requires an agreement to remain on active duty for 24 months after completion of the course.

Officers may be detailed to a "split" department head tour-that is, two tours (total length 4 years) in different billets to maximize professional experience prior to assignment as Executive Officer.

Each department head is challenged to prove him/herself as a submarine warfare expert, administrator and personnel manager. Performance demonstrated as a department head will provide the primary basis for competing for promotion to lieutenant commander and for selection as Executive Officer.

During the department head tour, candidates should complete requirements for command qualification. This qualification is the third professional goal. Successful completion of this qualification is predicated upon demonstrating the maturity, professional competence, and leadership required to be a Commanding Officer. The Squadron Commander convenes a board to evaluate each candidate through underway and in-port examinations. The Submarine Force Commander grants final approval as "Qualified for Command of Submarines".

Generally, by the completion of the department head tour, candidates should be experienced in the operation of both SSNs (attack submarines) and SSBNs (ballistic missile firing submarines).

- Post-Department Head Shore Tour:

Officers then rotate to a shore duty assignment after completion of their department head tour(s). This tour will be 2 years in duration. Many of the billets available are involved in the support of the Submarine Force on the staffs of the Squadron, Group and Type Commanders. Billets in the Washington area are available in OPNAV (i.e., Deputy Chief of Naval Operations-Submarine Warfare), in the Office of the Secretary of Defense, and in the Naval Military Personnel Command, among others. Additionally, selected officers completing an Engineer Officer tour are assigned to fleet commander staffs as members of the Nuclear Propulsion Examining Board.

- Executive Officer Tour:

Candidates' assignment as Executive Officer (XO) is contingent upon selection by a formal Executive Officer Screening Board convened by the Chief of Naval Personnel. Candidates will be considered for selection by three separate boards over a 3 year period. Their first screening will be by the board convened in the summer prior to the fiscal year in which they reach 10 years of commissioned service.

Executive officer tour lengths are 22-26 months. In addition to their specific duties as XO, candidates will normally complete requirements for command qualification early in this tour, if this qualification was not completed during their department head tour. Qualifying for command and being selected for command are not the same. Selection for command is carried out by the Submarine Command Selection Board. An officer is considered by the board once a year for 3 years, starting in his 12th year of commissioned service.

- Post-Executive Officer Shore Tour:

Officers generally are assigned to a shore duty prior to command. This 2 year tour will be in a wide variety of challenging assignments, primarily on major staffs and in the Washington, DC area.

- Command Tours:

Officers selected and qualified will be ordered directly to command upon the completion of their post-Executive Officer shore tour. Prior to reporting to their ships, they will attend about 6 months of formal Prospective Commanding Officer (PCO) training. Specific submarine PCO training is conducted by the Director, Naval Nuclear Propulsion Program (13 weeks), and the type commander (9 weeks). Command tour length will normally be 3 years.

- Post-Command Shore Tour:

Following command, submarine officers are assigned ashore in a variety of billets. Some of the most challenging assignments are in the submarine support area. These include submarine squadron deputy commander for training and readiness, as well as positions on submarine Group and Type Commanders' staffs in weapons, operations, plans and training. Assignments

are also available outside the submarine support area and include tours in Washington, DC, overseas, and as a student at the Naval War College. The nominal post-command tour length is 2 years.

Royal Navy:

- Warfare Officer (Submariner):

A leader with the confidence to make key tactical decisions under pressure to guide our submarines safely through the seas in conflict and in peacetime.

- Transferring your Skills:

The standard of seamanship and navigation training received by all Royal Navy Warfare Officer complies with International Maritime Organization regulations and is recognised by the Maritime and Coastguard Agency, making conversion to a civilian maritime career much easier.

- Requirements:

A good Warfare Officer has many qualities, not least of which is the ability to make fast and safe decisions, under pressure, while staying calm.

They must be able to prioritise your workload while carrying out several tasks at the same time. They must always be willing to be flexible and adapt to new circumstances at short notice. They need to be completely reliable and able to perform at your very best at any time of day or night. But being a Warfare Officer is not all about relentless action, so they also need to be able to deal with periods of relative inactivity and routine.

Candidates will have outstanding leadership potential but will need to be able to play their part in the various tasks your ship is required to perform.

- Selection:

Potential Officers must attend a two-day Admiralty Interview Board at HMS Sultan in Hampshire. As well as a formal interview and a discussion exercise, they are set a number of fitness and mental agility tasks including verbal and non-verbal reasoning skills, concentration and spatial orientation. They are also be tested on their potential leadership skills.

- Basic Training:

Warfare Officers spend up to a year at the Britannia Royal Naval College in Dartmouth, Devon. The training is extremely demanding but rewarding. From the moment they arrive, candidates are part of a team as they learn naval and leadership skills, take part in exercises and have their first sea-going experience.

- Fleet-time Training:

Common Fleet Time is a four-month package of training at sea designed to give candidates a breadth of knowledge about the Royal Navy. They work with each of the ship's departments, learning how they operate and studying for their Fleet Board examination.

Specialist Fleet Time is where candidates work to gain greater depth of knowledge by focusing on their future as a Warfare Officer.

- Professional Training:

Training is a continual process as candidates develop throughout their career. After their basic training, candidates join a ship and get more sea experience as they work towards their Navigational watch Certificate and Bridge Warfare Qualification as an Officer of the Watch in ships that are usually based in Portsmouth or Plymouth.

- Submarine Service:

Their next step will be to go to the Submarine School at HMS Raleigh, in Torpoint, Cornwall, for four months to learn about all aspects of submarines' operation, including warfare, weapons, propulsion and escape training.

Candidates are then be able to test their basic skills at sea as a Submariner. After an interview to check that they know literally every pipe, nut and bolt of their submarine, they win their Dolphins-the badge that shows they are a Submariner.

Canadian Navy:

Submarine qualification programs vary from navy to navy, although varying in degree of difficulty, complexity and duration they all are basically the same consisting of formal training of some kind and learning the systems of the submarine in varying degrees of detail once on board a submarine.

The length of the qualification program and the degree of knowledge required of the individual is in place purely as a result of safety and to maximize the submarine's fighting efficiency. The systems are learned so that whatever happens in the submarine everyone knows instinctively what to do when things get rough so that the survival of the boat isn't compromised. Whatever a submariner's background or occupation may be he must be aware of his surroundings and be capable of taking quick action in the event of an emergency situation.

The Canadian qualification program evolved from both the Royal Navy Submarine Service and United States Navy Submarine Service adopting the British approach of the three month "part III's" however extending it into a 7 month program by increasing the content and complexity of knowledge required similar to that of the U.S.N.

A tentative submariner first attends a 6-week basic submarine course in Fleet School Halifax. Course content is a comprehensive study of submarine theory of operation, submarine systems covering all aspects of submarine equipment such as air systems, hydraulic systems, electrical systems, weapons systems, sensors and so on; in other words virtually every system in the submarine is addressed.

On completion of the basic submarine course the novice submariner joins a submarine and commences his on board qualification program. Learning takes place over a 7 month period:

- The first month consists mainly of items, systems and procedures vital to submarine safety such as location and use of all fire fighting, life support, first aid equipment, submarine escape systems, mainline and trimline, casing fittings and knowledge of all major onboard safety evolutions.
- The second month consists of learning the complete hydraulic system layout, all control valves and the equipment operated by hydraulics
- The third month is all air systems and so on.
- Over the seven-month period all systems are covered which includes "chasing" each system through, (viewing each pipe, switch, valve etc. in each system) and drawing detailed, functionally correct diagrams of each system. The qualifier must be able to not only describe the theory of operation of all the equipment learned during this process, he must also demonstrate the ability to use it in most cases.

As the qualifier progresses through the various systems and procedures in any given month he must demonstrate his knowledge of the particular item, what its purpose is and how to operate it to a qualified member of the crew who will "sign off" the item in the qualifier's book as completed once the qualifier has demonstrated the correct knowledge.

Once the qualifier has completed all items for that month he is given a walk through by a senior rate who is expert in the area being covered for that month who examines the qualifier in all aspects of what he has learned. On successful completion of the senior rate's walk through the qualifier does an officer's walk through and on successful completion moves on to the next month.

On completion of the 7 month program the qualifier must do a final walk through of the submarine first with the Engineering Officer and then the Executive Officer. This walk through combines all he has learned during the qualifying process and he is examined in all aspects of what he has learned both in theory and "hands on" operation.

The final walk through is quite lengthy and includes open up for dive in all compartments which requires the qualifier to know virtually every piece of equipment in the submarine, what position, function or mode of operation it should be in and how it operates. A final walk through normally takes 8 to 10 hours to complete and is done over two or three days.

Rarely does the qualifier complete the qualification process in 7 months. The qualifier while completing his submarine qualification is also at the same time learning his own trade related items and equipment, standing watches and carrying out all other submarine day to day requirements. There are also many variables such as equipment availability, docking and leave periods, availability of walk through personnel and so on which tend to slow the process down somewhat. On average it is closer to a year.

Conclusion:

The particular qualification in question is one that falls within a highly regulated sector where all parties operating ocean-going vessels have set and agreed to comply with standards key roles charged with the safety of shipping.

The proposed National Certificate: Submarine Operations Management at NQF Level 5 complies with the requirements of the IMO STCW Code, and is similar to qualifications operating in allied Navies internationally. The Royal Navy are regarded as the leaders, and the SAN has closely followed the British approach.

ARTICULATION OPTIONS

The qualifications for the navy have yet to be developed, so articulation at present is limited but includes qualifications in the merchant marine.

Horizontal articulation is possible with the following qualification:

- National Diploma: Maritime Studies, Level 6.

Vertical articulation is possible with the following qualifications:

- National Higher Diploma: Maritime Studies, Level 7.

MODERATION OPTIONS

- Providers offering learning towards this qualification or the component unit standards must be accredited by the relevant ETQA.

- Moderation of assessment will be overseen by the relevant ETQA according to moderation principles and the agreed ETQA procedures.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors must be:

- Registered as assessors with the relevant ETQA.
- Be in possession of a relevant qualification at NQF level 7 or have at least 3 years relevant experience in the maritime sector.

NOTES

N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	244646	Conduct helicopter operations	Level 4	6
Core	244644	Distribute information and control traffic on voice and data nets during operations	Level 4	3
Core	244649	Manoeuvre and position the platform for tactical purposes	Level 4	8
Core	244648	Carry out watch keeping operations in the Submarine Operation Room.	Level 5	6
Core	244640	Conduct military missions in accordance with national and naval sub-surface doctrine	Level 5	5
Core	244650	Create and maintain a recognised maritime picture	Level 5	5
Core	244643	Demonstrate understanding of submarine systems and capabilities	Level 5	12
Core	244638	Demonstrate understanding of the principles of mission command	Level 5	8
Core	244627	Deploy torpedoes tactically under operational conditions	Level 5	8
Core	244651	Evaluate and report on missions	Level 5	3
Core	244632	Execute a mission plan on a submarine	Level 5	12
Core	244637	Execute optimum weapons employment	Level 5	4
Core	244641	Manage emergencies and damage control in submerged and surface states	Level 5	12
Core	244647	Plan and conduct mine laying operations in a submarine	Level 5	8
Core	244633	Plan and evaluate sub-surface naval operations at tactical level	Level 5	12
Core	244636	Plan, coordinate and execute the deployment and recovery of special force operations	Level 5	10
Elective	244654	Control and extinguish fires on a submarine	Level 3	5
Elective	244635	Apply safety and emergency legislation and naval procedures in the submarine service	Level 4	8
Elective	244656	Bring a submarine to periscope depth and surface	Level 4	8
Elective	244657	Carry out detection evasion measures in a submarine	Level 4	6
Elective	244634	Detect, classify, identify and track targets by means of submarine sensor systems	Level 4	6
Elective	244625	Direct battery-charging operations on a submarine	Level 4	5
Elective	244655	Direct berthing and/or mooring operations on a submarine	Level 4	4
Elective	244623	Identify and signal emergencies and distress on a submarine	Level 4	8
Elective	244630	Maintain a safe bridge watch on a submarine	Level 4	10
Elective	244642	Manage and conduct operations in a multi-threat environment	Level 4	6
Elective	244626	Manoeuvre a submarine in a submerged state	Level 4	8
Elective	244653	Operate the internal and external communications network on a submarine	Level 4	4
Elective	244628	Prepare to and dive a submarine	Level 4	10
Elective	244639	Use a periscope under tactical watchkeeping conditions	Level 4	6
Elective	244631	Use electronic aids to navigate a passage in a submarine	Level 4	6
Elective	244645	Achieve and maintain a state of operational readiness.	Level 5	4
Elective	244629	Conduct peace support operations	Level 5	6
Elective	244652	Direct special purpose missions	Level 5	10
Elective	244624	Plan and control vessel operating costs	Level 5	4
Fundamental	12154	Apply comprehension skills to engage oral texts in a	Level 4	5

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
		business environment		
Fundamental	12155	Apply comprehension skills to engage written texts in a business environment	Level 4	5
Fundamental	12153	Use the writing process to compose texts required in the business environment	Level 4	5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify and signal emergencies and distress on a submarine

SAQA US ID	UNIT STANDARD TITLE		
244623	Identify and signal emergencies and distress on a submarine		
ORIGINATOR			PROVIDER
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Identify emergency and distress system components.

SPECIFIC OUTCOME 2

Demonstrate knowledge of international and SAN codes and signals.

SPECIFIC OUTCOME 3

Compose and send distress messages.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Plan and control vessel operating costs*

SAQA US ID	UNIT STANDARD TITLE		
244624	Plan and control vessel operating costs		
ORIGINATOR	PROVIDER		
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Determine expenditure needs.

SPECIFIC OUTCOME 2

Plan and control ship's budget.

SPECIFIC OUTCOME 3

Evaluate the effectiveness of the ship's budget.

SPECIFIC OUTCOME 4

Authorise and monitor shipboard expenditure.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Direct battery-charging operations on a submarine*

SAQA US ID	UNIT STANDARD TITLE		
244625	Direct battery-charging operations on a submarine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	5

SPECIFIC OUTCOME 1

Demonstrate knowledge of battery charging equipment and procedures.

SPECIFIC OUTCOME 2

Monitor and maintain batteries.

SPECIFIC OUTCOME 3

Charge batteries on shore and at sea.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Manoeuvre a submarine in a submerged state***

SAQA US ID	UNIT STANDARD TITLE		
244626	Manoeuvre a submarine in a submerged state		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Demonstrate knowledge of hazards associated with submerged manoeuvres.

SPECIFIC OUTCOME 2

Demonstrate knowledge of submarine manoeuvres in horizontal and vertical planes.

SPECIFIC OUTCOME 3

Establish neutral buoyancy.

SPECIFIC OUTCOME 4

Manoeuvre a submarine in a submerged state.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Deploy torpedoes tactically under operational conditions***

SAQA US ID	UNIT STANDARD TITLE		
244627	Deploy torpedoes tactically under operational conditions		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Locate and identify torpedo system components.

SPECIFIC OUTCOME 2

Prepare to deploy torpedoes under operational conditions.

SPECIFIC OUTCOME 3

Fire the torpedo.

SPECIFIC OUTCOME 4

Track and report on torpedo deployment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Prepare to and dive a submarine*

SAQA US ID	UNIT STANDARD TITLE		
244628	Prepare to and dive a submarine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	10

SPECIFIC OUTCOME 1

Demonstrate knowledge of hazards associated with diving a submarine.

SPECIFIC OUTCOME 2

Prepare to dive a submarine.

SPECIFIC OUTCOME 3

Dive the submarine.

SPECIFIC OUTCOME 4

Maintain a stable dived state.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Conduct peace support operations

SAQA US ID	UNIT STANDARD TITLE		
244629	Conduct peace support operations		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Demonstrate an understanding of national and international legislation, regulations and policy in relation to a specified peace support mission.

SPECIFIC OUTCOME 2

Establish and communicate the mission scope and aim.

SPECIFIC OUTCOME 3

Direct peace support operations.

SPECIFIC OUTCOME 4

Evaluate operational effectiveness for a specified peace support mission.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Maintain a safe bridge watch on a submarine*

SAQA US ID	UNIT STANDARD TITLE		
244630	Maintain a safe bridge watch on a submarine		
ORIGINATOR	PROVIDER		
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	10

SPECIFIC OUTCOME 1

Manage watchkeeping duties.

SPECIFIC OUTCOME 2

Handover and relieve watch keeping duties.

SPECIFIC OUTCOME 3

Use periscope and related equipment to maintain a bridge watch on a submarine.

SPECIFIC OUTCOME 4

Maintain watchkeeping records.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Use electronic aids to navigate a passage in a submarine*

SAQA US ID	UNIT STANDARD TITLE		
244631	Use electronic aids to navigate a passage in a submarine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Locate, identify and explain navigation system components.

SPECIFIC OUTCOME 2

Plot a course.

SPECIFIC OUTCOME 3

Navigate a safe passage on a submarine.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Execute a mission plan on a submarine*

SAQA US ID	UNIT STANDARD TITLE		
244632	Execute a mission plan on a submarine		
ORIGINATOR			PROVIDER
SGB Maritime Defence			
FIELD			SUBFIELD
8 - Law, Military Science and Security			Safety in Society
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Execute planning and provisioning requirements of the mission plan.

SPECIFIC OUTCOME 2

Conduct briefings in response to threat appreciation and safety management.

SPECIFIC OUTCOME 3

Participate in the development of tactics for naval sub-surface missions.

SPECIFIC OUTCOME 4

Outline the hazards associated with diving, manoeuvring or surfacing a submarine.

SPECIFIC OUTCOME 5

Contribute to safety during sub-surface mission execution.

SPECIFIC OUTCOME 6

Evaluate the mission planning execution process.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Plan and evaluate sub-surface naval operations at tactical level*

SAQA US ID	UNIT STANDARD TITLE		
244633	Plan and evaluate sub-surface naval operations at tactical level		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Interpret and respond to directives within the operational chain of command.

SPECIFIC OUTCOME 2

Develop a threat appreciation.

SPECIFIC OUTCOME 3

Establish internal and external communications for a submarine.

SPECIFIC OUTCOME 4

Establish emission control and security policies.

SPECIFIC OUTCOME 5

Allocate weapons, systems and counter-measures at the planning stage.

SPECIFIC OUTCOME 6

Evaluate the mission planning process.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Detect, classify, identify and track targets by means of submarine sensor systems

SAQA US ID	UNIT STANDARD TITLE		
244634	Detect, classify, identify and track targets by means of submarine sensor systems		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate knowledge of the tactical management system components.

SPECIFIC OUTCOME 2

Detect, classify and identify sonar targets.

SPECIFIC OUTCOME 3

Create and maintain a situation picture using radar.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply safety and emergency legislation and naval procedures in the submarine service

SAQA US ID		UNIT STANDARD TITLE	
244635		Apply safety and emergency legislation and naval procedures in the submarine service	
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Demonstrate knowledge of submarine Occupational Health and Safety procedures for alongside and sea passage.

SPECIFIC OUTCOME 2

Explain submarine emergency procedures.

SPECIFIC OUTCOME 3

Select, wear and operate personal protective equipment.

SPECIFIC OUTCOME 4

Identify and apply procedures for damage control.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Plan, coordinate and execute the deployment and recovery of special force operations

SAQA US ID	UNIT STANDARD TITLE		
244636	Plan, coordinate and execute the deployment and recovery of special force operations		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Demonstrate an understanding of national and international legislation, regulations and policy in relation to a specified special purpose mission.

SPECIFIC OUTCOME 2

Contribute to establishing and communicating the mission scope and aim.

SPECIFIC OUTCOME 3

Direct deployment and recovery operations.

SPECIFIC OUTCOME 4

Evaluate operational effectiveness for a deployment and recovery operation.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Execute optimum weapons employment***

SAQA US ID	UNIT STANDARD TITLE		
244637	Execute optimum weapons employment		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Demonstrate knowledge of weapons safety, capability and limitations.

SPECIFIC OUTCOME 2

Monitor and maintain weapon and weapon system compatibility.

SPECIFIC OUTCOME 3

Evaluate threats and assign weapons to a selected target.

SPECIFIC OUTCOME 4

Direct the delivery of weapons to maximum effect under battle conditions.

SPECIFIC OUTCOME 5

Evaluate weapons deployment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate understanding of the principles of mission command

SAQA US ID	UNIT STANDARD TITLE		
244638	Demonstrate understanding of the principles of mission command		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Demonstrate knowledge of ship structures and systems.

SPECIFIC OUTCOME 2

Demonstrate knowledge and understanding of mission command principles and practice.

SPECIFIC OUTCOME 3

Demonstrate understanding of the command aim and command priority requirements.

SPECIFIC OUTCOME 4

Support the command aim and priority.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Use a periscope under tactical watchkeeping conditions*

SAQA US ID	UNIT STANDARD TITLE		
244639	Use a periscope under tactical watchkeeping conditions		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate knowledge of periscopes and related equipment.

SPECIFIC OUTCOME 2

Use periscope to maintain a safe tactical watch.

SPECIFIC OUTCOME 3

Use periscopes for photo recon purposes.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Conduct military missions in accordance with national and naval sub-surface doctrine

SAQA US ID	UNIT STANDARD TITLE		
244640	Conduct military missions in accordance with national and naval sub-surface doctrine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	5

SPECIFIC OUTCOME 1

Demonstrate an understanding of national and international legislation, regulations and policy in relation to a specified mission.

SPECIFIC OUTCOME 2

Establish the command aim and priority.

SPECIFIC OUTCOME 3

Direct operations at a tactical level.

SPECIFIC OUTCOME 4

Evaluate operational effectiveness for a specified mission.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Manage emergencies and damage control in submerged and surface states**

SAQA US ID	UNIT STANDARD TITLE		
244641	Manage emergencies and damage control in submerged and surface states		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Identify and explain different emergency alerts.

SPECIFIC OUTCOME 2

Select, wear and operate personal protective equipment.

SPECIFIC OUTCOME 3

Manage emergencies.

SPECIFIC OUTCOME 4

Assess and report damage.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Manage and conduct operations in a multi-threat environment*

SAQA US ID	UNIT STANDARD TITLE		
244642	Manage and conduct operations in a multi-threat environment		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Support the command aim and priority.

SPECIFIC OUTCOME 2

Anticipate and develop responses to threats in a multi-threat environment.

SPECIFIC OUTCOME 3

Drive the combat direction organisation in a multi-threat environment.

SPECIFIC OUTCOME 4

Evaluate operations in a multi-threat environment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Demonstrate understanding of submarine systems and capabilities***

SAQA US ID	UNIT STANDARD TITLE		
244643	Demonstrate understanding of submarine systems and capabilities		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Demonstrate understanding of the safety system.

SPECIFIC OUTCOME 2

Demonstrate understanding of the propulsion system.

SPECIFIC OUTCOME 3

Demonstrate understanding of submersion system capabilities and limitations.

SPECIFIC OUTCOME 4

Demonstrate understanding of water, fuel, ventilation and disposal systems.

SPECIFIC OUTCOME 5

Demonstrate understanding of weapons electrical system.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Distribute information and control traffic on voice and data nets during operations*

SAQA US ID	UNIT STANDARD TITLE		
244644	Distribute information and control traffic on voice and data nets during operations		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	3

SPECIFIC OUTCOME 1

Distribute information on voice networks during operations.

SPECIFIC OUTCOME 2

Direct traffic on data networks during operations.

SPECIFIC OUTCOME 3

Control traffic on the integrated communication network.

SPECIFIC OUTCOME 4

Evaluate the process of information and voice traffic control.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Achieve and maintain a state of operational readiness.*

SAQA US ID	UNIT STANDARD TITLE		
244645	Achieve and maintain a state of operational readiness.		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Achieve a specified state of readiness.

SPECIFIC OUTCOME 2

Assist with the conduct of acceptance trials.

SPECIFIC OUTCOME 3

Maintain the vessel at the required state of operational readiness.

SPECIFIC OUTCOME 4

Evaluate the effectiveness of the process.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Conduct helicopter operations**

SAQA US ID	UNIT STANDARD TITLE		
244646	Conduct helicopter operations		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate knowledge of helicopter capabilities and limitations.

SPECIFIC OUTCOME 2

Provide joining information to inbound helicopters.

SPECIFIC OUTCOME 3

Carry out deck operations on a submarine.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Plan and conduct mine laying operations in a submarine

SAQA US ID	UNIT STANDARD TITLE		
244647	Plan and conduct mine laying operations in a submarine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Demonstrate knowledge of mine laying operations.

SPECIFIC OUTCOME 2

Plan and prepare mine laying operations.

SPECIFIC OUTCOME 3

Carry out mine laying operations.

SPECIFIC OUTCOME 4

Document and report on mine laying operations.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out watch keeping operations in the Submarine Operation Room.

SAQA US ID	UNIT STANDARD TITLE		
244648	Carry out watch keeping operations in the Submarine Operation Room.		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Prepare to carry out watch keeping operations in the Operations Room.

SPECIFIC OUTCOME 2

Direct submarine operations in the Operations Room.

SPECIFIC OUTCOME 3

Control and direct the action information organisation.

SPECIFIC OUTCOME 4

Gather intelligence during an operation room watch.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Manoeuvre and position the platform for tactical purposes***

SAQA US ID	UNIT STANDARD TITLE		
244649	Manoeuvre and position the platform for tactical purposes		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Demonstrate knowledge of formations, dispositions and screens.

SPECIFIC OUTCOME 2

Manoeuvre and position the platform and/or force for tactical purposes.

SPECIFIC OUTCOME 3

Control the manoeuvre and positioning of own vessel safely.

SPECIFIC OUTCOME 4

Evaluate the process of manoeuvring and positioning the force.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Create and maintain a recognised maritime picture*

SAQA US ID	UNIT STANDARD TITLE		
244650	Create and maintain a recognised maritime picture		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	5

SPECIFIC OUTCOME 1

Use a range of electronic devices to gather intelligence information.

SPECIFIC OUTCOME 2

Classify contacts as friendly, hostile or neutral.

SPECIFIC OUTCOME 3

Create a recognised maritime picture.

SPECIFIC OUTCOME 4

Disseminate information for decision-making.

SPECIFIC OUTCOME 5

Evaluate the process of creating and maintaining the integrated picture.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Evaluate and report on missions*

SAQA US ID	UNIT STANDARD TITLE		
244651	Evaluate and report on missions		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	3

SPECIFIC OUTCOME 1

Determine evaluation and reporting requirements.

SPECIFIC OUTCOME 2

Gather information for reporting and evaluation purposes.

SPECIFIC OUTCOME 3

Evaluate and report on a mission.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Direct special purpose missions*

SAQA US ID	UNIT STANDARD TITLE		
244652	Direct special purpose missions		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Demonstrate an understanding of national and international legislation, regulations and policy in relation to a specified special purpose mission.

SPECIFIC OUTCOME 2

Contribute to establishing and communicating the mission scope and aim.

SPECIFIC OUTCOME 3

Direct special purpose missions.

SPECIFIC OUTCOME 4

Evaluate operational effectiveness for a specified special purpose mission.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Operate the internal and external communications network on a submarine*

SAQA US ID	UNIT STANDARD TITLE		
244653	Operate the internal and external communications network on a submarine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	4

SPECIFIC OUTCOME 1

Demonstrate knowledge of the internal and external communications network on a submarine.

SPECIFIC OUTCOME 2

Communicate using the internal communication system.

SPECIFIC OUTCOME 3

Communicate externally using the communication system.

SPECIFIC OUTCOME 4

Select and use signalling equipment under maritime surface and sub-surface distress conditions.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Control and extinguish fires on a submarine*

SAQA US ID	UNIT STANDARD TITLE		
244654	Control and extinguish fires on a submarine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	5

SPECIFIC OUTCOME 1

Operate fire fighting and damage control equipment.

SPECIFIC OUTCOME 2

Extinguish and control fire.

SPECIFIC OUTCOME 3

Assess and report damage.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Direct berthing and/or mooring operations on a submarine

SAQA US ID	UNIT STANDARD TITLE		
244655	Direct berthing and/or mooring operations on a submarine		
ORIGINATOR	PROVIDER		
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	4

SPECIFIC OUTCOME 1

Demonstrate knowledge of berthing and mooring operations.

SPECIFIC OUTCOME 2

Direct a submarine berthing evolution.

SPECIFIC OUTCOME 3

Direct a submarine mooring evolution.

SPECIFIC OUTCOME 4

Complete berthing and/or mooring evolutions.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Bring a submarine to periscope depth and surface*

SAQA US ID	UNIT STANDARD TITLE		
244656	Bring a submarine to periscope depth and surface		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Demonstrate knowledge of the hazards associated with bringing a submarine to surface.

SPECIFIC OUTCOME 2

Prepare to bring a submarine to periscope depth.

SPECIFIC OUTCOME 3

Surface a submarine.

SPECIFIC OUTCOME 4

Complete surface routine.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Carry out detection evasion measures in a submarine**

SAQA US ID	UNIT STANDARD TITLE		
244657	Carry out detection evasion measures in a submarine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate knowledge of detection and evasion systems.

SPECIFIC OUTCOME 2

Demonstrate knowledge of detection evasion principles.

SPECIFIC OUTCOME 3

Apply noise reduction measures in a submarine.

SPECIFIC OUTCOME 4

Monitor noise levels in a submarine.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Air Defence

registered by Organising Field 08, Law Military Science and Security, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below **and no later 13 August 2007**. All correspondence should be marked **Standards Setting – Air Defence** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D. Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: dmphuthing@saqa.org.za


DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Diploma: Image Analysis

SAQA QUAL ID	QUALIFICATION TITLE		
58784	National Diploma: Image Analysis		
ORIGINATOR		PROVIDER	
SGB Air Defence			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Diploma	8 - Law, Military Science and Security	Sovereignty of the State	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	251	Level 5	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Purpose:

Image analysis is the process by which information is derived or extracted from any available image or set of images for planning, decision making, change detection, elimination, confirmation; surveillance support activities; reconnaissance or mapping. This qualification will provide a learner with possible opportunities in the following sectors, intelligence, geo-sciences, geohydrology, archaeology, mapping of watersheds and environmental management. The competencies within this qualification could be utilised in either a governmental or civilian context.

The purpose of this qualification is to provide the learner with skills and related knowledge in both analogue and digital image analysis.

The qualifying learner will be able to:

- Identify, prepare and analyse imagery for the purpose of providing information for stakeholder decision making and planning purposes.
- Perform a variety of imagery analysis applications.
- Assimilate and collate imagery and imagery information for image analysis purposes.
- Manage projects, people and systems in accordance with organisational quality requirements.

Rationale:

Decision-making at the strategic level is dependant on information. Such decision-making could be for agricultural, ecological, urban and rural development, disaster risk management or military and law enforcement purposes. Imagery is one of the main sources of such information. It has the advantage that it can be stored for historical purposes, used to compare changes over a period and the latest imagery can be obtained on demand. Possible platforms that provide such imagery are satellite, aircraft and static. Imagery is captured and stored in both analogue and digital format (the latter being the mostly widely used system currently). The ability to extract information from both types of imagery has become a very specialised skill but well supported by computerised systems. A qualification in image analysis will ensure that skilled people are available to ensure that validated information are made available for strategic decision-makers and for securing the national resources both from a disaster and a military perspective.

This qualification adds value to the economic growth needs of the country by identifying possible natural resources in the areas of mining, forestry, and agriculture. Typical learners would be

from the mapping industry, surveyors, agriculture, disaster management, military and law enforcement intelligence, scene investigation, and urban development. These learners will be assisting strategic decision makers in their long term planning.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

- Communication at NQF Level 4.
- Mathematics NQF Level 4.

Access to the Qualification:

An FETC/NSC or equivalent.

Recognition of Prior Learning:

The Qualification may be obtained in whole or in part through the process of Recognition of Prior Learning. Learners who may meet the requirements of any Unit Standard in this Qualification may apply for recognition of prior learning to the Relevant ETQA, and will be assessed against the assessment criteria of the exit level outcomes of this qualification and specific outcomes for the relevant Unit Standard/s.

Anyone wishing to be assessed against this Qualification may apply to be assessed by any assessment agency, assessor or provider institution, which is accredited by the relevant ETQA.

QUALIFICATION RULES

- All fundamental units standards to the value of 46 credits must be completed.
- All core unit standards to the value of 175 credits must be completed.
- Learners must complete unit standards to the value of at least 20 credits.

Learners may choose to complete an area of specialisation within the elective component of this qualification. Should learners choose an area of specialisation, they are required to complete all the unit standards listed within the specialisation:

Geographical specialization:

- Operate a geographical information system and components thereof.
- Perform spatial analysis under supervision.

Military specialization:

- Analyse the effects of damage on imagery.
- Demonstrate an understanding of ground based forces and CCD principles.
- Analyse ground based air defence environment applicable to image analysis.
- Demonstrate an understanding of infrastructure.
- Demonstrate an understanding of the maritime and airward environment.

Law Enforcement specialization:

- Use firearms in a military and law enforcement environment.
- Apply basic photogrammetric compilation principles for map production.
- Apply basic Geographic Information System (GIS) vector software functions.

EXIT LEVEL OUTCOMES

1. Identify and prepare imagery for the purpose of providing information for stakeholder decision-making and planning purposes.
2. Perform imagery analysis.
 - o Range: Analysis includes qualitative and quantitative deductions.
 - o Range: Qualitative includes but not limited to detection, recognition, identification and technical analysis.
 - o Range: Quantitative includes but not limited to image enhancements and histograms.
3. Assimilate and collate imagery and imagery information for image analysis purposes.
 - o Range: Collate includes record, store and retrieve.
4. Manage projects, people and systems in accordance with organisational quality requirements.

Critical Cross-Field Outcomes:

This unit standard promotes, in particular, the following critical cross-field outcomes:

- Identifying and solving problems in which responses display that responsible decisions using critical and creative thinking have been made when:
 - o Solving problems regarding image analysis.
- Working effectively with others as a member of a team, group, organisation, and community during:
 - o Planning and imagery analysis.
- Organising and managing oneself and one's activities responsibly and effectively when:
 - o Performing activities related to image analysis.
- Communicate effectively using visual, mathematical and/or language in the modes of oral and/or written persuasion to advise and report on image analysis processes.
- Participating as responsible citizens in the life of local, national and global communities by integrating the fundamental principles of image analysis into various work contexts.
- Collecting, analysing, organising and critically evaluating information to better understand and explain:
 - o Identify, prepare and analyse imagery for the purpose of providing information for stakeholder decision making and planning purposes.
 - o Perform a variety of imagery analysis applications.
 - o Assimilate and collate imagery and imagery information for image analysis purposes.
 - o Manage projects, people and systems in accordance with organisational quality requirements.
- Using science and technology effectively and critically, showing responsibility towards the environment and health of others when:
 - o Using different types of equipment.
- Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation when:
 - o When determining the influence of image analysis on possible scenarios.
 - o Manage projects, people and systems in accordance with organisational quality requirements.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1.1 Imagery differences are explained with respect to types, format and origin.

o Range:

- o Imagery includes but is not limited to multi-spectral, panchromatic, hyper-spectral, video.
- o Types refer to but not limited to spectral range, resolution, software format, service provider.
- o Format includes but is not limited to digital formats such as raw binary data, Joint Photographic Experts Group (JPG), Tagged Image File Format (TIFF), Bitmapped Graphics Format (BMP), and Shape File (SHP).
- o Origin refers to platform characteristics, capabilities and environmental restrictions.

1.2 Fit for purpose imagery is sourced to meet user needs and requirements.

o Range: Fit for purpose imagery sourced includes but is not limited to platform and sensor.

1.3 Images are pre-processed and prepared to meet the user needs and requirements.

o Range: Requirements include but are not limited to image format, rectification, scale, coverage (mosaic).

1.4 Factors that influence imagery are analysed in order to determine their impact on images.

o Range: Factors may refer to but are not limited to orientation, characteristics, content and histograms.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 Fundamental elements of image interpretation are implemented when analysing images.

o Range: Fundamental elements include but are not limited to shape, size, pattern, height, shadow, tone texture, site and association.

2.2 Imagery is assessed in order to make a factual finding.

o Range: Assessment can include but is not limited to detection, identification and classification.

o Range: Factual finding must be in line with client requirements.

2.3 Technical resources are operated to retrieve information from images.

o Range: Technical resources may include but in not limited to analytical equipment, tools, instruments and software.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 Assimilation processes are quality assured to ensure that co-ordinates are captured within defined parameters.

o Range: Assimilation processes could include geo-referencing, plotting, data capturing, ortho-rectification.

3.2 Computer database are utilised to capture imagery information within a defined format.

o Range: A defined format could include but is not limited to satellite imagery, analogue imagery digital imagery, static.

3.3 Imagery and imagery information are stored on computer database in order to retrieve information for image analysis purposes.

3.4 Information is organised and controlled in accordance with organisational record-keeping systems.

3.5 Imagery is geo-referenced for storage and retrieval in a spatial database.

Associated Assessment Criteria for Exit Level Outcome 4:

4.1 Quality management systems are implemented and reviewed to ensure optimal operations.

4.2 Project management principles, tools and processes are utilised to measure team performance and deliver project objectives.

4.3 Communication techniques are selected and applied in accordance with the needs of target audience.

o Range: Communication techniques advanced, written or oral techniques required when working in a supervisory and/or senior technical capacity in an organisation.

4.4 Projects are managed through conducting research in order to yield statistical results.

Integrated Assessment:

Formative assessments conducted during the learning process will consist of written assessments, simulation in a practical environment and a number of self-assessments.

Summative assessment consists of written assessments, assignments and simulation in a practical environment, integrating the assessment of all unit standards and embedded knowledge. Summative assessments is only conducted once the learner has demonstrated proficiency during formative assessment.

In particular assessors should check that the learner is able to demonstrate the ability to consider a range of options and make decisions about:

- The quality of the observed practical performance as well as the theory and embedded knowledge behind it.
- The different methods that can be used by the learner to display thinking and decision making in the demonstration of practical performance.
- Reflexive competencies.
- The fundamental competencies included in this qualification need to be assessed in an integrated way with the rest of the competencies.

INTERNATIONAL COMPARABILITY

The following countries were chosen to compare the qualification with as they embody best practice within the image analysis environment:

- The United States of America.
- Australia.
- The Netherlands.
- The United Kingdom.
- France.

It was evident that the core unit standards covered by the National Diploma: Image Analysis Level 5 is covered in training offered by these countries:

United States:

The Department of Geography at the University of Texas presents the module on Aerial Photography and Remote Sensing. This module introduces the basic concepts of remote sensing to provide the student with the background information necessary to successfully use remote sensed imagery in conjunction with GIS technology. The main emphasis of the programme is to explore the interfaces between remote sensing and Geographic Information Systems (GIS). Some of the subjects contained in the programme include the Basic Elements of Air Photo Interpretation, Digital Image Processing, Satellite Imaging, MSS, Thermal, Hyper-spectral Scanning, Radar (Microwave) Scanning and Remote Sensing and GIS.

At the Air Force Weather Agency, essential air and space intelligence is pursued through the application and monitoring of remote sensors to ensure battlespace awareness and decision superiority.

Similar knowledge and skills would render a considerable contribution to the profile of the South African Image Analyst.

Australia:

The Surveillance and Response Group enables the Australian Defence Force to develop emergent Intelligence through radar surveillance, intelligence collection and maritime surveillance. AP-3C Orion aircraft are employed in this role.

Radar and marine surveillance are equally important to the South African armed forces and similar attributes would be required from them to apply such intelligence effectively.

Netherlands:

The International Institute for Geo-Information Science and Earth Observation offers learning programmes in the knowledge fields of geo-information science and earth observation which consists of a combination of tools and methods for the collection through aerospace techniques. The storage and processing of this geo-spatial data is also addressed to enable the dissemination and application of the data in respective specialist services.

The prospective studies towards geo-spatial and aerospace techniques in the Image Analyst qualification, would enable the South African Image Analysts to contribute to similar specialist services.

France:

In Burgundy, France the application of remote sensing and GIS in archaeology, has been extensively conducted since 1978. In the Arroux valley many hours of survey flights have been flown over the years at different times of the year, different times of the day, using different films etc. Aerial surveys and aerial photography have been conducted from low-flying aircraft and several important sites, roads and other features have been discovered. Manual interpretation and photogrammetric analysis of existing vertical mapping photographs has also been conducted.

Aerial surveys and photography could be used by the South African archaeological agencies to discover or protect similar historical sites.

United Kingdom:

No 7010 (VR) Photographic Interpretation Squadron, provides strategic imagery analysis support to the Royal Air Force. The squadron's role has also been expanded to include tactical imagery analysis. The squadron consists of two units namely the Joint Air Reconnaissance Intelligence Centre (JARIC) and the Tactical Imagery Intelligence Wing (TIW).

This compares well with the role of the South African JARIC where strategic and tactical air intelligence forms the nucleus of its responsibility. Benchmarking them against the British counterparts would ensure the application of world-class principles in this specialist area.

The Cranfield University offers an Aerial Photograph Interpretation Course which introduces techniques for the extraction of topographic information from aerial photographs and digital satellite imagery. The syllabus contains subjects such as Remote Sensing, Geometry, Air Photo Mosaics and Interpretation Principles and Factors.

ARTICULATION OPTIONS

This qualification has been developed to provide a career opportunities as well as to facilitate progression to other related qualifications. Learners can move horizontally or vertically between defence related qualifications, although in most cases, some standards will be required horizontally before moving to another qualification vertically.

This qualification has horizontal articulation with the following qualifications:

- ID 49852: National Diploma in Applied Military Intelligence NQF Level 5.
- ID 48667: National Diploma in Statutory Intelligence NQF Level 5.

This qualification has vertical articulation with the following qualifications:

- ID 49783: National Diploma in Joint and Multi national NQF Level 6.
- ID 49102: National Diploma in Statutory Intelligence (Analysis) NQF Level 6.
- ID 49100: National Diploma in Statutory Intelligence (Counter Intelligence) NQF Level 6.

MODERATION OPTIONS

- Moderation of learner achievements takes place at providers accredited by the applicable ETQA for the provision of programmes that result in the outcomes specified for the "National Certificate in Image Analysis - NQF Level 5".
- Anyone moderating the assessment of a learner against this Qualification must be registered as a moderator with the relevant ETQA. Any institution offering learning that will enable the achievement of this Qualification must be accredited as a provider with the relevant ETQA.
- Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual Unit Standards as well as the integrated competence described in the Qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

For an applicant to register as an assessor, the applicant needs:

- A minimum of two years relevant occupational experience.
- Well-developed interpersonal skills, subject matter and assessment experience.
- Well-developed subject matter expertise within aviation.
- To be a registered assessor with the relevant Education and Training Quality Assurance Body.
- Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).

Assessment competencies and subject matter experience of the assessor can be established by recognition of prior learning.

NOTES

N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	119903	Analyse and synthesise spatial information from maps and other forms of spatial information	Level 4	4
Core	116901	Apply basic Geo-Information System (GIS) raster software functions	Level 4	4
Core	14270	Apply map and related spatial information skills for decision-making in the workplace	Level 4	2
Core	116869	Demonstrate an understanding of the basic principles of geographical features	Level 4	3
Core	116824	Demonstrate knowledge of sources for spatial data	Level 4	1
Core	116817	Geo-reference image / remote sense data according to specifications	Level 4	5
Core	11725	Interpret photographic detail from aerial photography for annotation purposes	Level 4	4
Core	8559	Plan and conduct research	Level 4	6
Core	244519	Administer the image acquisition process	Level 5	10
Core	244516	Analyse an image acquired by an active sensor	Level 5	12
Core	244501	Apply image analysis methodology	Level 5	12
Core	244539	Apply image analysis techniques	Level 5	8
Core	244537	Collate information into a structured image analysis report	Level 5	2
Core	117468	Conduct planning, briefing and debriefing sessions	Level 5	3
Core	116828	Demonstrate a basic understanding of geographical	Level 5	12

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
		space and spatial relationships		
Core	114049	Demonstrate an understanding of Computer Database Management Systems	Level 5	7
Core	116831	Demonstrate an understanding of the capabilities of Geo-Information Systems	Level 5	7
Core	116874	Demonstrate basic understanding of GIS vector data structures for data acquisition	Level 5	3
Core	116823	Disseminate spatial data	Level 5	2
Core	244515	Explain the principles of imagery sensor operations	Level 5	8
Core	242879	Facilitate integrated development planning processes	Level 5	12
Core	244517	Manipulate digital image data	Level 5	3
Core	244511	Perform scaling and mensuration of vertical and oblique aerial images	Level 5	8
Core	116821	Prepare a satellite imagery	Level 5	10
Core	244505	Process and prepare a digital image	Level 5	8
Core	244503	Produce a digital and analogue mosaic	Level 5	12
Core	11778	Investigate and interpret the theory relating to remote sensing including aerial cameras	Level 6	7
Elective	116819	Apply basic Geographic Information System (GIS) vector software functions	Level 4	2
Elective	244513	Analyse ground based air defence environment applicable to image analysis	Level 5	12
Elective	244509	Analyse the effects of damage on imagery	Level 5	5
Elective	14274	Apply basic photogrammetric compilation principles for map production	Level 5	6
Elective	15234	Apply efficient time management to the work of a department/division/section	Level 5	4
Elective	7876	Conduct on-the-Job-Training	Level 5	8
Elective	115753	Conduct outcomes-based assessment	Level 5	15
Elective	244529	Demonstrate an understanding of ground based forces and CCD principles	Level 5	15
Elective	244543	Demonstrate an understanding of infrastructure	Level 5	15
Elective	117985	Demonstrate an understanding of the Law of Armed Conflict during multi-national operations	Level 5	10
Elective	244541	Demonstrate an understanding of the maritime and airward environment	Level 5	10
Elective	118027	Demonstrate an understanding of the planning process at the operational level	Level 5	13
Elective	120044	Demonstrate knowledge of Airpower	Level 5	5
Elective	120492	Demonstrate the application of performance management	Level 5	6
Elective	120046	Demonstrate understanding of the military intelligence environment	Level 5	20
Elective	15224	Empower team members through recognising strengths, encouraging participation in decision making and delegating tasks	Level 5	4
Elective	14275	Operate a geographical information system and components thereof	Level 5	6
Elective	116834	Perform spatial analysis under supervision	Level 5	4
Elective	120487	Use firearms in a military and law enforcement environment	Level 5	12
Fundamental	242714	Apply elementary statistical methods	Level 5	5
Fundamental	15237	Build teams to meet set goals and objectives	Level 5	3
Fundamental	15225	Identify and interpret related legislation and its impact on the team, department or division and ensure compliance	Level 5	4
Fundamental	15230	Monitor team members and measure effectiveness of performance	Level 5	4
Fundamental	110526	Plan, organise, implement and control record-keeping systems	Level 5	4
Fundamental	15220	Set, monitor and measure the achievement of goals and objectives for a team, department or division within an organisation	Level 5	4
Fundamental	10147	Supervise a project team of a technical project to deliver project objectives	Level 5	14
Fundamental	12433	Use communication techniques effectively	Level 5	8



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Apply image analysis methodology**

SAQA US ID	UNIT STANDARD TITLE		
244501	Apply image analysis methodology		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Evaluate features of the subject of analysis.

SPECIFIC OUTCOME 2

Apply principles of image interpretation (II).

SPECIFIC OUTCOME 3

Apply an image interpretation process.

SPECIFIC OUTCOME 4

Make deductions and apply quality assurance to verify user requirements.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Produce a digital and analogue mosaic***

SAQA US ID	UNIT STANDARD TITLE		
244503	Produce a digital and analogue mosaic		
ORIGINATOR	PROVIDER		
SGB Air Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Sovereignty of the State		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Demonstrate an understanding of image plotting.

SPECIFIC OUTCOME 2

Produce an analogue mosaic.

SPECIFIC OUTCOME 3

Produce a digital mosaic.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Process and prepare a digital image***

SAQA US ID	UNIT STANDARD TITLE		
244505	Process and prepare a digital image		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Perform pre-processing operations on a digital image.

SPECIFIC OUTCOME 2

Perform image enhancement operations on a digital image.

SPECIFIC OUTCOME 3

Perform information extraction operations on a digital image.

SPECIFIC OUTCOME 4

Prepare a digital image for analysis.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Analyse the effects of damage on imagery**

SAQA US ID	UNIT STANDARD TITLE		
244509	Analyse the effects of damage on imagery		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	5

SPECIFIC OUTCOME 1

Analyse bomb damage for image analysis purposes.

SPECIFIC OUTCOME 2

Analyse natural damage for image analysis purposes.

SPECIFIC OUTCOME 3

Analyse man-made damage for image analysis purposes.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Perform scaling and mensuration of vertical and oblique aerial images***

SAQA US ID	UNIT STANDARD TITLE		
244511	Perform scaling and mensuration of vertical and oblique aerial images		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Determine the scale of a vertical aerial image.

SPECIFIC OUTCOME 2

Determine the dimensions of objects on oblique aerial images.

SPECIFIC OUTCOME 3

Determine the dimensions including height and volume of objects displayed on vertical aerial image.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Analyse ground based air defence environment applicable to image analysis**

SAQA US ID	UNIT STANDARD TITLE		
244513	Analyse ground based air defence environment applicable to image analysis		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Demonstrate an understanding of electronics.

SPECIFIC OUTCOME 2

Assess missiles and missile systems.

SPECIFIC OUTCOME 3

Analyse air defence systems.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Explain the principles of imagery sensor operations*

SAQA US ID	UNIT STANDARD TITLE		
244515	Explain the principles of imagery sensor operations		
ORIGINATOR			PROVIDER
SGB Air Defence			
FIELD			SUBFIELD
8 - Law, Military Science and Security			Sovereignty of the State
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Explain the electro-magnetic spectrum in relation to remote sensing.

SPECIFIC OUTCOME 2

Explain the characteristics of sensor systems.

SPECIFIC OUTCOME 3

Explain the operations of sensor systems.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Analyse an image acquired by an active sensor*

SAQA US ID	UNIT STANDARD TITLE		
244516	Analyse an image acquired by an active sensor		
ORIGINATOR			PROVIDER
SGB Air Defence			
FIELD			SUBFIELD
8 - Law, Military Science and Security			Sovereignty of the State
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Explain the fundamentals of active sensors.

SPECIFIC OUTCOME 2

Apply corrections to imagery acquired by an active sensor.

SPECIFIC OUTCOME 3

Analyse imagery acquired by an active sensor.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Manipulate digital image data

SAQA US ID	UNIT STANDARD TITLE		
244517	Manipulate digital image data		
ORIGINATOR			PROVIDER
SGB Air Defence			
FIELD			SUBFIELD
8 - Law, Military Science and Security			Sovereignty of the State
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	3

SPECIFIC OUTCOME 1

Demonstrate knowledge of data structures used for satellite imagery.

SPECIFIC OUTCOME 2

Apply metadata for analysis purposes.

SPECIFIC OUTCOME 3

Describe fundamentals of digital processing.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Administer the image acquisition process***

SAQA US ID	UNIT STANDARD TITLE		
244519	Administer the image acquisition process		
ORIGINATOR			PROVIDER
SGB Air Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Sovereignty of the State		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Acquire airborne imagery.

SPECIFIC OUTCOME 2

Acquire spaceborne digital imagery.

SPECIFIC OUTCOME 3

Apply image interpretability rating scale (IIRS).



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of ground based forces and CCD principles

SAQA US ID	UNIT STANDARD TITLE		
244529	Demonstrate an understanding of ground based forces and CCD principles		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	15

SPECIFIC OUTCOME 1

Demonstrate an understanding of terminology used in the military environment.

SPECIFIC OUTCOME 2

Analyse terrain on an image.

SPECIFIC OUTCOME 3

Apply doctrine and tactics of conventional warfare as an aid in the analysis of imagery.

SPECIFIC OUTCOME 4

Analyse weapon systems on an image.

SPECIFIC OUTCOME 5

Apply doctrine and tactics of unconventional warfare as an aid in the analysis of imagery.

SPECIFIC OUTCOME 6

Detect and analyse camouflage, concealment and deception (CCD) on an image.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Collate information into a structured image analysis report***

SAQA US ID	UNIT STANDARD TITLE		
244537	Collate information into a structured image analysis report		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Sovereignty of the State		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	2

SPECIFIC OUTCOME 1

Gather information using a range of sources.

SPECIFIC OUTCOME 2

Explain quality factors for report writing.

SPECIFIC OUTCOME 3

Compile a report.

SPECIFIC OUTCOME 4

Place map furniture on reports.

SPECIFIC OUTCOME 5

Verify the validity of a report.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply image analysis techniques

SAQA US ID	UNIT STANDARD TITLE		
244539	Apply image analysis techniques		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Sovereignty of the State	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

View imagery under stereo.

SPECIFIC OUTCOME 2

Apply scaling and mensuration skills on aerial photographs.

SPECIFIC OUTCOME 3

Apply image interpretation keys.

SPECIFIC OUTCOME 4

Apply interpretation methodology.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate an understanding of the maritime and airward environment*

SAQA US ID	UNIT STANDARD TITLE		
244541	Demonstrate an understanding of the maritime and airward environment		
ORIGINATOR		PROVIDER	
SGB Air Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Sovereignty of the State		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Demonstrate an understanding of terminology used in the maritime and airward environment.

SPECIFIC OUTCOME 2

Assess structure of ports.

SPECIFIC OUTCOME 3

Assess the features of shipbuilding.

SPECIFIC OUTCOME 4

Recognise aircraft and ships.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Maritime Defence

registered by Organising Field 08, Law Military Science and Security, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saqqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below **and no later 13 August 2007**. All correspondence should be marked **Standards Setting – Maritime Defence** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D. Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: dmpthuthing@saqa.org.za


DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**National Certificate: Warship Command and Control**

SAQA QUAL ID	QUALIFICATION TITLE		
58783	National Certificate: Warship Command and Control		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	8 - Law, Military Science and Security	Safety in Society	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	189	Level 6	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Purpose:

This qualification is aimed at people who are working within an Officer Training Programme with a view to being recognised as fully-fledged Commanding Officers. Typically, they will be people in SAN training schemes, developing their skills towards this qualification. Learners may also already be warfare officers or Executive Officers who wish to develop their skills for command. In particular this qualification will be useful for:

- Warship Safety Officers (Bridge Watch);
- Warfare and Principal Warfare Officers (Surface or sub-surface).

This qualification is designed to be flexible and accessible so that people are able to demonstrate the competencies required to work safely and productively at a strategic level in a surface operations environment. Recipients of this qualification will have knowledge and skills to assume command of a warship.

Recipients of this qualification will be able to:

- Communicate effectively in a leadership role.
- Navigate and/or handle the ship.
- Execute maritime operations.
- Manage Damage Control and Safety Activities.
- Demonstrate understanding of the legal aspects of maritime operations.
- Demonstrate understanding of SANDF regulations and Force Preparation procedures pertaining to warship management.

Commanding Officers will carry out their role within the context of:

- Set SAN operational procedures.
- Given administration systems.
- Given Naval doctrine.
- Given tactical procedures.
- The framework of the Law of Armed Conflict (LOAC) and current rules of engagement.

Rationale:

The Defence Force has taken the decision to align its training of personnel to qualifications registered on the NQF. The SA Navy (SAN) wishes to provide for the recognition of key clusters of leadership and management competencies, which coincide with SAN command requirements.

The majority of the learners for this qualification are likely to have completed the qualifications and training dealing with warship safety management and bridge watch-keeping within a naval context and, one of the areas of specialisation (anti-air, anti-surface and sub-surface warfare) within warfare operations management. This qualification will give learners the opportunity to develop and balance their practical skills with the essential knowledge needed to earn a formal qualification in Warship Command and Control.

Learners may either access this qualification as warfare and principal warfare officers, or as watchkeepers and officers with extensive experience on board, but without extensive practical operational knowledge and skill, and this qualification provides for this eventuality.

A decision has also been made that the SAN must comply with, or exceed, international maritime standards. Traditionally, SAN training has been of a high standard in defined areas, but has not always produced people capable of working at the levels required by international maritime license requirements for ship Masters. The qualification recognises and makes provision for these additional requirements.

In addition, the policy of the Defence Force, as part of a broader skills development process in South Africa, wishes to provide for mobility of its personnel (Learners) and for portability of competencies and learning obtained from one qualification to another where at all possible.

A further consideration is that, for transformation purposes, large numbers of generally poorly educated and trained people need access to high quality learning and assessment opportunities if they are to meet the requirements of the maritime sector in general, and the SAN in particular. The possibilities for incremental learning, which builds on generic officer training, must be created if the SAN is to make the equitable distribution of skills a reality. This qualification will assist the SAN to meet this objective.

Finally, there are people who have been working in the SAN for some time, and who have gained the additional skills and expertise required through systematic on-the-job training. This qualification and its constituent unit standards can make an invaluable contribution to personal and SAN skills development by providing for the recognition of the skills gained in this manner, through a systematic RPL process.

In summary, the rationale for this qualification and its constituent unit standards is to:

- Describe the standard required for competent command performance in the Defence Force and international arena.
- Provide clear guidelines and "targets" for SAN and other training providers, which also promotes accountability.
- Provide a means to recognise prior learning in a formal way.
- Provide access and progression via coherent learning pathways for mariners and officer trainees wishing to consider a career in naval warfare.
- Provide access to learners formerly denied opportunities for a career in maritime defence, which in turn promotes personal (and thus national) skills development.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

- It is assumed that learners are competent in Mathematics and Science at NQF Level 4.

- The international Language in the maritime sector (Navy and merchant marine) is English and it is assumed that Learners are competent in English at NQF Level 4.

Recognition of Prior Learning:

There is a critical need in the SAN to identify people from different demographic and gender backgrounds who have a sound foundation in seamanship and warship safety management (alongside and bridge watchkeeping), and who have begun to specialise in one of the aspects of warship operations management (air, surface and sub-surface). This qualification will provide them with the opportunity to have the specific and complex skills demanded of those who manage warships at a strategic level recognised within a safety conscious and highly regulated sector.

This qualification also recognises that there may be learners who are already warfare officers or Executive Officers with extensive experience of on-board operation, and who would like existing skills recognised so that they can gain access to further development opportunities, and provides for this eventuality.

Evidence can be presented in various ways, including international and/or previous local qualifications, products, reports, testimonials mentioning functions performed, work records, portfolios, videos of practice and performance records.

All such evidence will be judged in accordance with the general principles of assessment described above and the requirements for integrated assessment.

This qualification can therefore be obtained in whole or in part through a process of RPL.

Access to the Qualification:

Access to this qualification is open to all learners in possession of a National Senior Certificate with Mathematics and Science, or equivalent qualification.

It is preferable that learners first complete a Watchkeeping Certificate or a Qualification in Warship Operations Management.

QUALIFICATION RULES

Fundamental:

- All fundamental Unit Standards totalling 15 credits are compulsory.

Core:

- All Core unit standards totalling 171 credits are compulsory.

Elective:

- Learners are to choose unit standards totalling 3 credits from the unit standards listed as elective.
- To be awarded the whole qualification, learners must complete the unit standards specified above and obtain a minimum of 187 credits.
- Should learners exit the qualification without completing the whole qualification, recognition may be given for unit standards successfully completed.

EXIT LEVEL OUTCOMES

1. Communicate effectively in a leadership role.

2. Navigate the ship.
3. Execute maritime operations.
4. Manage safety and damage control activities.
5. Demonstrate an understanding of the legal aspects of a command role.
6. Demonstrate understanding of SANDF regulations and Force Preparation procedures pertaining to warship management.

Critical Cross-Field Outcomes:

- This qualification addresses all the Critical Cross-Field Outcomes, as detailed in the associated unit standards.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

- A range of communication principles, strategies and processes are applied to support effective communication and enhance meaningful interaction with key personnel.

Associated Assessment Criteria for Exit Level Outcome 2:

- Navigational planning and execution is directed, within the constraints of prevailing weather conditions and sea state, in such a way that the ship's position is consistent with plan at all times.
- The ship is manoeuvred effectively and safely in a range of specific operations.

Associated Assessment Criteria for Exit Level Outcome 3:

- Planning of all missions, military and peacekeeping support, is done thoroughly and provides an effective basis for decision-making and execution.
- Missions are executed so as to comply with legislative requirements and international agreements and regulations.

Associated Assessment Criteria for Exit Level Outcome 4:

- Damage is managed in a manner that supports the safe and effective operation of the platform within the bounds of acceptable risk.
- Actions to limit, control and/or repair damage are decisive and effective, in accordance with established procedures.

Associated Assessment Criteria for Exit Level Outcome 5:

- Political implications of actions are appreciated in relation to mission and/or peace support operations.
- Actions are taken that are consistent with international agreements, treaties and regulations.
- Command role is executed in ways that support South Africa's position in the region.

Associated Assessment Criteria for Exit Level Outcome 6:

- Knowledge of vessel systems and capabilities is accurate and sufficient to support decision-making with respect to the principles of fight, move and float.

- The ship and ship systems are monitored against agreed criteria for the required state of readiness, and actions maintain or improve readiness state, as required.
- Planning and preparation is thorough and makes provision for effective operations in accordance with established procedures.

Integrated Assessment:

Assessment should take place within the context of:

- Given Quality Assurance policies, procedures and processes.
- A guided and supported learning environment.

Assessment will take place according to the detailed specifications indicated in the unit standards associated with each exit level outcome (see "associated unit standards" above).

Over and above the achievement of the specified unit standards, evidence of integration will be required as per the following broad criteria, all within the context of an active learning environment.

Assessors should note that the evidence of integration could well be presented by learners when being assessed against the unit standards-thus there should not necessarily be separate assessments for each unit standard and then further assessment for integration. Well designed assessments should make it possible to gain evidence against each unit standard while at the same time gain evidence of integration.

Assessment should be in accordance with the following general and specific principles:

- The initial assessment activities should focus on gathering evidence in terms of the main outcomes expressed in the titles of the unit standards to ensure assessment is integrated rather than fragmented. Where assessment at title level is unmanageable, then the assessment can focus on each specific outcome, or groups of specific outcomes.
- Evidence must be gathered across the entire range specified in each unit standard, as applicable. Assessment activities should be as close to the real performance as possible, and where simulations or role-plays are used, there should be supporting evidence to prove that the candidate is able to perform in the real situation.
- All assessments should be conducted in accordance with the following universally accepted principles of assessment:
 - Use appropriate, fair and manageable methods that are integrated into real work-related or learning situations.
 - Judge evidence on the basis of its validity, currency, authenticity and sufficiency.
 - Ensure assessment processes are systematic, open and consistent.

INTERNATIONAL COMPARABILITY

The STCW Code (Seafarer's Training, Certification and Watchkeeping Code) as adopted by the 1995 Conference of the International Maritime Organization recognises the specific roles and responsibilities of a Master. It lays down duties and responsibilities and provides standards and criteria for the learning and assessment of Masters of vessels of 500 gross tonnage or more. Signatories to the Convention include some 71 countries, amongst them leading seafaring nations such as: Argentina, Australia, Canada, China, Denmark, Finland, France, Germany, India, Japan, Netherlands, New Zealand, Norway, Portugal, Russian Federation, South Africa, Spain, Sweden, and the United Kingdom.

Areas of specified competence include:

- Plan a voyage and conduct navigation.
- Determine position and resultant accuracy of the position fix by any means.
- Determine and allow for compass errors.
- Coordinate search and rescue programmes.
- Establish watchkeeping arrangements and procedures.
- Maintain safe navigation through the use of radar and ARPA and modern navigation systems to assist decision-making.
- Forecast weather and oceanographic conditions.
- Respond to navigational emergencies.
- Manoeuvre and handle a ship in all conditions.
- Operate remote controls of propulsion plants and engineering systems and services.
- Monitor the loading, stowage, securing, care during the voyage and the unloading of cargoes.
- Inspect and report defects and damage to cargo spaces, hatch covers and ballast tanks.
- Plan and ensure the safe loading, stowage, securing, care during the voyage and the unloading of cargoes.
- Assess reported defects and damage to cargo spaces, hatch covers and ballast tanks and take appropriate action.
- Carriage of dangerous goods.
- Control trim, stability and stress.
- Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and the protection of the marine environment.
- Maintain safety and security of the ship's crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems.
- Develop emergency and damage control plans and handle emergency situations.
- Organise and manage the crew.
- Organise and manage the provision of medical care on board.

United States:

The US Navy Officer Training curriculum includes the following areas:

- **Engineering:** Candidates are introduced to the fundamentals of naval propulsion plants. These include steam, nuclear, gas turbine and diesel. In addition, candidates will be introduced to the basic theories of electrical distribution systems, hydraulic systems, evaporator plants, air conditioners and refrigeration systems.
- **Military Indoctrination:** During military indoctrination candidates are taught basic military customs and courtesies, basic uniform assembly and requirements, inspection procedures and training requirements.
- **Naval History:** Subjects include the history of the Navy from the Revolutionary War to the present, theories on sea power, the influence of geography, the elements of strategic deterrence, maritime strategy and a quantitative and qualitative comparison of US and foreign navies.
- **Navigation:** Navigation training consists of dead reckoning, coastal piloting, Rules of the Road and electronic navigation. Candidates are required to plot simulated movements and positions of a ship at sea. Candidates receive practical application training aboard a yard patrol (YP) training ship in the Seamanship and Navigation phase of training.
- **Seamanship:** Seamanship training at OCS familiarizes candidates with naval terminology, equipment and various deck operations. Candidates are acquainted with fiber lines, wire ropes, anchors and anchor chains as well as the supervision of their safe use. The different types of rigs used by ships under way in refueling and replenishment at sea are introduced. Candidates learn to use the maneuvering board and how to put this knowledge to practical use when sailing.

- **Damage Control:** The damage control curriculum is designed to familiarize candidates with the types of damage, which can occur in the naval environment due to accidents, warfare and nautical disasters. Damage control also includes instruction in fire fighting theory and prevention of different kinds of fires common to sea, shore and air commands. It also includes principles of chemical, biological and radiological warfare defense. Practical demonstrations of flooding control are given in a mock-up of a shipboard space.
- **Naval Leadership:** Subjects include leadership qualities, motivational theories, team building, management skills, decision-making, goal setting and action planning, and communication processes and public speaking skills. Candidates have many opportunities through practical application to demonstrate leadership skills.
- **Division Officer:** Subjects include military rank structure, performance evaluations, educational programs, enlisted records, classified material handling, naval correspondence, officer designations, promotions, junior officer administrative duties, pay and allowances and advancement.
- **Military Law:** Subjects introduced include the Military Code of Conduct, The Geneva Convention, the Uniform Code of Military Justice, investigations, non-judicial punishment, court-martial procedures, apprehensions, jurisdiction, pretrial restraints, administrative discharges and claims.
- **Naval Warfare:** During this phase candidates study the equipment, shipboard spaces and weapons used in various operations. Amphibious, Mine, Strike, Electronic, Submarine, Surface, and Air warfare tactics will be studied. Candidates also examine the problems of detection and learn the weapons systems used in various types of combat.
- **Special Emphasis Program:** Subjects include suicide awareness and prevention, Drug and Alcohol Program Advisor (DAPA), Human Resources and Safety Programs, counterespionage and AIDS briefings.

Conclusion:

The particular qualification in question is one that falls within a highly regulated sector where all parties operating ocean-going vessels have set and agreed to comply with standards key roles charged with the safety of shipping.

The SAN's own approach is that the first stage of training for Commanding Officers should comply with STCW codes, and care has been taken to align this qualification with the provisions of the Code.

The proposed National Certificate: Warship Command and Control NQF Level 6 complies with the requirements of the IMO STCW Code, and is similar to qualifications operating in allied Navies internationally. The Royal Navy are regarded as the leaders, and the SAN has closely followed the British approach.

ARTICULATION OPTIONS

The qualifications for the navy have yet to be developed, so articulation at present is limited but includes qualifications in the merchant marine.

Horizontal articulation is possible with the following qualification:

- **National Diploma: Maritime Studies, NQF Level 6.**

Vertical articulation is possible with the following qualifications:

- National Higher Diploma: Maritime Studies, NQF Level 7.

MODERATION OPTIONS

- Providers offering learning towards this qualification or the component unit standards must be accredited by the relevant ETQA.

- Moderation of assessment will be overseen by the relevant ETQA according to moderation principles and the agreed ETQA procedures.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors must be:

- Registered as assessors with the relevant ETQA.
- Be in possession of a relevant qualification at NQF level 7 or have at least 3 years relevant experience in the maritime sector.

NOTES

N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	244540	Conceive and direct the required state of operational readiness	Level 5	4
Core	244546	Control trim, stability and stress	Level 5	6
Core	117985	Demonstrate an understanding of the Law of Armed Conflict during multi-national operations	Level 5	10
Core	118027	Demonstrate an understanding of the planning process at the operational level	Level 5	13
Core	120040	Demonstrate understanding of the concepts of operational command and control	Level 5	2
Core	244524	Demonstrate understanding vessel systems and capabilities	Level 5	6
Core	244532	Determine position of the vessel and the accuracy of the resultant position	Level 5	6
Core	244525	Ensure compliance with pollution prevention measures	Level 5	4
Core	244538	Establish health and safety systems for vessel and crew	Level 5	6
Core	244528	Establish watchkeeping arrangements and procedures	Level 5	6
Core	244536	Forecast weather and oceanographic conditions	Level 5	10
Core	244526	Manage safe navigation through the use of radar and other navigational aids	Level 5	4
Core	244530	Monitor compliance with legislative requirements and measures to ensure safety of life at sea	Level 5	4
Core	244549	Operate remote controls of propulsion plant and engineering systems and procedures	Level 5	4
Core	244533	Conduct military missions in accordance with national and naval doctrine	Level 6	8
Core	244547	Develop emergency and damage control plans and handle emergency situations	Level 6	6
Core	244544	Direct damage control activities	Level 6	8
Core	244548	Execute a peace support operation	Level 6	6
Core	244542	Manage vessel operations	Level 6	10
Core	244535	Manoeuvre and handle the ship under all conditions	Level 6	16
Core	244510	Organise and manage the crew	Level 6	8
Core	244545	Organise and manage the provision of medical care on board a vessel	Level 6	6
Core	244531	Plan voyage and conduct navigation	Level 6	8
Core	244527	Respond to navigational emergencies	Level 6	10
Elective	114846	Demonstrate an understanding of the historical, political, social and economic realities of South Africa	Level 5	10
Elective	15093	Demonstrate insight into democracy as a form of governance and its implications for a diverse society	Level 5	5
Elective	114862	Explain South Africa's role in Africa and SADC countries	Level 5	3

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	244520	Manage a hydrographic survey	Level 5	6
Elective	244522	Control, conduct and respond to search and rescue operation	Level 6	8
Fundamental	115792	Access, process, adapt and use data from a wide range of texts	Level 5	5
Fundamental	115789	Sustain oral interaction across a wide range of contexts and critically evaluate spoken texts	Level 5	5
Fundamental	115790	Write and present for a wide range of purposes, audiences and contexts	Level 5	5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Determine position of the vessel and the accuracy of the resultant position

SAQA US ID	UNIT STANDARD TITLE		
244532	Determine position of the vessel and the accuracy of the resultant position		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Determine the position of a vessel.

SPECIFIC OUTCOME 2

Allow for compass errors in the fixing of a vessel's position.

SPECIFIC OUTCOME 3

Record a vessel's position.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Monitor compliance with legislative requirements and measures to ensure safety of life at sea

SAQA US ID	UNIT STANDARD TITLE		
244530	Monitor compliance with legislative requirements and measures to ensure safety of life at sea		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Monitor vessel operations and maintenance procedures.

SPECIFIC OUTCOME 2

Identify and rectify non-compliance with legislative requirements and measures.

SPECIFIC OUTCOME 3

Maintain required certification of shipboard items and equipment.

SPECIFIC OUTCOME 4

Maintain documentation related to legislative requirements.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Establish watchkeeping arrangements and procedures***

SAQA US ID	UNIT STANDARD TITLE		
244528	Establish watchkeeping arrangements and procedures		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Establish bridge and/or engine room working systems and procedures.

SPECIFIC OUTCOME 2

Manage the bridge and/or engine room teams.

SPECIFIC OUTCOME 3

Evaluate watchkeeping and procedures.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Manage safe navigation through the use of radar and other navigational aids***

SAQA US ID	UNIT STANDARD TITLE		
244526	Manage safe navigation through the use of radar and other navigational aids		
ORIGINATOR	PROVIDER		
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Operate electronic navigational systems.

SPECIFIC OUTCOME 2

Interpret and evaluate information from electronic navigational systems.

SPECIFIC OUTCOME 3

Maintain navigational records.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Ensure compliance with pollution prevention measures

SAQA US ID	UNIT STANDARD TITLE		
244525	Ensure compliance with pollution prevention measures		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Maintain compliance with legislative requirements for protection of the marine environment.

SPECIFIC OUTCOME 2

Implement antipollution procedures.

SPECIFIC OUTCOME 3

Maintain documentation related to legislative requirements for the protection of the environment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Demonstrate understanding vessel systems and capabilities***

SAQA US ID	UNIT STANDARD TITLE		
244524	Demonstrate understanding vessel systems and capabilities		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Demonstrate understanding of the propulsion system.

SPECIFIC OUTCOME 2

Demonstrate understanding of auxiliary system capabilities and limitations.

SPECIFIC OUTCOME 3

Demonstrate understanding of water, fuel, ventilation and disposal systems.

SPECIFIC OUTCOME 4

Demonstrate understanding of weapons electrical system.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Manage a hydrographic survey

SAQA US ID	UNIT STANDARD TITLE		
244520	Manage a hydrographic survey		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Demonstrate an understanding of national and international legislation, regulations and policy in relation to the hydrographic survey.

SPECIFIC OUTCOME 2

Establish and communicate the scope and aim of the survey operation.

SPECIFIC OUTCOME 3

Direct the survey operations.

SPECIFIC OUTCOME 4

Evaluate operational effectiveness for a survey operation.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Conduct military missions in accordance with national and naval doctrine***

SAQA US ID	UNIT STANDARD TITLE		
244533	Conduct military missions in accordance with national and naval doctrine		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	8

SPECIFIC OUTCOME 1

Demonstrate an understanding of national and international legislation, regulations and policy in relation to a specified mission.

SPECIFIC OUTCOME 2

Establish the command aim and priority.

SPECIFIC OUTCOME 3

Direct operations at a tactical level.

SPECIFIC OUTCOME 4

Evaluate operational effectiveness for a specified mission.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Plan voyage and conduct navigation

SAQA US ID	UNIT STANDARD TITLE		
244531	Plan voyage and conduct navigation		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	8

SPECIFIC OUTCOME 1

Maintain navigational charts, nautical publications and related documentation.

SPECIFIC OUTCOME 2

Plan route for voyage.

SPECIFIC OUTCOME 3

Fix vessel's position.

SPECIFIC OUTCOME 4

Document and report planned route.

SPECIFIC OUTCOME 5

Maintain and adjust vessel's course.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Respond to navigational emergencies***

SAQA US ID	UNIT STANDARD TITLE		
244527	Respond to navigational emergencies		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	10

SPECIFIC OUTCOME 1

Take action prior to and during a navigational emergency.

SPECIFIC OUTCOME 2

Perform damage control measures after a navigational emergency.

SPECIFIC OUTCOME 3

Manage the abandonment of the vessel.

SPECIFIC OUTCOME 4

Re-float a grounded vessel.

SPECIFIC OUTCOME 5

Coordinate emergency towing operations.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Control, conduct and respond to search and rescue operation***

SAQA US ID	UNIT STANDARD TITLE		
244522	Control, conduct and respond to search and rescue operation		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	8

SPECIFIC OUTCOME 1

Respond to a request for assistance.

SPECIFIC OUTCOME 2

Plan a coordinated search and rescue at sea.

SPECIFIC OUTCOME 3

Implement a coordinated rescue approach at sea.

SPECIFIC OUTCOME 4

Debrief a search and rescue operation.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Organise and manage the crew

SAQA US ID	UNIT STANDARD TITLE		
244510	Organise and manage the crew		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	8

SPECIFIC OUTCOME 1

Provide leadership to officers and crew.

SPECIFIC OUTCOME 2

Allocate duties.

SPECIFIC OUTCOME 3

Maintain standards of work and behaviour on board a vessel.

SPECIFIC OUTCOME 4

Resolve conflicts.

SPECIFIC OUTCOME 5

Plan, organise and promote shipboard training and assessment.

SPECIFIC OUTCOME 6

Evaluate shipboard training and assessment.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Operate remote controls of propulsion plant and engineering systems and procedures

SAQA US ID	UNIT STANDARD TITLE		
244549	Operate remote controls of propulsion plant and engineering systems and procedures		
ORIGINATOR	PROVIDER		
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Operate remote controls of propulsion plant and engineering systems and services.

SPECIFIC OUTCOME 2

Coordinate deck and engine-room resources.

SPECIFIC OUTCOME 3

Manage emergency situations involving the use of remote controls.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Control trim, stability and stress**

SAQA US ID		UNIT STANDARD TITLE	
244546		Control trim, stability and stress	
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Monitor and maintain the structural integrity of the vessel.

SPECIFIC OUTCOME 2

Control the trim and stability of a vessel under normal operating conditions.

SPECIFIC OUTCOME 3

Control the trim and stability of a vessel in the event of damage and consequent flooding.

SPECIFIC OUTCOME 4

Manage the stress conditions of the vessel.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Conceive and direct the required state of operational readiness***

SAQA US ID	UNIT STANDARD TITLE		
244540	Conceive and direct the required state of operational readiness		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	4

SPECIFIC OUTCOME 1

Determine a required state of readiness.

SPECIFIC OUTCOME 2

Oversee the conduct of acceptance trials.

SPECIFIC OUTCOME 3

Ensure that the vessel is maintained at the required state of operational readiness.

SPECIFIC OUTCOME 4

Evaluate the effectiveness of the process.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Establish health and safety systems for vessel and crew***

SAQA US ID	UNIT STANDARD TITLE		
244538	Establish health and safety systems for vessel and crew		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Coordinate the monitoring of procedures for the safety of the work environment.

SPECIFIC OUTCOME 2

Coordinate the monitoring of health and safety of personnel on board ship.

SPECIFIC OUTCOME 3

Coordinate the monitoring of the operational condition of life saving, fire detection, fire fighting and other safety systems on board a vessel.

SPECIFIC OUTCOME 4

Coordinate the checking and replacement of consumable materials and items in life saving, fire detection, fire fighting and other safety systems.

SPECIFIC OUTCOME 5

Maintain documentation on the condition of life saving, fire detection, fire fighting and other safety systems on board.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Forecast weather and oceanographic conditions

SAQA US ID	UNIT STANDARD TITLE		
244536	Forecast weather and oceanographic conditions		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Collect and interpret weather and oceanographic data.

SPECIFIC OUTCOME 2

Forecast local weather and oceanographic conditions.

SPECIFIC OUTCOME 3

Maintain records of, and report, weather and oceanographic information and forecasts.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Execute a peace support operation***

SAQA US ID	UNIT STANDARD TITLE		
244548	Execute a peace support operation		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	6

SPECIFIC OUTCOME 1

Demonstrate an understanding of national and international legislation, regulations and policy in relation to a specified peace support mission.

SPECIFIC OUTCOME 2

Establish and communicate the mission scope and aim.

SPECIFIC OUTCOME 3

Direct peace support operations.

SPECIFIC OUTCOME 4

Evaluate operational effectiveness for a specified peace support mission.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Develop emergency and damage control plans and handle emergency situations

SAQA US ID	UNIT STANDARD TITLE		
244547	Develop emergency and damage control plans and handle emergency situations		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	6

SPECIFIC OUTCOME 1

Prepare contingency plans for emergency response.

SPECIFIC OUTCOME 2

Develop plans for damage control following a shipboard emergency.

SPECIFIC OUTCOME 3

Develop plans for fire protection, detection and extinction.

SPECIFIC OUTCOME 4

Develop procedures for the use of various lifesaving appliances.

SPECIFIC OUTCOME 5

Coordinate the implementation of emergency response plans.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Organise and manage the provision of medical care on board a vessel***

SAQA US ID	UNIT STANDARD TITLE		
244545	Organise and manage the provision of medical care on board a vessel		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	6

SPECIFIC OUTCOME 1

Take charge of a medical emergency on board a vessel.

SPECIFIC OUTCOME 2

Provide for routine medical care on board a vessel.

SPECIFIC OUTCOME 3

Seek assistance from shore-based medical advisers.

SPECIFIC OUTCOME 4

Perform quarantine procedures when entering port from overseas.

SPECIFIC OUTCOME 5

Oversee the maintenance of medical records.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Direct damage control activities

SAQA US ID	UNIT STANDARD TITLE		
244544	Direct damage control activities		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	8

SPECIFIC OUTCOME 1

Prepare damage control plans for a combat vessel.

SPECIFIC OUTCOME 2

Direct and monitor damage control activities.

SPECIFIC OUTCOME 3

Evaluate the command aim.

SPECIFIC OUTCOME 4

Evaluate damage control techniques and activities.

SPECIFIC OUTCOME 5

Debrief drills, simulations or incidents.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Manage vessel operations**

SAQA US ID	UNIT STANDARD TITLE		
244542	Manage vessel operations		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD	SUBFIELD		
8 - Law, Military Science and Security	Safety in Society		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	10

SPECIFIC OUTCOME 1

Develop plans for general and specific vessel operations.

SPECIFIC OUTCOME 2

Ensure legal requirements are fulfilled.

SPECIFIC OUTCOME 3

Monitor and control vessel expenditure.

SPECIFIC OUTCOME 4

Develop and implement the vessel's ISM Code Safety Management System.

SPECIFIC OUTCOME 5

Monitor and control vessel's physical resources.

SPECIFIC OUTCOME 6

Analyse and compile voyage data.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Manoeuvre and handle the ship under all conditions

SAQA US ID	UNIT STANDARD TITLE		
244535	Manoeuvre and handle the ship under all conditions		
ORIGINATOR		PROVIDER	
SGB Maritime Defence			
FIELD		SUBFIELD	
8 - Law, Military Science and Security		Safety in Society	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	16

SPECIFIC OUTCOME 1

Manoeuvre the ship during mooring operations.

SPECIFIC OUTCOME 2

Manoeuvre the vessel for required operations in normal conditions.

SPECIFIC OUTCOME 3

Manoeuvre the ship during non-combat emergencies.

SPECIFIC OUTCOME 4

Manoeuvre the ship during helicopter operations.

SPECIFIC OUTCOME 5

Manoeuvre vessel during adverse weather conditions.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Environmental Science and Waste Management

registered by Organising Field 10, Physical, Mathematical, Computer and Life Sciences, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and **no later than 13 August 2007**. All correspondence should be marked **Standards Setting – Environmental Science and Waste Management** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D. Mphuthing

Postnet Suite 248

Private Bag X06

Waterkloof

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or faxed to 012 – 431-5144

e-mail: dmpthuthing@saqa.org.za


R. S. BHIKHA

DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**Further Education and Training Certificate: Environmental Noise**

SAQA QUAL ID	QUALIFICATION TITLE		
58801	Further Education and Training Certificate: Environmental Noise		
ORIGINATOR	PROVIDER		
SGB Environmental Sc/Mgt & Waste Mgt			
QUALIFICATION TYPE	FIELD	SUBFIELD	
Further Ed and Training Cert	10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	120	Level 4	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION**Purpose:**

This qualification is an entry-level qualification for those who are already working in environmental health, and wish to specialise in noise management. All Environmental Health Practitioners are registered with the Professional Board, and this qualification will contribute to ongoing professional development of Environmental Health Practitioners. It will provide career development opportunities, and opportunities for specialisation in the specific field of noise.

There is a scarcity of skills in this area in the country as a whole, with a reliance on expert consultants. In many cases, Environmental Health Practitioners lack the expertise to evaluate the quality of the reports they receive, and make judgements in this regard. There is a huge case load at present, with many investigations required, and too few people qualified to process them. This qualification will compliment the existing professional expertise, and allow for greater focus and efficiency in the field.

The qualification will also provide for a variety of learning pathways - some Environmental Health Practitioners will be able to achieve this qualification as part of their tertiary study, delivered by institutions. Some will be able to have their practical skills, developed on the job, recognised through an RPL (Recognition of Prior Learning) process.

In particular, this qualification will be useful for:

- Environmental Health Practitioners working in municipalities.
- Noise control officers (who are not qualified EHP's).

Recipients of this qualification will be able to:

- Communicate in a variety of ways.
- Use mathematics in real life and education, training and development situations.
- Demonstrate an understanding of sound and noise.
- Demonstrate understanding of the impact of noise on communities.
- Deal with noise infringements.
- Provide noise-related input to municipal planning processes.

Environmental Field Workers will carry out their role at all times:

- Under the supervision of an available, qualified supervisor (Noise Control Officer).

They will not take full responsibility for measurement and issuing of notices.

Environmental Health Practitioners will carry out their role:

- Under the broad direction of senior management.
- In response to directives by senior management to investigate complaints.
- As part of a specialist unit responsible for measuring, and reporting.

Rationale:

Currently Environmental Health Practitioners do not receive adequate training in noise management as part of their initial training in environmental health. Degree programmes have traditionally not looked at noise. With rapid urbanization, noise is becoming an issue, and municipalities are faced with a growing challenge in this regard. A significant part of the challenge is the lack of suitably qualified people.

Noise pollution is about why noise has an effect on humans. People in Local Authorities who work in The Noise Control Division of Integrated Pollution Control Departments are involved in the well-being of people and the internal and external environment. There are three main work roles in Noise Pollution and Assessment within Local Government:

- Field Workers (Assistant Environmental Health Practitioners).
- Environmental Health Practitioners - the focus of this qualification. These skills would be added on to the Environmental Health Practitioner qualification which should already be in place.
- Noise Control Officers.

Field workers (Assistant Environmental Health Practitioners Level 3):

There is a need for officers at the level of field workers within the local authority to assist in the handling of noise nuisances within the communities and to report to the noise officers.

They apply the by-laws and facilitate issues between complainants and offenders where there is a noise nuisance. They are not involved in planning. They may issue an instruction for an investigation to be done by an expert. They need negotiation and conflict resolution skills, and good interpersonal skills. They work in response to complaints.

Environmental Health Practitioners (Level 4):

Historically Environmental Health Practitioners require a diploma or degree for appointment by the Local Authority, without, or with minimal qualifications or recognized competence in noise management. They were required to follow instructions and report to Noise Control Officers.

Currently they identify problems that are in contravention to regulations including external pollution in the Local Authority, execute Noise Control Regulations and may give input into Local Government Policy. It was agreed that an FETC: Environmental Noise would be an appropriate qualification to provide the necessary specialisation for the work in Noise Control Divisions of Integrated Pollution Control Departments.

The recipient of this Level 4 qualification will be equipped to: conduct noise measurements, issue notices, look at town planning schemes and developments and request assessments by experts.

The Certificate: Environmental Noise (Level 4) will provide the necessary specialisation for Noise Control Officers in Noise Control Divisions of Integrated Pollution Control Departments.

Noise Control Officers:

The Level 5 certificate will build on the Level 4 certificate. Noise Control Officers in management positions who hold the Level 5 certificate also require a related tertiary qualification and registration with a professional council. They typically operate in Local Authorities as planners, supervisors and/or managers. Noise control is one of the core functions (KPA) for local government as defined in the new Health Act.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

It is also assumed that practitioners are already competent in:

- Communications at NQF level 3 or equivalent.
- Mathematical Literacy at NQF level 3 or equivalent.
- Unit Standard: NLRD242891 - Apply communication, interpersonal and conflict management principles in Ward Committee functions, processes or similar competence.

Recognition of Prior Learning:

At present there are short courses offered by consultants and acoustic engineers, usually contracted by recognised institutions to do training in specific areas (measurement, for example). Apart from these short courses, Noise Control Officers learn from one another and from practical experience.

This qualification provides for the formal recognition of skills that have been gained by short courses and/or experience of those already operational in the field.

Access to the qualification:

- Open.

QUALIFICATION RULES

Fundamental:

- Communication.
 - Candidates are required to achieve all 20 credits for Communications from the available credits.
 - In terms of the requirements for an FETC, candidates are required to achieve 20 credits obtained in a second official language at a minimum of level 3.
- Mathematical Literacy - Candidates are required to demonstrate achievement of the 16 credits for the Mathematics unit standards within the context of education, training and development situations.

Core:

- Candidates must achieve all 52 CORE credits listed in Exit Level Outcomes.

Elective:

- Candidates must achieve at least 12 credits of their choice from any of the available ELECTIVE credits in Exit Level Outcomes.

EXIT LEVEL OUTCOMES

1. Demonstrate an understanding of sound and noise.
2. Demonstrate understanding of the impact of noise on communities.
3. Deal with noise infringements.
4. Provide noise-related input to municipal planning processes.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

- Explanations provided of both sound and noise comply with scientific usage, and general understanding in the field.
- The approach to dealing with noise nuisances is consistent with regulations and local municipal policy.

Associated Assessment Criteria for Exit Level Outcome 2:

- The description of the impact of different types and classifications of noise accurately reflects an understanding of its impact on wellbeing in a variety of contexts.

Associated Assessment Criteria for Exit Level Outcome 3:

- A range of noise infringements is investigated and managed in accordance with regulations and policy.
- All procedures are thorough and meet requirements for valid evidence and processes under law.

Associated Assessment Criteria for Exit Level Outcome 4:

- Input promotes noise as an issue in planning considerations.

Integrated Assessment:

Assessment should take place within the context of:

- Given Quality Assurance policies, procedures and processes.
- A guided and supported learning environment.

Assessment will take place according to the detailed specifications indicated in the unit standards above.

Over and above the achievement of the specified unit standards, evidence of integration will be required as per the following broad criteria, all within the context of an active learning environment.

Assessors should note that the evidence of integration (as below) could well be presented by candidates when being assessed against the unit standards - thus there should not necessarily be separate assessments for each unit standard and then further assessment for integration. Well designed assessments should make it possible to gain evidence against each unit standard while at the same time gain evidence of integration.

Assessment should be in accordance with the following general and specific principles:

- The initial assessment activities should focus on gathering evidence in terms of the main outcomes expressed in the titles of the unit standards to ensure assessment is integrated rather than fragmented. Where assessment at title level is unmanageable, then the assessment can focus on each specific outcome, or groups of specific outcomes. Take special note of the need for integrated assessment.
- Evidence must be gathered across the entire range specified in each unit standard, as applicable. Assessment activities should be as close to the real performance as possible, and where simulations or role-plays are used, there should be supporting evidence to prove that the candidate is able to perform in the real situation.
- All assessments should be conducted in accordance with the following universally accepted principles of assessment:
 - Use appropriate, fair and manageable methods that are integrated into real work-related or learning situations.
 - Judge evidence on the basis of its validity, currency, authenticity and sufficiency.
 - Ensure assessment processes are systematic, open and consistent.

INTERNATIONAL COMPARABILITY

The following information indicates international involvement in and commitment to noise control and noise management.

The World Health Organisation.

The WHO provides the following guidelines on noise and noise management:

- Stages in Noise Management.
- Noise Exposure Mapping.
- Noise Exposure Modelling.
- Noise Control Approaches:
 - Mitigation measures (Road traffic noise, Railway noise and noise from trams, Aircraft noise, Machines and Equipment, Noise control within the sound transmission path, Noise protection at the receiver's site).
 - Precautionary measures (Land use planning, Education and public awareness).
- Evaluation of Control Options.
- Management of Indoor Noise:
 - Government policy on indoor noise.
 - Design considerations.
 - Indoor noise level control.
 - Resolving indoor noise problems.
- Priority Setting in Noise Management:
 - Noise policy and legislation.
 - Examples of noise policies.
 - Noise emission standards have proven to be inadequate.
 - Unsustainable trends in noise pollution future policy planning.
 - Analysis of the impact of environmental noise.
 - Cost-benefit analysis.
 - Review of standard setting.
 - Enforcement of noise standards: Low-noise implementation plans.
- Conclusions on Noise Management.

International Associations:

The International Institute of Noise Control Engineering (I-INCE) was founded in 1974. It is a worldwide consortium of organizations concerned with noise control, acoustics and vibration. The primary focus of the Institute is on unwanted sounds and on vibrations producing such sounds when transduced. I-INCE is the sponsor of the INTER-NOISE Series of International

Congresses on Noise Control Engineering held annually in leading cities of the world. I-INCE also co-sponsors symposia on specialized topics within the I-INCE field of interest. The quarterly magazine *Noise/News International* is jointly published by I-INCE and the Institute of Noise Control Engineering of the USA (INCE/USA). In 1992, I-INCE instituted a program to undertake technical initiatives on critically-important issues of international concern within the I-INCE field of interest. This initiative has resulted in three reports and six ongoing Technical Study Groups.

Draft Guidelines and Codes of Practice:

What is evident is that many nations are confronting the issue of noise and noise management. This is supported from the number of national guidelines being published, as well as codes of practice issued. The following are samples, and is not intended to be comprehensive.

Draft Scottish Noise Management Guide (October 24, 2005).

Chapter headings in the Guide include:

- Chapter 3: Local authority noise management framework.
- Chapter 4: Delivering the noise service.
- Chapter 5: Public awareness and education initiatives.
- Chapter 6: Review of noise service.

New Zealand: "Noise in the Workplace - Approved Code of Practice for the Management of".

The purpose of this code is to provide practical guidance in meeting the requirements of the Health and Safety in Employment Act 1992 and the Health and Safety in Employment Regulations 1995. This process involves the identification and the management of noise hazards in the workplace. A consequence of proper control and management of the problem of excessive noise will be a reduction in the incidence of hearing loss arising from noise exposure in workplaces.

Chapter headings in the Guide include:

- Part 2: Noise Hazard Identification.
- Part 3: Noise Hazard Assessment.
- Part 4: Control of Noise Hazards.
- Part 5: Protection Against Noise Hazards.
- Part 6: Training and Education.
- Part 7: Audiometry.
- Part 8: Designers, Manufacturers and Suppliers Of Plant.
- Part 9: Designers, Manufacturers and Suppliers Of Hearing Protectors.

United States of America:

Title: Examination of Noise Management Approaches in the United States.

Abstract: This report is intended to serve as a reference document on noise management approaches used in the United States. Emphasis has been placed on identifying and evaluating the full range of techniques and measures which are available when selecting a noise management strategy.

Broadening the range of choice is a first step in moving toward the resolution and prevention of noise/land use conflicts. Awareness of the available options is of critical importance when individual actors in an issue have limited unilateral power to achieve objectives.

The first three chapters of the report provide background material designed to aid in the understanding of noise management issues. A brief description of the noise problem in the U.S. is given, followed by a discussion on conceptual approaches to noise/land use issues. Some basic concepts of sound and the measurement and assessment of noise are reviewed. In addition, the management application of noise descriptors, relating human responses to noise exposure levels, is examined. In Chapter III, a change is made from describing the noise environment, to describe the legal framework of statutory and cause law that shapes management policy. Chapters 4 through 6 are devoted to identifying and evaluating management approaches.

International conference on noise:

The INTER-NOISE Congresses are the largest international gathering of experts in noise control engineering each year. The INTER-NOISE Congresses have been held each year since 1972 at venues around the world. The Congresses include a large technical program consisting of papers and posters on all topics of noise control engineering. Papers summarizing these presentations are collected into a Proceedings document that is available for reference after the Congress. The Congresses also include an exhibition of the latest products and instrumentation for noise control engineering.

Countries have responded with their own legislation and guidelines for noise management. This in turn has led to education and training with respect to noise.

United Kingdom:

In 1974 the UK established The Institute of Acoustics as a professional body for those working in acoustics, noise and vibration. It amalgamated the Acoustics Group of the Institute of Physics and the British Acoustical Society. The Institute of Acoustics is a nominated body of the Engineering Council, offering registration at Chartered and Incorporated Engineer levels.

The range of interests of members within the world of acoustics embraces aerodynamics, architectural acoustics, building acoustics, electroacoustics, engineering dynamics, noise and vibration, hearing, speech, underwater acoustics, together with a variety of environmental aspects.

The Institute works closely with other professional bodies in related fields, including CIEH, REHIS and IOSH and the Association of Noise Consultants.

The Institute offers an education programme, comprising a postgraduate Diploma in Acoustics and Noise Control and several Certificate of Competence courses.

Through specialist Institute of Acoustics working groups, support is given to the development of legislation in these areas, and in UK, European and International Standards development. The Institute is a founding member of the European Acoustics Association (EAA), a member society of the International Institute of Noise Control Engineering (I-INCE) and a member of the International Commission for Acoustics (ICA).

Certificate of Competence in Environmental Noise Measurement:

A five-day course which provides delegates with a basic knowledge of the methodology of environmental noise measurement, including the use and accuracy requirements of sound level meters and analysers. It enables them be aware of the significance of measurement data against the framework of standards and legislation for environmental noise.

Certificate of Competence in Workplace Noise Risk Assessment:

This Certificate course aims to provide a recognised course of education and training to enable persons to carry out workplace noise assessments in a competent manner, as required by the Control of Noise at Work Regulations 2005. It is designed to provide a background of basic acoustics combined with 'hands on' practical experience of industrial noise measurements and associated assessment of workplace noise exposure.

Diploma in Acoustics and Noise Control:

The Institute of Acoustics' postgraduate Diploma in Acoustics and Noise Control has been run since 1975. It is usually studied on a part-time basis, over one year. The Diploma course was set up to provide specialist academic training for membership of the Institute of Acoustics and over the years the course has become well established as providing high level training in real-world practical acoustics. As a result, the Diploma is widely recognised as the leading specialist qualification for the professional practitioner in acoustics. It is recognised by a number of UK universities as providing partial exemption from their requirements for the award of MSc degrees.

The normal minimum requirement for admission to the Diploma course is a degree in a science, engineering or construction-related subject or an Environmental Health Officer's Diploma.

The elements making up the programme (as trained by the universities) are:

- The General Principles of Acoustics Module.
- Two Specialist Option Modules.
- A Project.

These elements may be taken individually, e.g. over a period of two years, but to gain the Diploma, students must pass all of them.

The two Specialist Option Modules are chosen from:

- Architectural & Building Acoustics.
- Law & Administration.
- Noise Control Engineering.
- Transportation Noise.
- Sound Reproduction.
- Measurement & Instrumentation.
- Vibration Control.

Which options run depend upon the choices made by the students and the availability of suitable staff. However, the first four options are usually available.

MSc in Acoustics and Noise Control:

The MSc is designed to provide graduates with the knowledge and skills to work in environmental acoustics, whether in consultancy, local / central government or in research. The course also aims to provide employers with a supply of suitably qualified graduates.

The programme is designed to take graduates with an engineering or numerate science degree and give them specialist skills and knowledge in environmental acoustics. Acoustics is currently a skills shortage area, so good graduates will be in a very strong position in the jobs market. Students have the option to transfer between MSc Environmental Acoustics and MSc Audio Acoustics after completing the first four modules, which for full time students will be at the end of Semester 1.

The content focuses on Environmental Noise Measurement where candidates will learn how to take reliable measurements of environmental noise, how to apply acoustic theory and knowledge of standard practice to work out what, where and how to measure. They will be given a practical test with a sound level meter as part of the assessment, and will be given the opportunity to obtain the Institute of Acoustics Certificate of Competence in Environmental Noise Measurement. Details on content include:

- Noise control:
 - Knowledge to select appropriate noise control options for realistic environmental noise scenarios, and to justify their selections.
- Mathematics and Vibrations:
 - Competency at mathematics to understand how audio systems work.
- Acoustics:
 - Fundamental understanding of the physics behind the behaviour of sound - sound; vibration; sound generation and propagation; measurement (time and frequency).
- Transducers and sound reinforcement:
 - Design of appropriate transducers to transform electronic signals to acoustic waves; behaviour of these waves in rooms and outdoors; appropriate application of loudspeakers for music reproduction, sound reinforcement and public address.
- Psychoacoustics:
 - Human auditory perception: pitch perception, localisation and masking and how these are used in perceptual coding and spatial audio; measuring human response to audio signals.
- Digital signal processing:
 - Digital systems: transforming signals from analogue to digital representations and vice versa; manipulation of digital signals by filtering; exploration of convolution, Fourier transformation and filter design.
- Numerical techniques:
 - Use of numerical techniques to understand complex mathematical systems; techniques including Boundary Element, Finite Element, Statistical Energy Analysis and geometric room acoustic models.
- Room Acoustics:
 - Correct acoustical design to make the space comfortable to use and reproduced sound audible and intelligible; design of spaces for non-electronic sound sources.

NEBOSH qualifications:

The National Examination Board in Occupational Safety and Health is an independent awarding body attracting more than 20,000 candidates each year. NEBOSH was founded in 1979. Noise and noise management is treated as an aspect of Occupational Safety and Health.

The NEBOSH Specialist Diploma in Environmental Management is a professional level qualification designed to develop the environmental management skills of health, safety and environmental practitioners and other suitable candidates. Candidates are required to hold the IEMA Certificate in Environmental Management (or equivalent qualification) and would benefit from relevant Health and Safety qualifications and would ideally have environmental experience in industry. Upon completion of the course, candidates are assessed by written examination and will also need to submit an environmental audit report within an agreed time limit.

Topics include:

- Understanding of techniques for monitoring air, water, waste and noise emissions.
- Understanding of environmental auditing in effective pollution control management.
- Detailed knowledge of air pollution control, effluent treatment and disposal of hazardous waste and environmental noise control.
- Selection of the best practicable environmental options using dispersion modelling.
- Environmental impact assessment.

- Risk assessment and cost benefit analysis.

The Open University (UK)-T308:

Environmental monitoring, modelling and control: This course is about strategies for controlling environmental pollution. By the end of the course learners are able to define and describe:

- The principles and concepts of solid wastes management, noise control, air quality management and water treatment.
- The computer modelling of environmental situations.
- The economic assessment of projects.

Noise, one of the course components, begins by reviewing basic concepts such as units, criteria and indices, legal and social control and planning. The technical aspects of noise control including prediction schemes and sound insulation of buildings, are important topics. There are case studies of public enquiries and of industrial noise.

T308 is a Level 3 course, which makes intellectual demands appropriate to the final year of an honours degree. T308 is a compulsory course in the:

- Diploma in Pollution Control.

T308 is a specified course in the:

- BA (Hons) or BSc (Hons) Environmental Studies.
- BSc (Hons) Technology.
- BSc (Hons) Natural Sciences.
- Advanced Diploma in Environmental Decision-Making.

Switzerland:

Swiss Acoustical Society: Schweizerische Gesellschaft für Akustik/Société Suisse d'Acoustique (SGA/SSA).

The Swiss Acoustical Society was established in 1971. The majority of the members are consultant engineers and practitioners, mostly in the field of environmental noise protection; only a small minority is doing research.

The aim of the society is the promotion of acoustics in Switzerland by supporting studies and research in the area of acoustics, by exchange of experience between experts, by taking positions on questions of noise control legislation, and by strengthening the cooperation of acousticians over the language borders in this multilingual country.

Four to five times a year the society's newsletter - bilingual in French and German - informs the members about news and topics on acoustics in Switzerland and abroad and covers lectures, courses, congresses, new publications, interesting web pages, and job offers. There is no formal education in Acoustics in Switzerland. Therefore the society offers to its individual members the possibility to pass an examination for the title "Akustiker SGA" and thereby provides proof of their qualifications in acoustics.

Regarding the fields of acoustics SGA's members are interested in, noise control leads with building acoustics and room acoustics coming second. A majority of the members is interested in measuring technique, one third of the members list physical acoustics among their interests and one quarter name musical acoustics and electroacoustics. This priority is reflected in the choice of subjects treated at the society's events.

SGA/SSA is member of the European Acoustics Association EAA, the International Commission of Acoustics ICA and the International Institute of Noise Control Engineering I-INCE.

New Zealand:

The NZQA has one unit standard related directly to noise control, at Level 3: "Demonstrate knowledge of hearing conservation in the workplace".

There is a Diploma qualification offered at Level 6.

NZIM Diploma in Health and Safety Management - Level 6.

The Diploma in Health and Safety Management aims to provide current practical and realistic health and safety information.

The course is designed for people whose area of responsibility within industry or government includes health and safety. This may include, but are not restricted to, safety coordinators, risk advisers, occupational health nurses, human resource managers, training officers, engineers, production supervisors, union officials and insurance personnel.

Programme content includes Management Integrating Health and Safety; Safety and other relevant Compliance Legislation; Employee Health, Welfare and Wellbeing; Employee Development through Training and Involvement; Specialised Workplace Health and Safety Management (of which Noise Management is a part); Hazard Risk Management; and Accident and Incident Management.

The stated Learning Outcomes of the Diploma indicate that successful learners will be able to apply their Noise Management competence:

- Critically assess the effectiveness and value of workplace health and safety within their own organisation.
- Identify and prioritise health and safety training to facilitate responsibility fulfilment within their organisation.
- Use essential 'minimum standard' concepts to respond strategically to workplace health and safety management.
- Develop skills and behaviours which add value to existing skills and knowledge.
- Work openly and positively toward the evaluation and development of workplace health and safety projects.
- Initiate practical systems management and strategies to address health and safety issues.
- Generate positive attitudes towards health and safety and its management within the organisation.

Australia:

In Australia, there appear to be few courses devoted entirely to acoustics; rather it is seen as complementing a wide range of subjects. Advice to those at school is to have a broad range of background subjects at secondary school with a knowledge of basic mathematics and some skills in computing essential (computers are used in all aspects of the design, measurement, and data analysis in acoustics).

While not all people working in acoustics have extensive formal qualifications, some basic training is necessary. Projections in Australia suggest that there will be an increasing demand for people with formal qualifications in the acoustics work force, rather than the "self-trained" workers who have only done a few short courses during their career. Learning should place an emphasis on basic physics and mathematics and include an understanding of wave-motion, basic computing and some electronics and instrumentation. Courses which include a study of

optics and electromagnetic theory are useful, as many of the basic ideas and laws developed in these areas are directly transferable to acoustics. Individuals may wish to complement these studies with areas such as architecture, the life sciences including biology or psychology and/or an arts subject like music.

Candidates are advised to extend their studies after obtaining a basic degree and undertake additional work towards a Masters or even a Doctoral degree in acoustics. A number of Universities include acoustics among the areas offered for such training. The following list indicates some types of Faculties and the kind of research topics which may be undertaken.

Mechanical Engineering: Research into the effects of vibration in various structures, production of turbulent sound from flowing fluids, active noise control.

Physics: Interaction of sound with materials, basic properties of acoustic materials, behaviour of musical instruments.

Biology: Communication between living organisms by means of sound, effects of noise on the behaviour of marine and land-based animals - including man.

Psychology: Problems of speech and hearing and the intelligibility of communication.

Africa:

There is little or no published evidence of comprehensive approaches in Africa to noise control and noise management, apart from South Africa. The isolated examples that appear are in relation to international airports.

South African legislation provides clear guidelines for noise management, and this is reflected in the different municipalities and their policies and regulations. There is a move to develop unified national strategies and approaches to the management of noise in South Africa.

Existing education and training initiatives:

OAITC and UNISA have developed short certificate courses, centering on environmental science and environmental management, to provide tuition for persons who have an interest in the environment. These short courses will be useful for:

- People whose function in the workplace is to undertake environmental audits and or assessments.
- Engineers who wish to include environmental considerations in their development planning.
- People practicing waste management.
- Environmental impact assessors.
- Occupational and environmental hygienists.
- Environmental, health and safety officers.
- Any person whose work involves environmental and ecological assessments.

Learners successfully completing the short courses will gain credits towards UNISA's National Diploma in Environmental Science and Environmental Management.

Environmental Science & Environmental Management: NQF Level 5.

Companies and individuals may elect to choose individual modules or the entire learning programme.

Module 1: Environmental management systems.

Module 2: Environmental aspects and impacts.

Module 3: Waste disposal and waste management.

Module 4: Occupational and environmental noise.

Module 5: Environmental chemistry and industrial ecology.

Module 6: Environmental legislation.

Module 7: Toxicology.

Module 8: The Kyoto Protocol and the Clean Development Mechanism.

Conclusion:

It is clear that noise and noise management is viewed as an increasingly important part of planning and development in the future. There are many examples of qualifications at tertiary level, but an obvious need also for access to these qualifications.

This qualification will provide access to the field, and enable people in local government in particular, to play a vital and informed role in noise management. It provides for immediate skills needs in the sector, as well as progression into more specialist roles.

ARTICULATION OPTIONS

The following information shows the location of this qualification in terms of other qualifications within the field:

- The first steps to qualifications in noise control include unit standards at Level 3. The intention is to progress up the career path to a Degree at Level 6.
- Candidates working in noise control are required to hold a Diploma or Degree: Environmental Health. The first noise related qualification is the FETC: Environmental Noise. This qualification can be used by persons in other areas of environmental health to extend or further their careers.
- Successful learners can then progress to a National Certificate: Environmental Noise Level 5 to provide the specialised knowledge and skill necessary to work in Noise Control Divisions of Integrated Pollution Control Departments.
- There are horizontal articulation possibilities with Occupational Health qualifications at Level 5.

MODERATION OPTIONS

- Providers offering learning towards this qualification or the component unit standards must be accredited by the relevant ETQA.
- Moderation of assessment will be overseen by the relevant ETQA according to moderation principles and the agreed ETQA procedures.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors must be registered in terms of the requirements of SAQA and the relevant ETQA. Assessors are assumed to have competence in environmental noise equivalent to this qualification, or above.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	244590	Describe and explain sound generation and propagation	Level 3	3
Core	244593	Identify and deal with a noise nuisance	Level 3	4
Core	244602	Apply processes and procedures for dealing with alleged noise infringement in a specific Local Authority	Level 4	8
Core	244615	Conduct noise measurements to validate a complaint	Level 4	10
Core	244614	Describe and explain the physical, emotional and psychological impact of noise on social well being	Level 4	5
Core	244597	Distinguish between and classify different types of occupational and environmental noise	Level 4	6
Core	244598	Investigate and approve applications for public events from an environmental noise perspective	Level 4	6
Core	244601	Provide input and guidance to local government	Level 4	10

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
		departments with respect to noise, and noise-related planning requirements		
Elective	116492	Interact ethically in multicultural contexts	Level 3	6
Elective	9533	Use communication skills to handle and resolve conflict in the workplace	Level 3	3
Elective	14927	Apply problem solving strategies	Level 4	4
Elective	119676	Apply the skills of customer care in a specific work environment	Level 4	4
Elective	110000	Generate information and reports for internal and external use	Level 4	10
Elective	110023	Present information in report format	Level 4	6
Elective	119342	Apply knowledge of ethical principles, standards and professional conduct in public sector management and administration	Level 5	8
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes.	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Fundamental	12154	Apply comprehension skills to engage oral texts in a business environment	Level 4	5
Fundamental	12155	Apply comprehension skills to engage written texts in a business environment	Level 4	5
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Fundamental	12417	Measure, estimate & calculate physical quantities & explore, critique & prove geometrical relationships in 2 and 3 dimensional space in the life and workplace of adult with increasing responsibilities	Level 4	4
Fundamental	119469	Read/view, analyse and respond to a variety of texts	Level 4	5
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Fundamental	12153	Use the writing process to compose texts required in the business environment	Level 4	5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Describe and explain sound generation and propagation*

SAQA US ID	UNIT STANDARD TITLE		
244590	Describe and explain sound generation and propagation		
ORIGINATOR	PROVIDER		
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD	SUBFIELD		
10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

SPECIFIC OUTCOME 1

Define sound and noise.

SPECIFIC OUTCOME 2

Describe and explain how sound is generated.

SPECIFIC OUTCOME 3

Describe and explain how sound is propagated.

SPECIFIC OUTCOME 4

Identify and explain provisions for dealing with noise nuisance.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify and deal with a noise nuisance*

SAQA US ID	UNIT STANDARD TITLE		
244593	Identify and deal with a noise nuisance		
ORIGINATOR		PROVIDER	
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	4

SPECIFIC OUTCOME 1

Distinguish between noise nuisance and disturbing noise.

SPECIFIC OUTCOME 2

Identify noise nuisance.

SPECIFIC OUTCOME 3

Deal with noise nuisance.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Distinguish between and classify different types of occupational and environmental noise

SAQA US ID	UNIT STANDARD TITLE		
244597	Distinguish between and classify different types of occupational and environmental noise		
ORIGINATOR	PROVIDER		
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD	SUBFIELD		
10 - Physical, Mathematical, Computer and Life Sciences	Environmental Sciences		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate an understanding of ambient noise, industrial noise and noise measurement.

SPECIFIC OUTCOME 2

Describe the characteristics of occupational noise.

SPECIFIC OUTCOME 3

Describe the characteristics of environmental noise.

SPECIFIC OUTCOME 4

Identify the regulations and standards that govern the limits and responses to different noise types.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Investigate and approve applications for public events from an environmental noise perspective

SAQA US ID	UNIT STANDARD TITLE		
244598	Investigate and approve applications for public events from an environmental noise perspective		
ORIGINATOR		PROVIDER	
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Process the application.

SPECIFIC OUTCOME 2

Investigate the application.

SPECIFIC OUTCOME 3

Provide an approval certificate for the event.

SPECIFIC OUTCOME 4

Handle queries or complaints with respect to the event.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Provide input and guidance to local government departments with respect to noise, and noise-related planning requirements

SAQA US ID	UNIT STANDARD TITLE		
244601	Provide input and guidance to local government departments with respect to noise, and noise-related planning requirements		
ORIGINATOR		PROVIDER	
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	10

SPECIFIC OUTCOME 1

Demonstrate knowledge of legislation and strategic policy documents dealing with noise control.

SPECIFIC OUTCOME 2

Demonstrate an understanding of noise management systems.

SPECIFIC OUTCOME 3

Demonstrate knowledge of the importance of planning around sound and noise.

SPECIFIC OUTCOME 4

Provide input to planning from a noise perspective.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply processes and procedures for dealing with alleged noise infringement in a specific Local Authority

SAQA US ID	UNIT STANDARD TITLE		
244602	Apply processes and procedures for dealing with alleged noise infringement in a specific Local Authority		
ORIGINATOR		PROVIDER	
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Demonstrate understanding of the regulations that apply to noise infringements.

SPECIFIC OUTCOME 2

Demonstrate understanding of municipal office protocols and procedures.

SPECIFIC OUTCOME 3

Demonstrate understanding of the limitations of own authority with respect to noise management.

SPECIFIC OUTCOME 4

Contribute to the development of policy in response to noise legislation.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Describe and explain the physical, emotional and psychological impact of noise on social well being

SAQA US ID	UNIT STANDARD TITLE		
244614	Describe and explain the physical, emotional and psychological impact of noise on social well being		
ORIGINATOR		PROVIDER	
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	5

SPECIFIC OUTCOME 1

Describe and explain how the ear perceives sound.

SPECIFIC OUTCOME 2

Describe and explain the physical health issues associated with noise.

SPECIFIC OUTCOME 3

Describe and explain the emotional and/or psychological issues associated with noise nuisance and disturbing noise.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Conduct noise measurements to validate a complaint***

SAQA US ID	UNIT STANDARD TITLE		
244615	Conduct noise measurements to validate a complaint		
ORIGINATOR		PROVIDER	
SGB Environmental Sc/Mgt & Waste Mgt			
FIELD		SUBFIELD	
10 - Physical, Mathematical, Computer and Life Sciences		Environmental Sciences	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	10

SPECIFIC OUTCOME 1

Demonstrate an understanding of the principles of sound level measurement equipment.

SPECIFIC OUTCOME 2

Prepare to conduct a noise measurement.

SPECIFIC OUTCOME 3

Conduct the noise measurement.

SPECIFIC OUTCOME 4

Analyse and interpret measurements.

SPECIFIC OUTCOME 5

Report measurement results.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Transport and Logistics Operations

registered by Organising Field 11, Services, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saga.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and **no later 13 August 2007**. All correspondence should be marked **Standards Setting – Transport and Logistics Operations** addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D. Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: dmphuthing@saqa.org.za


DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**National Certificate: Ports and Harbours**

SAQA QUAL ID	QUALIFICATION TITLE		
58759	National Certificate: Ports and Harbours		
ORIGINATOR		PROVIDER	
SGB Transport and Logistics Operations			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	11 - Services	Transport, Operations and Logistics	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	149	Level 5	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Purpose:

Shipping is a global business of great importance to international trade. The utilization of modern management principles, concepts for improving efficiency and sound management practices are increasingly required in the shipping industry. Many of the middle and upper level executives in shipping have a background in functional or technical areas and have limited management training. This qualification will offer re-skilling and up-skilling of such people operating in a port environment.

Learners will acquire the necessary knowledge and skills to manage the operations of ports or sea terminals to international standards.

The qualifying learner will be able to:

- Establish and maintain sound working relations with all relevant role-players in the marine transport industry.
- Apply local and international law, conventions and policies related to maritime operations and ports.
- Apply knowledge of maritime and port economics to oversee the organisational activities in a port or harbour.
- Apply financial and administrative management in a port or harbour environment.

Rationale:

This National Certificate at NQF level 5 resulted from an identified industry and employer need and represents a step in the established sub-field learning pathway. It will contribute to sustainable and professional management of ports and terminals to ensure South Africa's economic growth and prosperity.

This qualification has been generated to ensure South Africa's compliance with international competitive trends in the ports and harbours industry. A new port training strategy was the subject of a United Nations Conference on Trade and Development (UNCTAD) held in Porto during May 2002. Three South African delegates were in attendance. A plan of action for the implementation of the new Port Management Programme (PMP) was established at the conference for three represented linguistic groups, being French, Portuguese and English. This qualification provides for implementation of that programme in South Africa.

To date all training of managers for South African ports was outsourced to Belgium and the Netherlands. Furthermore, there is a need for an NQF compliant qualification that will provide the South African authorities with the opportunity to present this education and training locally. The typical learners for this qualification will include:

- Terminal operators.
- Supervisors.
- Middle Manager.
- Stevedore operators.
- Ships' agents.
- Clearing and forwarding agents.
- Deck officers.
- Master Mariners.
- Port managers.
- Harbour masters.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

It is assumed that learners are competent in:

- Communication in English at NQF Level 4 or equivalent.
- Mathematical literacy at NQF Level 4 or equivalent.
- Computer literacy at NQF Level 3 or equivalent.

Recognition of Prior Learning:

This Qualification and all the fundamental, core and elective Unit Standards associated with it can be achieved by any learner through the recognition of prior learning, which includes learning outcomes achieved through formal, informal and non-formal learning and work experience. The qualification can be obtained in whole or in part through RPL.

Access to the Qualification:

Access is open to learners with an FETC or equivalent NQF level 4 qualification.

QUALIFICATION RULES

- All fundamental Unit Standard credits totalling 25 are compulsory.
- All Core Unit Standard credits totalling 112 are compulsory.
- Learners are to choose Unit Standards totalling a maximum of 12 credits.

The total credits for this qualification is 149.

EXIT LEVEL OUTCOMES

1. Communicate with internal and external role-players to ensure optimal participation and performance required to oversee port operations.
2. Apply legal, regulatory and statutory requirements within the port and harbour environment.
3. Explain maritime economics and international trade in relation to the role and function of ports and harbours in the South African context.
4. Explain port economics in relation to the nature and characteristics of port operations in the South African context.

5. Apply management principles, concepts and methods to oversee port operations.
6. Oversee the financial and administrative requirements of a section/division/organisation in the ports and harbours environment.

ASSOCIATED ASSESSMENT CRITERIA**Assessment Criteria for Exit Level Outcomes 1:**

- 1.1 Appropriate tools and information systems are used to manage communication and information in terms of organisational resources.
- 1.2 Communication theory is applied in leading discussions, making presentations and chairing meetings related to internal and external stakeholders.
- 1.3 Written and oral communication techniques are used with stakeholders of ports and harbours.
- 1.4 Information is collated and analysed to develop conclusions and communicate recommendations in performing an oversight role in ports operations.
- 1.5 Service levels to a range of ports and harbours customers are measured and monitored according to organisational procedures.
- 1.6 Leadership strategies are applied and institutional accountability enhanced to deal with managing a variety of ports and harbours role-players and stakeholders.

Assessment Criteria for Exit Level Outcomes 2:

- 2.1 The National Ports Act and related port rules are applied in the context of South African ports and harbours.
- 2.2 South African Maritime Safety Association (SAMSA), Maritime Pollution (MARPOL) and International Ship and Port Facility Security Code (ISPS) requirements are applied in the port or harbour and approaches.
- 2.3 The principles, rules and regulations of the Public Finance Management Act (PFMA) are applied in relation to the required accounting systems and accountability.
- 2.4 The Labour Relations Act (LRA) is interpreted and implemented in accordance with the provisions related to various bodies and role-players.

Assessment Criteria for Exit Level Outcomes 3:

- 3.1 The demand and supply of ports and terminals is explained in terms of the comparative advantages/disadvantages of South African ports to competitors.
- 3.2 Port productivity and pricing practices are analysed in relation to international best practice.
- 3.3 International trade is explained in relation to the maritime economics and the role and function of ports and terminals.
- 3.4 Risk regions of trade are identified and tariffs and non tariff barriers are explained in terms of South African product groups and services.
- 3.5 The maritime transport industry and the role of the National Ports Authority is explained in the context of South Africa.
- 3.6 The internal and external functions of a port are described in relation to the services rendered.

Assessment Criteria for Exit Level Outcomes 4:

- 4.1 The layout and operations of ports/harbours and terminals are analysed in relation to the terminal or port type and infrastructure.
- 4.2 The operational processes are described in terms of the import/export logistical flow.
- 4.3 Vessel classification and registration are described in relation to the purpose of vessel types.
- 4.4 The nature of the different cargoes handled by vessels as well as the specialised cargo handling equipment used are described in terms of safety regulations.

Assessment Criteria for Exit Level Outcomes 5:

- 5.1 Port/harbour or terminal related problems are defined and investigated in terms of organisational procedures.
- 5.2 Possible solutions are generated by using a range of problem-solving techniques and evaluated against the established criteria in order to determine suitability.
- 5.3 The optimum solution is implemented according to organisational constraints and evaluated against the criteria.
- 5.4 The implementation of an organisation's code of ethics is evaluated and a plan to improve commitment and compliance is developed in the context of port operations.
- 5.5 Potential risks to ports/harbours and terminals are identified and their impact are determined in relation to port operations.
- 5.6 Port/terminal continuity plans are developed, implemented and evaluated in consultation with all relevant stakeholders according to organisational procedures and policies.

Assessment Criteria for Exit Level Outcomes 6:

- 6.1 Ships disbursements are calculated and recorded in accordance with statutory requirements and port operations.
- 6.2 Expenses/overdue accounts generated during vessels port stays are monitored and allocated/recovered according to port or terminal procedures.
- 6.3 Vessel working documentation, operational ship documentation and cargo documentation is monitored and administered according to statutory requirements and organizational procedures.
- 6.4 Container control documentation is monitored and administered in relation to the principals and depots.
- 6.5 Business unit budget needs are analysed, presented and justified with reference to management expenses and economic viability.
- 6.6 Actual expenses and revenue are monitored and controlled against projected expenses and revenue.

Integrated Assessment:

Integrated assessment at the level of the Qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across Unit Standards to achieve competence that is grounded and coherent in relation to the purpose of the Qualification. Integrated assessment should show how already demonstrated competence in individual areas can be linked and applied for the achievement of a holistic outcome as described in the exit level outcomes.

Integrated assessment must judge the quality of the observable performance, and also the quality of the thinking that lies behind it. Assessment tools must encourage learners to give an account of the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will demand practical evidence while others may be more theoretical, depending on the type of outcomes to be assessed. The ratio between action and interpretation is not fixed, but varies according to the demands of the particular exit level outcome of the Qualification.

While the generic components of this Qualification at NQF Level 5 can be assessed through occupational contexts and activities relating to Port management, care must be taken in both the learning programme and the assessment to ensure that these foundational skills are portable. The primary aim of this Qualification is to ensure that learners have a sound knowledge and skills base to prepare them for further learning, whatever career path they may choose. Learners must be able to transfer generic skills across a number of different contexts, and apply them within a number of learning areas.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place.

INTERNATIONAL COMPARABILITY

A new port training strategy was the subject of a United Nations Conference on Trade and Development (UNCTAD) held in Porto during May 2002 and attended by 65 countries. Three South African delegates were in attendance, where a plan of action for the implementation of the new Port Management Programme (PMP) was established for three represented linguistic groups, being French, Portuguese and English.

This programme represents international best practice for the management of ports and harbours. It has been developed in consultation with all the internationally relevant maritime transport organisations and representatives of all the countries involved in international maritime trade. The Port Management Programme comprises the following 4 modules:

- Module 1: International trade and transport.
- Module 2: Organisation of a port system.
- Module 3: The functioning of a port system.
- Module 4: Future challenges of the port.

This qualification is fully aligned with the PMP and its four modules.

Another benchmark for the training and development of port managers in developing countries is the Port Reform Toolkit. This has been developed by the Public-Private Infrastructure Advisory Facility (PIIAF) and the World Bank. This learning programme comprises the following 8 modules:

- Module 1: Framework for Port Reform.
- Module 2: The Evolution of Ports in a Competitive World.
- Module 3: Alternate Port Management Structures and Ownership Models.
- Module 4: Legal Tools for Port Reform.
- Module 5: Financial Implications of Port Reform.
- Module 6: Port Regulation.
- Module 7: Labour Reform and Related Social Issues.
- Module 8: Implementing Port Reform.

This National Certificate in Ports and Harbours Level 5 was designed to meet the requirements of both the UNCTAD Port Management Programme and the Port Reform Toolkit. The competencies identified for this qualification has been pegged at NQF level 5 representing the first level of management in the ports and harbours environment.

The unit standards in this qualification have been generated to ensure that they cover the nature and scope of the modules of these programmes that form the basis for best practice in the maritime industry. The following unit standards in this qualification represent all the port and harbour environment learning identified by the international maritime transport community in the modules referred to above:

- Understand the maritime industry.
- Apply regulations, codes and statutory reporting in the port environment.
- Describe the role of the port authority in maritime transport.
- Describe port terminal operations.
- Explain the economics of ports and harbours.
- Demonstrate an understanding of the international trade environment.
- Understand the basics of Ships Design and Cargo operations.
- Work with container control administration.

- Complete financial, statutory and operational shipping documentation.

This qualification also includes generic management competencies not included in the PMP or the PPIAF as the South African situation demands that the learners for whom this qualification has been designed are competent in the identified management competencies to be able to function effectively in their jobs. The competencies are included in the following unit standards:

- Monitor the level of service to a range of customers.
- Solve problems, make decisions and implement solutions.
- Apply the principles of ethics and professionalism in a business environment.
- Monitor, assess and manage risk.
- Apply the budget function in a business unit.
- Apply basic financial procedures to PFMA principles.
- Use appropriate tools and information systems to manage own information and communication.

It can be concluded that this National Certificate in Ports and Harbours, Level 5 closely resembles the international training needs as expressed by the UNCTAD programme and the Port Reform Kit. The difference lies in the additional outcomes listed above.

ARTICULATION OPTIONS

The qualification articulates vertically with the following:

- National Diploma: Transportation Management, Level 6, ID 983.
- National Diploma: Transport Economics, Level 6, ID 919.

Examples of horizontal articulation with this Qualification:

- ID 49398: National Certificate: Incident Management, NQF Level 5.
- National Certificate: Transportation Management, Level 5, ID 1187.

MODERATION OPTIONS

- Any institution offering learning that will enable achievement of this qualification must be accredited by the relevant ETQA.
- External Moderation of assessment will be overseen by the relevant ETQA at its discretion.
- The accredited Training Provider will oversee internal Moderation of assessment.
- Moderation should encompass achievement of competence described in both individual unit standards as well as the integrated competence described in the qualification.
- Moderation must also encompass achievement of the competencies described in the exit level outcomes described above.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

- Assessors must be registered as assessors with a relevant ETQA or an ETQA that has a Memorandum of Understanding with the relevant ETQA.
- Assessors must be in possession of a Management qualification or a related qualification in Transport and Logistics Operations at a minimum of NQF level 6.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	242810	Manage Expenditure against a budget	Level 4	6
Core	242829	Monitor the level of service to a range of customers	Level 4	5

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	242817	Solve problems, make decisions and implement solutions	Level 4	8
Core	117638	Understand the basics of Ships Design and Cargo operations	Level 4	10
Core	123372	Use appropriate tools and information systems to manage own information and communication	Level 4	4
Core	117632	Work with container control administration.	Level 4	10
Core	244454	Analyse port terminal operations	Level 5	10
Core	114873	Apply basic financial procedures to PFMA principles	Level 5	3
Core	244459	Apply regulations, codes and statutory reporting in the ports and harbours environment	Level 5	8
Core	117683	Complete financial, statutory and operational shipping documentation	Level 5	8
Core	244455	Demonstrate an understanding of port and harbour economics	Level 5	6
Core	244456	Describe the role and function of a port authority in maritime transport	Level 5	6
Core	115833	Monitor, assess and manage risk	Level 5	6
Core	230078	Apply the principles of ethics to a business environment	Level 6	10
Core	118023	Demonstrate an understanding of the international trade environment	Level 6	12
Elective	120391	Apply leadership skills to relationship management	Level 4	8
Elective	114877	Formulate and implement an action plan to improve productivity within an organisational unit	Level 4	8
Elective	117655	Know and understand the basics of marine insurance	Level 4	8
Elective	15234	Apply efficient time management to the work of a department/division/section	Level 5	4
Elective	114278	Demonstrate and apply an understanding of the Labour Relations Act (Act 66 of 1995)	Level 5	12
Elective	15230	Monitor team members and measure effectiveness of performance	Level 5	4
Elective	13237	Optimise the quality assurance system	Level 5	6
Fundamental	120304	Analyse, interpret and communicate information	Level 5	9
Fundamental	244471	Understand the maritime transport industry	Level 5	8
Fundamental	12433	Use communication techniques effectively	Level 5	8



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Analyse port terminal operations**

SAQA US ID	UNIT STANDARD TITLE		
244454	Analyse port terminal operations		
ORIGINATOR		PROVIDER	
SGB Transport and Logistics Operations			
FIELD		SUBFIELD	
11 - Services		Transport, Operations and Logistics	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Describe the layout and operations of ports and terminals.

SPECIFIC OUTCOME 2

Analyse the operations of container terminals.

SPECIFIC OUTCOME 3

Analyse the operation of car terminals.

SPECIFIC OUTCOME 4

Analyse the operation of multi-purpose terminals.

SPECIFIC OUTCOME 5

Analyse the operations of bulk-loading terminals.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate an understanding of port and harbour economics*

SAQA US ID	UNIT STANDARD TITLE		
244455	Demonstrate an understanding of port and harbour economics		
ORIGINATOR	PROVIDER		
SGB Transport and Logistics Operations			
FIELD	SUBFIELD		
11 - Services	Transport, Operations and Logistics		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Explain the demand for ports and terminals.

SPECIFIC OUTCOME 2

Explain the supply of ports and terminals.

SPECIFIC OUTCOME 3

Measure port productivity using best practice.

SPECIFIC OUTCOME 4

Understand the pricing of port services.

SPECIFIC OUTCOME 5

Determine port performance and best practice benchmarks.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Describe the role and function of a port authority in maritime transport*

SAQA US ID	UNIT STANDARD TITLE		
244456	Describe the role and function of a port authority in maritime transport		
ORIGINATOR		PROVIDER	
SGB Transport and Logistics Operations			
FIELD		SUBFIELD	
11 - Services		Transport, Operations and Logistics	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	6

SPECIFIC OUTCOME 1

Explain the maritime transport industry.

SPECIFIC OUTCOME 2

Analyse different types of maritime ports.

SPECIFIC OUTCOME 3

Explain the role of the National Ports Authority (NPA).

SPECIFIC OUTCOME 4

Describe the external functions of a maritime port.

SPECIFIC OUTCOME 5

Describe the internal functions of a maritime port.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Apply regulations, codes and statutory reporting in the ports and harbours environment

SAQA US ID	UNIT STANDARD TITLE		
244459	Apply regulations, codes and statutory reporting in the ports and harbours environment		
ORIGINATOR		PROVIDER	
SGB Transport and Logistics Operations			
FIELD		SUBFIELD	
11 - Services		Transport, Operations and Logistics	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Understand the National Ports Act.

SPECIFIC OUTCOME 2

Apply port rules.

SPECIFIC OUTCOME 3

Understand the South African Maritime Safety Authority (SAMSA) requirements for port operations.

SPECIFIC OUTCOME 4

Apply the Maritime Pollution (MARPOL) requirements in terms of the port and approaches.

SPECIFIC OUTCOME 5

Apply the International Ship and Port Facility Security (ISPS) Code.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand the maritime transport industry

SAQA US ID	UNIT STANDARD TITLE		
244471	Understand the maritime transport industry		
ORIGINATOR		PROVIDER	
SGB Transport and Logistics Operations			
FIELD		SUBFIELD	
11 - Services		Transport, Operations and Logistics	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	8

SPECIFIC OUTCOME 1

Understand the nature of seaborne trade.

SPECIFIC OUTCOME 2

Explain the structure of the shipping industry.

SPECIFIC OUTCOME 3

Understand maritime geography in relation to ports and harbours.

SPECIFIC OUTCOME 4

Explain the economic impact of the shipping industry on city ports and harbours.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

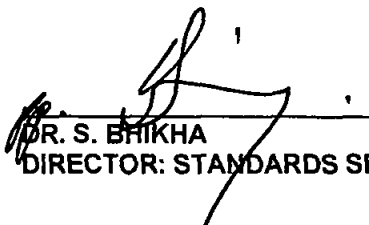
Building Construction

registered by Organising Field 12, Physical Planning and Construction, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.sqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and *no later 13 August 2007*. All correspondence should be marked **Standards Setting – Building Construction** addressed to

The Director: Standards Setting and Development
SAQA
Attention: Mr. D. Mphuthing
Postnet Suite 248
Private Bag X06
Waterkloof
0145
or faxed to 012 – 431-5144
e-mail: dmphuthing@saqa.org.za



DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT


SOUTH AFRICAN QUALIFICATIONS AUTHORITY
QUALIFICATION:
Further Education and Training Certificate: Plumbing

SAQA QUAL ID	QUALIFICATION TITLE		
58782	Further Education and Training Certificate: Plumbing		
ORIGINATOR		PROVIDER	
SGB Building Construction			
QUALIFICATION TYPE	FIELD	SUBFIELD	
Further Ed and Training Cert	12 - Physical Planning and Construction	Physical Planning, Design and Management	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	190	Level 4	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Purpose:

Qualifying learners will be able to integrate their knowledge, understanding and competencies related to occupational health and safety, National Building Regulations and industry codes of practice to perform a range of plumbing activities.

The achievement of this qualification will contribute to the development of those learners who have not had the benefit of formal education and training in that it provides formal recognition for knowledge and skills acquired through extensive workplace experience. Learners who have achieved this qualification will be able to access further learning opportunities and enhance their prospects for sustainable employment within the construction industry. For new entrants, this Qualification describes the learning outcomes required to participate effectively in a structured work environment. Employers will be able to use this Qualification as the source for identifying skills needs and appropriate training interventions. Providers of education and training will be able to use this Qualification in the design and development of appropriate outcomes based learning materials, assessment guides and related assessment tools. Completion of this qualification relates to the Organising Framework for Occupations (OFO) in that it reflects the competencies of occupational designation 334101 Plumber (General).

Qualifying learners will be able to:

- Identify and solve problems with practical mathematical applications.
- Communicate in verbal or written form with peers, members of supervisory/management levels and others.
- Apply understanding of the functioning of plumbing systems to install, test and maintain them in a built environment.
- Apply fault finding techniques to diagnose and repair installed plumbing systems.

Rationale:

As a result of past legacies, many practitioners within the building construction sector were denied career advancement and possible recognition as qualified tradesmen. This was as a direct result of poor educational opportunities at some schools, leading to a lack of entry to formal training institutions. This National Certificate in Plumbing based on unit standards allows learners to reach their full potential of advancement without formal education becoming an impassable barrier and in addition, allow for the recognition of prior learning.

This Qualification represents a planned combination of learning outcomes with a defined purpose in that they consist of the essential embedded knowledge and applied competence required by the plumbing trade of those learners who seek to be recognised by the trade for formal certification and registration as a Plumber.

There is a high demand for learners who are able to apply their skills within the parameters of the legislative framework regulating the plumbing trade and formal recognition at this level is beneficial to learners, the industry and society in the order of sustainable employment, increased productivity levels and the health and safety of communities.

This Qualification is accessible to learners who are employed within the Construction Industry, new entrants into the world of work and persons who are unemployed. There is no gender, ethnic or other bias towards learners who wish to enter this qualification.

Learners who wish to enter this Qualification are assumed to have the equivalent competencies reflected as Learning Assumed to be in Place in the individual unit standards that make up this Qualification. The fundamental competencies in this qualification correspond with those found in other trades at NQF Level 4 to ensure portability of credits between other trade qualifications at this level. This qualification may be achieved through any of the (four) routes, which includes apprenticeship, learnership, internship, RPL. To successfully complete this qualification, the learner must spend a minimum time in the workplace (competent in sets of skills) linked to notional hours and will be completed in this qualification over a two years.

Wide stakeholder participation in the development of this Qualification has ensured that the learning outcomes are relevant to national and industry skills development needs and learners will be able to transfer their credits from one learning institution and/or employer to another. The development and guidance of learners is facilitated by persons who have achieved the level of qualification recognised by the industry for certification and registration as a Plumber.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED IN PLACE

- National Certificate: Plumbing L2 (or equivalent)
- Mathematical literacy at NQF Level 3.
- Communication at NQF Level 3.

Recognition of Prior Learning:

Pre-assessments in both the Fundamental and Core areas of learning associated with this qualification will be conducted on learners prior to entry into the qualification. Successful demonstration of competence against all criteria contained in unit standards, against which prior learning is measured, will culminate in the award of credits to the learner. Learners' will not be required to repeat learning in those areas where prior learning is recognised and accredited.

The Recognition of Prior Learning process will also be applied where learners', who have achieved this Qualification, wish to continue their further learning and enter other trades at Level 4.

Access to the Qualification:

Access to this qualification is open bearing learning assumed to be in the place.

QUALIFICATION RULES

The qualification is made up of a combination of learning outcomes from Fundamental, Core and Elective components, totalling 190 credits.

Fundamental component - It consists of:

- Unit Standards at level 4 totalling 20 credits in Communication in a first South African language;
- Unit Standards at level 3 totalling 20 credits in Communication in a second South African language;
- Unit Standards at level 4 totalling 16 credits in Mathematical Literacy.

NB: It is compulsory for learners to be competent in two South African languages, the first at level 4 and the second at level 3. The completion of all these unit standards is compulsory.

Core Component - It is made up of unit standards totalling 114. All unit standards in this section are compulsory.

Elective component - There are 107 credits in this component. The learners is expected to choose a *minimum of 20 credits from the Elective to achieve a minimum total credits of 190 in order to be awarded this qualification.*

EXIT LEVEL OUTCOMES

1. Identify and solve problems with practical mathematical applications.
2. Communicate in verbal or written form with peers, members of supervisory/management levels and other relevant role-players.
3. Apply understanding of the functioning of plumbing systems to install, test and maintain them in a built environment.
4. Apply fault - finding techniques to diagnose and repair installed plumbing systems.

Critical Cross-Field Outcomes:

This qualification promotes, in particular, the following critical cross-field outcomes:

- Identifying and solving problems in which responses display that responsible decisions using critical and creative thinking have been made when:
 - Identifying and developing component shapes for a plumbing activity.
 - Obtaining information where instructions or information on drawings is insufficient.
 - Identifying and pro-actively reporting on non-availability of resources and materials.
- Working effectively with others as a member of a team, group, organisation, and community during:
 - Activities involving clients, co-workers and other trades on site.
 - Communicating and receiving advice from supervisor.
- Organising and managing oneself and one's activities responsibly and effectively when:
 - Setting out the work area and preparing to fabricate and install components.
 - Performing activities in accordance with industry standards.
 - Selecting plumbing tools and equipment in accordance with the requirements of the task.
 - Ensuring tools, equipment and plumbing materials are securely stored.
 - Maintaining minimum quantities of plumbing materials in accordance with task requirements.
 - Safety equipment and clothing is selected and prepared in accordance with legislative requirements.
- Collecting, analysing, organising and critically evaluating information to better understand and explain by:
 - Carrying out written site instructions issued by the client, correctly and efficiently.

- Correctly interpreting information contained in drawings.
- Setting out work areas from provided control positions and levels in accordance with instructions and drawings.

- Communicating effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion when:
 - Issuing clear verbal instructions to team members.
 - Actively listening to feedback received from team members.
 - Evaluating and reporting problem situations to the client.

- Using science and technology effectively and critically, showing responsibility towards the environment and health of others when:
 - Applying the appropriate tools and materials for different plumbing activities.

- Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation when:
 - Applying the inter-relatedness of the fabrication and installation of components to plumbing systems.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1.1 Plumbing problems are identified utilising mathematical principles to determine requirements.

1.2 Mathematical principles and techniques are used to solve problems related to personal and business contexts.

○ Range: General and personal finance, statistics and probability, other practical applications such as monitoring, building.

1.3 Mathematical principles and techniques are applied while performing tasks in the plumbing context in respect of calculations.

○ Range: Plumbing calculations, geometric shapes applied to design of structures, mass, volume, temperature, pressure.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 Verbal communication is used in the interaction with other role players in the plumbing process to determine and understand the extent of plumbing requirements and implement plumbing applications and giving and getting feedback.

2.2 Written communication is used in order to understand, evaluate and report on plumbing problems.

2.3 Technical reading skills are applied in order to understand plumbing regulations and task specifications.

2.4 Technical writing skills are applied in order to record plumbing activities and pass instructions.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 A working knowledge of the functioning of plumbing systems is demonstrated in accordance with Regulations.

3.2 Plumbing systems are installed in accordance with South African National Standards (SANS) standards and codes and manufacturers specifications.

3.3 Plumbing systems are tested in accordance with SANS standards and codes and manufacturers specifications.

3.4 Plumbing systems are maintained in accordance with SANS standards and codes and manufacturers specifications.

Associated Assessment Criteria for Exit Level Outcome 4:

- 4.1 Faultfinding techniques are applied to establish the cause of plumbing systems not functioning.
- 4.2 Building drawings are used to understand plumbing systems and trace the causes of problems.
- 4.3 The cause of the problem is identified in order for the appropriate remedies to be applied or recommended.
- 4.4 Inspection and testing is conducted to ensure that the plumbing systems have been restored and the cause of the problem rectified.
- 4.5 Plumbing tools and equipment are maintained in accordance with the relevant maintenance policy.
- 4.6 Work is completed in accordance with the relevant occupational health and safety, environmental, quality assurance and other requirements.
- 4.7 Cooperation with fellow workers and other personnel (teamwork) is effective and constructive to ensure the achievement of work objectives.
- 4.8 Work is planned, scheduled and evaluated in accordance with the relevant procedures and standards.

Integrated Assessment:

The Qualification will be awarded to learners who are able to successfully demonstrate competence, in a practical context, against all the specific outcomes contained in all unit standards and their associated assessment criteria, embedded knowledge (theory) and critical cross-field outcomes (generic abilities).

Integrated assessment practices are achieved through the design and development of assessment activities that make use of a variety of assessment methods and tools that measure not only the learner's knowledge and ability to perform practical tasks and activities within a familiar context, but which also challenge learners to demonstrate their ability to deal with problem situations that might or can arise in the workplace from time and which require learners' to demonstrate their ability to adapt their performance to meet the requirements of changed circumstances and to reflect on what they are doing and why.

Summative assessment consists of knowledge tests combined with assignments, case studies and practical demonstrations.

The assessment methods and instruments used to assess learners in the context of this qualification can be applied to the assessment process for Recognition of Prior Learning. A holistic approach is applied when RPL assessments are conducted and include methods and tools that allow for evidence to be gathered from sources located within the broader context where the learner's knowledge and skills have been acquired over a period of time. These assessment methods and tools include assessments of the learner conducted by peers or superiors, certificates of attendance for short courses or panel assessments.

To achieve this qualification and become a registered artisan plumber, the learner has to complete and be found competent in a final trade test moderated by the appropriate Quality Assurance Body.

INTERNATIONAL COMPARABILITY

An extensive Internet search was conducted to compare the revised NQF Level 4 qualification with international plumbing qualifications, particularly within 'developing world' nations. The key phrases of this search included 'plumber training' and 'plumbing apprenticeship'. The names of 'developing world' countries include Namibia, Nigeria, India and Jamaica were then suffixed to these keyword phrases in order to undertake a more targeted search. The developed countries include United Kingdom, Canada and Australia.

Namibia:

Namibia appears to be embarked on a quite radical reform of its VET system. This reflects growing acceptance of the weaknesses of the system as it has evolved to date and a concern to better focus the system on meeting the needs of socio-economic development. The weaknesses of the system have been well documented in a series of reports. There is limited employer involvement in training. There has been insufficient relevance to both the needs of the formal and informal economies and to economic and social development. Curriculum has been slow to change and the quality of delivery has been uneven. The system has remained small and costly; yet centralisation has been very strong. There appears to be a skills shortage already and plans for future economic development are likely to improve this. The system is faced with a dual challenge of better supporting both growth and poverty reduction strategies.

Nigeria:

As a result of shortage of skilled craftsmen and expert plumbers, Nigerian builders are now looking beyond the shores of the country and this has been giving industry practitioners sleepless nights. Besides the persistence of poor quality jobs, projects are being delayed and in some cases stalled. Also, construction costs are escalating and investors are beginning to have a rethink over the real estate development business. Observers have attributed the trend to the economic downturn, lack of sustained manpower development initiative and the emergence of a rather more attractive vocation to the craftsmen. Left with no other choice, developers are now importing skilled plumbers from neighboring countries.

India:

In India two bodies - the Central Apprenticeship Council (CAC), a statutory body and the National Council of Vocational Training (NCVT), a non-statutory body - operate as advisory institutions. The most important NCVT functions involve: establishing and awarding National Trade Certificates in engineering and non-engineering trades, prescribing standards for syllabi, equipment, space, duration of courses and methods of training; arranging trade tests and laying down standards of proficiency required for the National Trade Certificate; recognition of training institutions for the purposes of issuing National Trade Certificates and laying down conditions for such recognition. The State Councils for Vocational Training (SCVTs), as well as Trade Committees have been established to assist the NCVT. They advise the state government on training policy matters and are supposed to co-ordinate vocational training in each state.

Coming to curriculum, vocational training devotes 70 per cent of time to practical instruction while the rest is theory. The Central Staff Training and Research Institute (CSTAR) at Kolkata is responsible for preparation of draft curricula and their revision from time to time. The DGET's Curriculum Development Section coordinates this work. It scrutinises draft curricula and obtains approval of the NCVT. The periodicity of revisions depends on the technological changes taking place in industry in each trade. Generally, the introduction or revision of curriculum is based on recommendations made by NCVT. This should be done in consultation with relevant trade committees whose members are drawn from industry, technical institutions and DGET institutes.

The reality however, all of the above is how things should be. In reality, most curricula 'followed' at institutes imparting vocational training have little relevance for wage or self-employment of the trainees. Plumbing courses which have been running for the past five decades continue to be taught irrespective of the market demand for plumbers in the region.

Jamaica:

The Jamaican Qualification Framework gives information pertaining to unit competencies within a qualification plan that may fit your work area or skill area training needs.

All core unit standards must be completed in order to be certified along with the required number of electives.

Core:

Competency Description; Level; Hours; Code:

- Assemble pipes and fittings for clients; Level 1; 40 Hours; MEMASY0071A.
- Perform related Computations-Basic; Level 1; 20 Hours; MEMCOR0051A.
- Mark off/out (Genral Engineering); Level 1; 10 Hours; MEMCOR0081A.
- Draw and interpret sketches and simple drawings; Level 1; 20 Hours; MEMCOR0091A.
- Use power tools; Level 1; 15 Hours; MEMCOR0111A.
- Classify engineering materials - (Basic); Level 1; 30 Hours; MEMCOR0121A.
- Undertake interactive workplace communication; Level 1; 20 Hours; MEMCOR0131A.
- Follow principles of (Oh&S) in work environment; Level 1; 20 Hours; MEMCOR0141A.
- Plan to undertake a routine task; Level 1; 10 Hours; MEMCOR0161A.
- Use hand tools; Level 1; 5 Hours; MEMCOR0191A.
- Carry out mechanical cutting operations - (Basic); Level 1; Hours; 10 Hours; MEMFAB0041A.
- Perform brazing and/or silver soldering; Level 1; 40 Hours; MEMFAB0051A.
- Install and maintain piping and tubing; Level 1; Hours; 40 Hours; MEMINS0041A.
- Prepare for piping and tubing installation; Level 1; 20 Hours; MEMINS0061A.
- Perform manual handling and lifting; Level 1; 5 Hours; MEMMAH0071A.
- Perform Housekeeping Duties; Level 1; 10 Hours; MEMMAH0081A.
- Use workshop machines for basic operations; Level 1; 20 Hours; MEMMPO0081A.
- Plan a complete activity; Level 2; 5 Hours; MEMCOR0012A.
- Perform related romputations; Level 2; 20 Hours; MEMCOR0022A.
- Interpret standard specifications and manuals; Level 2; 5 Hours; MEMCOR0042A.
- Operate in an autonomous team environment; Level 2; 5 Hours; MEMCOR0052A.
- Write technical reports (Basic); Level 2; 40 Hours; MEMCOR0122A.
- Install valves, regulators and metering devices; Level 2; 15 Hours; MEMINS0182A.
- Roughing-in customer's pipe-work install pipe-work; Level 2; 15 Hours; MEMINS0192A.
- Install plumbing fixtures; Level 2; 15 Hours; MEMINS0202A.
- Install plumbing equipment; Level 2; 15 Hours; MEMINS0212A.
- Install auxiliary equipment; Level 2; 15 Hours; MEMINS0222A.
- Prepare materials and locations for installing drains and waste systems; Level 2; 15 Hours; MEMINS0232A.
- Position, join and secure pipes & components to provide drains & waste systems; Level 2; 15 Hours; MEMINS0242A.
- Carry out routine maintenance of plumbing systems to systems to sustain effectiveness; Level 2; 20 Hours; MEMMRD0462A.

Elective:

Competency Description; Level; Hours; Code:

- Prepare for demolition process; Level 1; 40 Hours; BCGCOR0171A.
- Carry out data entry and retrieval procedures; Level 1; 40 Hours; ITICOR0011A.
- Prepare basic engineering drawing; Level 1; 30 Hours; MEMCOR0101A.
- Perform manual heating, and thermal cutting; Level 1; 20 Hours; MEMFAB0061A.
- Undertake fabrication, forming, bending and shaping - (Basic); Level 1; 40 Hours; MEMFAB0071A.
- Weld using oxyacetylene welding process (Oaw)-fuel gas welding; Level 1; 50 Hours; MEMFAB0121A.
- Prepare surfaces; Level 2; 40 Hours; BCGCOR0212A.

- Carry out concrete work; Level 2; 40 Hours; BCGMAS0292A.
- Craft personal entrepreneurial strategy; Level 2; 50 Hours; BSBSBM0012A.
- Attend to breakdown; Level 2; 20 Hours; MEMCOR0062A.
- Perform advanced welding using oxyacetylene welding process (Oaw); Level 2; 40 Hours; MEMFAB0072A.
- Order materials; Level 2; 20 Hours; MEMMAH0042A.
- Shut down/isolate machines/equipment; Level 2; 20 Hours; MEMMRD0072A.
- Perform inspection (Basic); Level 2; 20 Hours; MEMQUA0012A.
- Assembly pipes, storage and main distribution systems; Level 3; 40 Hours; MEMASY0023A.
- Install and maintain storage and main distribution systems; Level 3; 40 Hours; MEMINS0043A.
- Purchase materials; Level 3; 20 Hours; MEMMAH0073A.
- Maintain the effective operation of storage and distribution systems; Level 3; 40 Hours; MEMMRD0343A.

Learners that feel that they have some experience in certain areas, the training institution will help them to assess and measure the quality of the skills and knowledge that they have already.

A career counsellor will advise them on how to close the gap between what they have and what they need, and will show them how they can build on what they already have.

After they have demonstrated competence at a level that meets the requirement of 'good quality work', they will be recommended for the National Vocational Qualification of Jamaica (NVQ-J) at the level at which they have been assessed.

The skills knowledge and experience that they already have might just be good enough to earn them a certificate to move to the next stage of their journey to employability and to a bright future.

Canada:

In Canada there are various models for delivery of apprenticeship training. Some programs are delivered using the traditional model which involves an individual spending their first year of training in-school, followed by practical time of approximately 1800 hours on-the-job supplemented by a 6 to 8-week in-school period each year of the apprenticeship term which, for the majority of occupations, is four years. Other models of delivery designed to provide quality, accessibility and transferability include Internship model.

England:

In England they have developed a suite of Qualifications for plumbers of all specialities. These include:

- Level 2 Certificate in basic Plumbing studies.

This provides the learner with the knowledge and understanding needed to complete a Level 2 NVQ. They will learn about key plumbing principles and the theory of areas such as hot and cold water systems, sanitation systems, central heating systems (pipe work), and electrical supply and safety. Assessment is via multiple choice examination and practical tests. A total of 495 learning hours are recommended for this award.

- Level 2 NVQ in Plumbing.

Candidates will need to demonstrate their competence in six mandatory areas:

- Maintaining a safe working environment.

- Maintaining effective working relationships.
- Contributing to *improvement* of the work environment.
- Install non-complex plumbing systems and components.
- Decommission non-complex plumbing systems.
- Maintain non-complex plumbing systems and components.

- Level 3 Certificate in Plumbing Studies.

This provides the learner with the knowledge and understanding needed to complete the Level 3 NVQ. They will learn about systems planning, complex cold water, domestic hot water and sanitation systems, central heating systems, domestic gas supply systems and improving business products and services. Assessment is by multiple choice question papers and practical tasks.

- Level 3 NVQ in Plumbing.

Candidates will need to demonstrate their competencies in the first two units of the Level 2 NVQ plus:

- Contribute to the improvement plumbing products and services.
- Plan complex domestic plumbing work activities.
- Install complex domestic plumbing systems.
- Commission and decommission complex domestic plumbing systems.
- Service and maintain complex domestic plumbing systems and components.

Learners can articulate horizontally through Levels 2 and 3 NVQ Heating and Ventilating, Levels 2 and 3 in Domestic Natural Gas Installation and Maintenance and Levels 2 and 3 Technical Studies.

Learners are also able to articulate vertically through Levels 3 and 4 Introductory Award for Owner Managers.

Australia:

Qualification Structure and Rules:

To be awarded the Certificate III in Plumbing qualification, candidates must achieve a minimum of four of the following plumbing streams:

- Stream 1 - Water (Mandatory).
- Stream 2 - Sanitary.
- Stream 3 - Drainage.
- Stream 4 - Mechanical Services.
- Stream 5 - Roofing.
- Stream 6 - Gas Services.

Individual competency units gained in one qualification or sub-sector stream may also be used as a credit for any other qualification or sub-sector in which the unit is listed in the table as either a core or elective.

The rules for each of these individual streams are shown in the following pages:

- Plumbing Stream 1 - Water. This is a mandatory requirement. To obtain this stream all twenty-four (24) core competency units and six (6) elective competency units from the following table must be achieved:

Core:

Unit Number; Title:

- BCPCM2001A; Work effectively in the plumbing and services sector.
- BCPCM2002A; Carry out interactive workplace communication.
- BCPCM2003A; Carry out OH&S requirements.
- BCPCM2004A; Read plans and calculate plumbing quantities.
- BCPCM2005A; Handle and store plumbing materials.
- BCPCM2006A; Use plumbing hand and power tools.
- BCPCM2007A; Carry out levelling.
- BCPCM2010A; Mark out materials.
- BCPCM2011A; Apply first aid in the workplace.
- BCPCM2012A; Weld using oxy-acetylene equipment.
- BCPCM2013A; Weld using arc welding equipment.
- BCPCM3001A; Flash penetrations through roofs and walls.
- BCPCM3002A; Weld polyethylene (PE) pipe using fusion method.
- BCPCM3003A; Fabricate and install non-ferrous pressure piping.
- BCPFS3001A; Fabricate and install fire hydrant and hose reel systems.
- BCPFS3007A; Install domestic and residential life safety sprinkler systems.
- BCPRF2001A; Work safely on roofs.
- BCPWT3001A; Set out and install water services.
- BCPWT3002A; Install and adjust water service controls and devices.
- BCPWT3003A; Install and commission water heating systems.
- BCPWT3005A; Install water pump sets.
- BCPWT3006A; Fit off and commission hot and cold water services.
- BCPWT3007A; Connect irrigation systems from drinking water supply.
- BCGCO2003B; Carry out concreting to simple forms.

Elective:

Unit Number; Title:

- BCPCM2008A; Cut and join sheet metal.
- BCPCM2009A; Cut with oxy-LPG acetylene.
- BCPFS2001A; Connect static storage tanks.
- BCPFS2002A; Install portable fire equipment.
- BCPFS3003A; Fit off sprinkler heads, controls and ancillary equipment.
- BCPFS3004A; Install control valve assemblies, actuating devices and local alarms.
- BCPFS3008A; Test and maintain fire hydrant and hose reel installations.
- BCPIG2001A; Design domestic urban irrigation systems.
- BCPIG3001A; Set out, install and commission irrigation systems.
- BCPIG3002A; Install and commission domestic irrigation pumps.
- BCPMS3001A; Fabricate and install steel pressure piping.
- BCPMS3002A; Select and fit insulation and sheathing.
- BCPMS3003A; Install small bore heating systems.
- BCPMS3010A; Install and maintain evaporative air cooling systems.
- BCPRF2003A; Collect and store roof water.
- BCPWT3004A; Install domestic water treatment equipment.
- BCPWT3008A; Install water service.
- BCCPL3001B; Install water mains pipelines.
- BCF2009A; Carry out load slinging of off-site materials.
- BCGCM2003B; Install trench support.
- BCGCM2008B; Erect and dismantle restricted height scaffolding.
- BCGCM3001B; Operate elevated work platforms.

- BCGRI3001B; Operate personnel and materials hoists.
- BCGWC3006B; Install acoustic and thermal environmental protection systems.
- MEM5.49AA; Perform routine gas tungsten arc welding.
- MEM5.50AA; Perform routine gas metal arc welding.
- RTE3605A; Troubleshoot faults and blockages in irrigation systems.

Plumbing Stream 2 - Sanitary. To obtain this stream all six (6) core competency units and four (4) elective competency units from the following table must be achieved:

Core:

Unit Number; Title:

- BCPCM2008A; Cut and join sheet metal.
- BCPDR2001A; Locate and clear blockages.
- BCPSN3001A; Plan the layout for a residential sanitary plumbing system.
- BCPSN3002A; Install discharge pipes.
- BCPSN3003A; Fabricate and install sanitary stacks.
- BCPSN3004A; Install and fit off sanitary fixtures.

Elective:

Unit Number; Title:

- BCPCM2009A; Cut with oxy-LPG acetylene.
- BCPDR2002A; Install domestic treatment plants.
- BCPDR2003A; Maintain effluent disinfection system.
- BCPDR2004A; Install stormwater and sub-soil drainage systems.
- BCPDR2005A; Drain worksite.
- BCPDR2006A; Install pre-fabricated inspection openings and enclosures.
- BCPDR3002A; Install below ground sanitary drainage systems.
- BCPDR3003A; Install on-site disposal systems.
- BCPMS3002A; Select and fit insulation and sheathing.
- BCPSN3005A; Install pre-treatment facilities.
- BCPSN3006A; Install sewerage pump sets.
- BCF2009A; Carry out load slinging of off-site materials.
- BCGCM2003B; Install trench support.
- BCGCM2008B; Erect and dismantle restricted height scaffolding.
- BCGCM3001B; Operate elevated work platforms.
- BCGRI3001B; Operate personnel and material hoists.
- BCGWC3006B; Install acoustic and thermal environmental protection systems.

Plumbing Stream 3 - Drainage. To obtain this stream all nine (9) core competency units and three (3) elective competency units from the following table must be achieved:

Core:

Unit Number; Title:

- BCPDR2001A; Locate and clear blockages.
- BCPDR2002A; Install domestic treatment plants.
- BCPDR2004A; Install stormwater and sub-soil drainage systems.
- BCPDR2005A; Drain worksite.
- BCPDR2006A; Install pre-fabricated inspection openings and enclosures.
- BCPDR3001A; Plan the layout for a residential sanitary drainage system.

- BCPDR3002A; Install below ground sanitary drainage systems.
- BCPDR3003A; Install on-site disposal systems.
- BCGCM2003B; Install trench support.

Elective:

Unit Number; Title:

- BCPCM2008A; Cut and join sheet metal.
- BCPCM2009A; Cut with oxy-LPG acetylene.
- BCPDR2003A; Maintain effluent disinfection systems.
- BCPSN3005A; Install pre-treatment facilities.
- BCCPL3001B; Install water mains pipelines.
- BCF2009A; Carry out load slinging of off-site materials.

Plumbing Stream 4 - Mechanical Services. To obtain this stream all four (4) core competency units and eleven (11) elective competency units from the following table must be achieved:

Core:

Unit Number; Title:

- BCPCM2008A; Cut and join sheet metal.
- BCPMS2001A; Assemble mechanical services components.
- BCPMS3001A; Fabricate and install steel pressure piping.
- BCPMS3003A; Install small bore heating systems.

Elective:

Unit Number; Title:

- BCPCM2009A; Cut with oxy-LPG acetylene.
- BCPMS3002A; Select and fit insulation and sheathing.
- BCPMS3004A; Install medical gas pipeline systems.
- BCPMS3005A; Install and test ducting systems.
- BCPMS3006A; Install air handling units.
- BCPMS3007A; Install split system air conditioning.
- BCPMS3008A; Install air conditioning control equipment.
- BCPMS3009A; Maintain mechanical services equipment.
- BCPMS3010A; Install and maintain evaporative air cooling systems.
- BCPRF3003A; Fabricate and install external flashings.
- BCF2009A; Carry out load slinging of off-site materials.
- BCGCM2003B; Install trench support.
- BCGCM2008B; Erect and dismantle restricted height scaffolding.
- BCGCM3001B; Operate elevated work platforms.
- BCGRI3001B; Operate personnel and material hoists.
- BCGWC3006B; Install acoustic and thermal environmental protection systems.
- MEM5.49AA; Perform routine gas tungsten arc welding.
- MEM5.50AA; Perform routine gas metal arc welding.
- MEM10.9AA; Install refrigeration and air conditioning plant and equipment.
- MEM10.10AA; Install pipework and pipework assemblies.
- MEM18.86AA; Test, evacuate and charge refrigeration systems.

Plumbing Stream 5 - Roofing. To obtain this stream all nine (9) core competency units and four (4) elective competency units from the following table must be achieved:

Core:

Unit Number; Title:

- BCPCM2008A; Cut and join sheet metal.
- BCPRF2002A; Select and install roof sheeting and wall cladding.
- BCPRF2003A; Collect and store roof water.
- BCPRF3001A; Receive roofing materials.
- BCPRF3002A; Fabricate and install roof drainage components.
- BCPRF3003A; Fabricate and install external flashings.
- BCPRF3004A; Install roof components.
- BCPRF3005A; Install roof coverings to curved roof structures.
- BCPRF3006A; Install composite roof systems.

Elective:

Unit Number; Title:

- BCPCM2009A; Cut with oxy-LPG acetylene.
- BCPRF2004A; Fabricate roof coverings for curved structures.
- BCF2009A; Carry out load slinging of off-site materials.
- BCGCM2003B; Install trench support.
- BCGCM2008B; Erect and dismantle restricted height scaffolding.
- BCGCM3001B; Operate elevated work platforms.
- BCGR13001B; Operate personnel and material hoists.
- BCGWC3006B; Install acoustic and thermal environmental protection systems.
- MEM5.49AA; Perform routine gas tungsten arc welding.
- MEM5.50AA; Perform routine gas metal arc welding.

Plumbing Stream 6 - Gas Services. To obtain this stream all twelve (12) core competency units and five (5) elective competency units from the following table must be achieved:

Core:

Unit Number; Title:

- BCPCM2008A; Cut and join sheet metal.
- BCPGS3001A; Install gas piping systems.
- BCPGS3002A; Size consumer piping systems.
- BCPGS3003A; Install and commission Type A gas appliances.
- BCPGS3004A; Install LP gas storage of aggregate storage capacity up to 500 litres.
- BCPGS3006A; Install LP gas systems in caravans/mobile homes, watercraft and mobile work places.
- BCPGS3007A; Install gas detection devices.
- BCPGS3008A; Install gas pressure control equipment.
- BCPGS3009A; Install a Type A appliance flue.
- BCPGS3011A; Purge consumer piping.
- BCPGS3013A; Disconnect and reconnect Type A appliances.
- BCPGS3014A; Calculate and install natural ventilation for Type A gas appliances.

Elective:

Unit Number; Title:

- BCPCM2009A; Cut with oxy-LPG acetylene.
- BCPGS3005A; Install LP gas storage of aggregate capacity exceeding 500 litres and less than 8KL.
- BCPGS3010A; Install a Type B appliance flue.
- BCPGS3012A; Maintain Type A gas appliances.
- BCPGS3015A; Install subsidiary gas meters.
- BCPMS2001A; Assemble mechanical services components.
- BCPMS3001A; Fabricate and install steel pressure piping.
- BCPMS3003A; Install small bore heating systems.
- BCPMS3005A; Install and test ducting systems.
- BCPMS3006A; Install air handling units.
- BCF2009A; Carry out load slinging of off-site materials.
- BCGCM2003B; Install trench support.
- BCGCM2008B; Erect and dismantle restricted height scaffolding.
- BCGCM3001B; Operate elevated work platforms.
- BCGR13001B; Operate personnel and material hoists.
- MEM5.49AA; Perform routine gas tungsten arc welding.
- MEM5.50AA; Perform routine gas metal arc welding.

A comprehensive comparison between the South African NC in construction plumbing NQF Level 3 and the Australian Certificate III in Plumbing. The research was aided by a presentation by a delegate from the Australian plumbing industry. The findings of this comparison were that the two qualifications were very similar in the core unit standards with an exception of two competencies; these were basic electricity and basic welding. These were integrated into the unit standards with which they were directly associated. With regards to the elective unit standards, plumbers in South Africa do not perform some of the tasks stipulated in the Australian model. These unit standards were identified and put aside.

ARTICULATION OPTIONS

This qualification has been developed for mobility across similar trades within the industry and is intended to allow for further learning towards supervisory and management qualifications within this and other sectors.

This Qualification articulates horizontally with the following registered qualification(s):

- ID 24194: Further Education and Training Certificate: Construction Material Manufacturing, NQF Level 4.
- ID 50018: Further Education and Training Certificate: Computer Aided Drawing Office Practice, NQF Level 4.
- ID 48817: Further Education and Training Certificate: Construction Materials Testing, NQF Level 4.
- ID 49053: Further Education and Training Certificate: Supervision of Construction Processes, NQF Level 4.

This Qualification articulates vertically with the following registered learning programmes:

- ID 23683: National Diploma: Management of Civil Engineering Construction Processes, NQF Level 5.
- ID 48636: National Diploma: Structural Steelwork Detailing, NQF Level 5.
- ID 23675: National Certificate: Management of Building Construction Processes, NQF Level 5.
- National Certificate: Water Care, NQF Level 5.

MODERATION OPTIONS

• Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with an appropriate Education, Training, and

Quality Assurance (ETQA) Body or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

- Any institution offering learning that will enable the achievement of this qualification must be accredited as a provider with the relevant ETQA or with an ETQA that has a Memorandum of Understanding with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.

- Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards as well as in the exit level outcomes described in the qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

For an applicant to register as an assessor, the applicant needs:

- Well-developed interpersonal skills, subject matter and assessment experience.
- To be competent in the planning and conducting assessment of learning outcomes as described in the unit standards Conduct Outcomes-based assessment at NQF Level 5.
- Well-developed subject matter expertise within Plumbing.
- Competent in the exit level outcomes of the FETC: Plumbing Level 4.
- To be registered with the relevant Education and Training Quality Assurance Body.
- Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence). Assessment competencies and subject matter experience of the assessor can be established by recognition of prior learning.

NOTES

Note on artisan registration:

To be registered as an artisan the learner must:

- Register as a learner in one of the four routes with a registered employer.
- Successfully complete the relevant qualification or its equivalent.
- Successfully complete the practical competencies laid down for the specific artisan.
- Successfully pass the Trade Test.
- Comply with the registration procedures for an artisan as determined by the Department of Labour procedure.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	116534	Carry out basic first aid treatment in the workplace	Level 3	2
Core	242692	Install access equipment for construction work	Level 3	6
Core	14580	Read and interpret construction drawings and specifications	Level 3	10
Core	242821	Identify responsibilities of a team leader in ensuring that organisational standards are met	Level 4	6
Core	244502	Install and maintain soil, waste and vent pipe systems	Level 4	12
Core	244492	Install, maintain and repair sanitaryware appliances	Level 4	12
Core	244495	Install, maintain and test Rainwater Systems	Level 4	12
Core	244498	Install, maintain and test below ground drainage systems	Level 4	12
Core	244507	Install, maintain and test cold water supply systems	Level 4	12
Core	244496	Install, maintain and test hot water supply systems	Level 4	12
Core	13224	Monitor the application of safety, health and environmental protection procedures	Level 4	4
Core	244497	Perform building works	Level 4	8
Core	244493	Procure resources for construction works	Level 4	6

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	9973	Apply basic business concepts	Level 3	8
Elective	114946	Identify causes of stress and techniques to manage it in the workplace	Level 3	2
Elective	244491	Fabricate and install sheet metal components	Level 4	8
Elective	244499	Install and maintain solar water heating systems	Level 4	12
Elective	244500	Install specialised hospital sanitaryware systems	Level 4	12
Elective	114589	Manage time productively	Level 4	4
Elective	7997	Managing self-development	Level 4	12
Elective	244494	Perform specialised fault-finding and repairs to plumbing systems	Level 4	12
Elective	15234	Apply efficient time management to the work of a department/division/section	Level 5	4
Elective	15237	Build teams to meet set goals and objectives	Level 5	3
Elective	7876	Conduct on-the-Job-Training	Level 5	8
Elective	115753	Conduct outcomes-based assessment	Level 5	15
Elective	15224	Empower team members through recognising strengths, encouraging participation in decision making and delegating tasks	Level 5	4
Elective	11994	Monitor, reflect and improve on own performance	Level 5	3
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Fundamental	119462	Engage in sustained oral/signed communication and evaluate spoken/signed texts	Level 4	5
Fundamental	119469	Read/view, analyse and respond to a variety of texts	Level 4	5
Fundamental	9016	Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4
Fundamental	119471	Use language and communication in occupational learning programmes	Level 4	5
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Fundamental	119459	Write/present/sign for a wide range of contexts	Level 4	5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Fabricate and install sheet metal components

SAQA US ID	UNIT STANDARD TITLE		
244491	Fabricate and install sheet metal components		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Physical Planning, Design and Management	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Plan and prepare to perform sheet metal component fabrication and installation.

SPECIFIC OUTCOME 2

Develops sheet metal shapes.

SPECIFIC OUTCOME 3

Fabricate sheet metal components.

SPECIFIC OUTCOME 4

Install fabricated sheet metal components.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install, maintain and test cold water supply systems***

SAQA US ID	UNIT STANDARD TITLE		
244507	Install, maintain and test cold water supply systems		
ORIGINATOR	PROVIDER		
SGB Building Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Building Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to install, maintain and test cold water supply systems.

SPECIFIC OUTCOME 2

Install cold water pipes and pipe fittings.

SPECIFIC OUTCOME 3

Test cold water supply systems.

SPECIFIC OUTCOME 4

Maintain and repair cold water pipes and fittings.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install and maintain soil, waste and vent pipe systems

SAQA US ID	UNIT STANDARD TITLE		
244502	Install and maintain soil, waste and vent pipe systems		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to install and maintain soil, waste and vent pipe systems.

SPECIFIC OUTCOME 2

Install a one-pipe soil pipe system vents.

SPECIFIC OUTCOME 3

Install a single stack soil pipe system.

SPECIFIC OUTCOME 4

Maintain and repair above ground soil, waste and vent systems.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install specialised hospital sanitaryware systems***

SAQA US ID	UNIT STANDARD TITLE		
244500	Install specialised hospital sanitaryware systems		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to perform specialised hospital sanitary system installations.

SPECIFIC OUTCOME 2

Install and maintain waste water, soil and vent systems for bio-hazardous effluent.

SPECIFIC OUTCOME 3

Install and maintain specialised hospital sanitaryware.

SPECIFIC OUTCOME 4

Install and maintain specialised hospital automatic cleaning and laboratory fixtures.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install and maintain solar water heating systems

SAQA US ID	UNIT STANDARD TITLE		
244499	Install and maintain solar water heating systems		
ORIGINATOR	PROVIDER		
SGB Building Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Building Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Understand solar energy as a source of heat.

SPECIFIC OUTCOME 2

Prepare and plan for the installation of solar water heating systems.

SPECIFIC OUTCOME 3

Install solar water heating components, pipes and fittings.

SPECIFIC OUTCOME 4

Maintain solar water heating components, pipes and fittings.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install, maintain and test below ground drainage systems***

SAQA US ID	UNIT STANDARD TITLE		
244498	Install, maintain and test below ground drainage systems		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to install, maintain and test below ground drainage systems.

SPECIFIC OUTCOME 2

Install below ground waterborne drainage systems.

SPECIFIC OUTCOME 3

Inspect and maintain below ground waterborne drainage systems.

SPECIFIC OUTCOME 4

Install below ground non-waterborne means of sanitary disposal.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Perform building works

SAQA US ID	UNIT STANDARD TITLE		
244497	Perform building works		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Plan and prepare to perform building works.

SPECIFIC OUTCOME 2

Construct brick masonry for manholes and chambers.

SPECIFIC OUTCOME 3

Perform in-situ concreting and benching.

SPECIFIC OUTCOME 4

Install precast elements.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install, maintain and test hot water supply systems***

SAQA US ID	UNIT STANDARD TITLE		
244496	Install, maintain and test hot water supply systems		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to install, test and maintain hot water supply systems.

SPECIFIC OUTCOME 2

Install hot water pipes and fittings.

SPECIFIC OUTCOME 3

Install hot water cylinders.

SPECIFIC OUTCOME 4

Maintain and repair hot water pipes and fittings.

SPECIFIC OUTCOME 5

Understand and apply basic electrical principals referring to hot water cylinders.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install, maintain and test Rainwater Systems

SAQA US ID	UNIT STANDARD TITLE		
244495	Install, maintain and test Rainwater Systems		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to install rainwater gutters and downpipes.

SPECIFIC OUTCOME 2

Position gutter brackets.

SPECIFIC OUTCOME 3

Install rainwater gutters and downpipes.

SPECIFIC OUTCOME 4

Maintain and repair rainwater gutters and downpipes.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Perform specialised fault-finding and repairs to plumbing systems***

SAQA US ID	UNIT STANDARD TITLE		
244494	Perform specialised fault-finding and repairs to plumbing systems		
ORIGINATOR	PROVIDER		
SGB Building Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Building Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to perform specialised fault finding and repairs to plumbing systems.

SPECIFIC OUTCOME 2

Understand and describe diagnostic, correction and upgrading principles.

SPECIFIC OUTCOME 3

Apply specialised maintenance and repair techniques to hot and cold water plumbing systems.

SPECIFIC OUTCOME 4

Apply specialised maintenance and repair techniques to above ground soil and waste water piping systems.

SPECIFIC OUTCOME 5

Apply specialised maintenance and repair techniques to below ground drainage systems.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Procure resources for construction works***

SAQA US ID	UNIT STANDARD TITLE		
244493	Procure resources for construction works		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Understand the principles and processes in the procurement of resources.

SPECIFIC OUTCOME 2

Procure labour resources.

SPECIFIC OUTCOME 3

Procure material resources.

SPECIFIC OUTCOME 4

Procure plant, equipment and tools.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install, maintain and repair sanitaryware appliances***

SAQA US ID	UNIT STANDARD TITLE		
244492	Install, maintain and repair sanitaryware appliances		
ORIGINATOR		PROVIDER	
SGB Building Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Building Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	12

SPECIFIC OUTCOME 1

Plan and prepare to install sanitaryware appliances.

SPECIFIC OUTCOME 2

Install sanitaryware appliances.

SPECIFIC OUTCOME 3

Fit sanitaryware appliances to hot and cold water supply systems.

SPECIFIC OUTCOME 4

Fit sanitaryware appliances to soil and waste water systems.

SPECIFIC OUTCOME 5

Maintain and repair sanitaryware appliances.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Quantity Surveying

registered by Organising Field 12, Physical Planning and Construction, publishes the following Qualification and Unit Standard for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standard. The full Qualification and Unit Standard can be accessed via the SAQA web-site at www.saqqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standard should reach SAQA at the address below and **no later 13 August 2007**. All correspondence should be marked **Standards Setting – Quantity Surveying** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D. Mphuthing

Postnet Suite 248

Private Bag X06

Waterkloof

0145

or faxed to 012 – 431-5144

e-mail: dmphuthing@saqa.org.za



DR. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**Further Education and Training Certificate: Quantity Surveying**

SAQA QUAL ID	QUALIFICATION TITLE		
58780	Further Education and Training Certificate: Quantity Surveying		
ORIGINATOR	PROVIDER		
SGB Quantity Surveying			
QUALIFICATION TYPE	FIELD	SUBFIELD	
Further Ed and Training Cert	12 - Physical Planning and Construction	Physical Planning, Design and Management	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	145	Level 4	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Rationale and Purpose:

Quantity Surveying is acknowledged as an independent profession within the context of the built environment worldwide. Registered Quantity Surveying Assistants, i.e. persons who have been awarded this Certificate in Quantity Surveying and who are registered with the South African Council for the Quantity Surveying Profession in terms of the Quantity Surveying Profession Act 2000 (Act No 49 of 2000) enjoy due recognition and financial reward in terms of their specialised skills and competence in the application of basic technical knowledge related to quantity surveying in the Built Environment, including:

- Planning for Construction Projects.
- Project Cost Management, Procurement and Administration.
- Specialised Management Services.
- Support Competencies.

As employees under the direction and supervision of a competent person who possesses appropriate skills and experience, and are:

- Eligible for employment in numerous spheres of the economy, which include private sector consultancies and professional firms, public sector employment (State, provincial and local authorities), tertiary/adult basic/further education and training, financial institutions, property development enterprises, research organisations, and construction companies.
- Empowered to build their personal career paths through undertaking further learning programmes with a view to articulation towards obtaining additional qualifications associated with the built environment.

While demand for quantity surveying skills in the construction industry is influenced by economic factors, for example, capital investment in property development projects, the skills and knowledge-base acquired by holders of this Certificate afford opportunities for entry into sectors of the economy other than the construction, for example, manufacturing industries, retailing, and maintenance (structures of all types).

This qualification is intended to assist all relevant stakeholders and role-players, such as potential employers operating in the built environment or other fields related to physical planning and construction, curriculum developers and providers of learning programmes, all education and training bodies and relevant moderators as well as learners and their parents, to understand

the notion of and criteria determining the level and the outcomes of the teaching/learning programme associated with this Certificate in Quantity Surveying, which is bound by discipline-specific, basic, technical knowledge and has been developed by consensus amongst a widely representative group of Knowledge Experts operating in the Built Environment who support the scope, complexity of learning and competencies to be acquired by learners undertaking this programme of study.

Learners will be able to:

- Interact with relevant stakeholders in the construction industry, e.g. working with plumbers for the on-site re-measurement of plumbing.
- Measure and report on construction activity production and resource costs.
- Interpret construction drawings and specifications.
- Implement and monitor an on-site Health and Safety Plan.
- Compile price determination documents and utilise the information in project administration applications.
- Understand well-defined and frequently-encountered problems related to the built environment.
- Understand basic commercial and management issues.
- Communicate effectively on all matters to which their skills and competencies have been applied.
- Use and apply information technology.
- Understand fundamental economic and legal principles.
- Execute tasks requiring elementary descriptive quantification skills.
- Apply basic technical knowledge related to the Built Environment.

The principal purposes of this qualification are to:

Provide learners with basic technical vocational knowledge, skills and competencies related to quantity surveying in the construction and property industries:

- Equip learners with a foundation for further intellectual development and opportunities for gainful employment and rewarding contributions to society.
- Provide the built environment professions with Certificated persons who possess.
- Contextually specific technical skills.
- Produce learners who are prepared for and understand the principles of:
 - Life-long learning.
 - Critical citizenship.
 - A wide range of issues which are crucial to the welfare of society, eg upliftment, empowerment and transformation.
- Contribute towards a learner's capacity to meet the prerequisites for statutory registration with the South African Council for the Quantity Surveying Profession in terms of the Quantity Surveying Profession Act 2000 (as amended).

This Unit Standards-based qualification is for persons who meet the:

- Formal requirements for admission as candidates for the Certificate (set by institutional discretion).
- Additional institution-specific requirements related to minimum access standards for particular disciplines.
- Appropriate requirements related to Recognition of Prior Learning (RPL) which provide access to candidates who do not comply with formal prerequisites for admission. In addition, this qualification is for persons who desire to undertake further study leading to enhancement of their qualification/s.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

- Mathematical Literacy at NQF Level 3.
- Communication at NQF Level 3.
- Physical Science at NQF Level 3.
- Technical Drawing at NQF Level 3.

It is important to note that learners who do not have a clear understanding of mathematics and science may have difficulty in successfully completing this qualification. In addition, learners who apply for admission to this programme should be able to:

- Comprehend what they have learned.
- Communicate it reliably, accurately and comprehensively in the required medium of instruction.
- Take responsibility for their own learning progress and competence development within a well-structured and managed learning environment.
- Evaluate their own performance.

Recognition of Prior Learning:

This Qualification may be achieved in part or completely through RPL, which includes formal, informal and non-formal learning and work experience.

Persons desiring entrance to the programme leading to the award of this qualification are:

- Advised, assisted and supported (portfolio compilation, orientation to required levels of competence, substantiation of their claims regarding prior skills/experience, planning of progression).
- Evaluated and assessed in accordance with their claims regarding prior skills and experience gained (portfolio review, implementation of assessment/evaluation methods, recommendations arising from the assessment/evaluation processes).
- Provided with quality management/assurance objectives to support the achievement of competence leading to the award of the qualification (assessment of competence in respect of required outcomes, auditing, approval, recommendation, reporting).

Access to the Qualification:

Access to this qualification is open bearing in mind learning assumed to be in the place.

QUALIFICATION RULES

The qualification is made up of a combination of learning outcomes from Fundamental, Core and Elective components, totalling 145 credits.

Fundamental component - It consists of:

- Unit Standards at level 4 totalling 20 credits in Communication in a first South African language;
- Unit Standards at level 3 totalling 20 credits in Communication in a second South African language;
- Unit Standards at level 4 totalling 16 credits in Mathematical Literacy.

NB. It is compulsory for learners to be competent in two South African languages, the first at level 4 and the second at level 3. The completion of all these unit standards is compulsory.

Core Component - It is made up of unit standards totalling 79. All unit standards in this section are compulsory.

Elective component - There are 60 credits in this component. The learners is expected to choose a minimum of 10 credits from the Elective to achieve a minimum total credits of 145 in order to be awarded this qualification.

EXIT LEVEL OUTCOMES

1. Demonstrate familiarity with content and theory related to documents required and processes related to construction project planning and development.
2. Demonstrate competence related to core quantity surveying practice and technical and construction knowledge and skills.
3. Analyse and locate the principles and performance of their own work within current practice related to the built environment professions and the construction industry.
4. Communicate in a variety of ways within the quantity surveying environment.

Critical Cross-Field Outcomes:

This qualification promotes, in particular, the following critical cross-field outcomes:

- Identifying and solving problems in which responses display that responsible decisions using critical and creative thinking have been made when:
 - Identifying and developing component shapes for a quantity surveying activity.
 - Obtaining information where instructions or information on drawings is insufficient.
 - Identifying and pro-actively reporting on non-availability of resources and materials.
- Working effectively with others as a member of a team, group, organisation, and community during:
 - Activities involving clients, co-workers and other trades on site.
 - Communicating and receiving advice from supervisor.
- Organising and managing oneself and one's activities responsibly and effectively when:
 - Setting out the work area and preparing to fabricate and install components.
 - Performing activities in accordance with industry standards.
 - Selecting quantity surveying tools and equipment in accordance with the requirements of the task.
 - Ensuring tools, equipment and quantity surveying materials are securely stored-
Maintaining minimum quantities of quantity surveying materials in accordance with task requirements.
 - Safety equipment and clothing is selected and prepared in accordance with legislative requirements.
- Collecting, analysing, organising and critically evaluating information to better understand and explain by:
 - Carrying out written site instructions issued by the client, correctly and efficiently.
 - Correctly interpreting information contained in drawings.
 - Setting out work areas from provided control positions and levels in accordance with instructions and drawings.
- Communicating effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion when:
 - Issuing clear verbal instructions to team members.
 - Actively listening to feedback received from team members.
 - Evaluating and reporting problem situations to the client.

- Using science and technology effectively and critically, showing responsibility towards the environment and health of others when:
 - By applying the appropriate tools and materials for different quantity surveying activities.
 - Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation when:
 - The inter-relatedness of the fabrication and installation of components to quantity surveying systems.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1.

1. Documents and reports used on construction projects are identified and explained.
2. The benefits of the purpose of estimates of cost of construction projects are explained.
3. Construction drawings and specifications are correctly interpreted.
4. The purpose and content of tender and contractual/legal documents for construction projects are understood.
5. Basic setting-out of construction works, using appropriate survey equipment is demonstrated.
6. Monitoring, evaluating and communicating simple project schedules are applied.

Associated Assessment Criteria for Exit Level Outcome 2.

1. Estimates of costs and budgets for elements of work are prepared.
2. Monitoring/methods controlling actual costs against budgets are explained.
3. Measurement and reporting processes on construction activity production versus resource costs are demonstrated.
4. Site administrative functions, including the maintenance of records and the implementation of personnel administration systems are demonstrated.
5. Elementary descriptive quantification skills in compilation of price determination documents and utilisation of the information in project administration applications are demonstrated.
6. Management of information contained in project documentation is applied.
7. Procurement, administration and utilisation of construction resources is explained.

Associated Assessment Criteria for Exit Level Outcome 3.

1. The roles of various consultants and stakeholders involved in the procurement and delivery of Built Environment projects are described.
2. The benefits of interaction with other role-players encountered within the Built Environment, are explained and illustrated, with examples.
3. Awareness of ethics in the workplace and the need to adhere to codes of professional conduct are demonstrated.
4. Implementation procedures and monitoring processes of an on-site Health and Safety Plan are described.

Associated Assessment Criteria for Exit Level Outcome 4.

1. Effective public speaking skills are demonstrated.
2. An ability to prepare correspondence and reports is demonstrated.
3. Construction drawings and specifications are explained clearly.
4. Price determination documents and technical information related to all matters to which their skills and competence have been applied, are explained using correct terminology.
5. Computer Software packages are used within the Quantity Surveying environment.

Integrated Assessment:

Learning and assessment are integrated throughout the programme. Continuous formative assessment is applied to ensure that learners receive feedback on their progress towards the

achievement of specific learning outcomes. Summative assessment is concerned with the evaluation of the learning achievements relative to the exit-level outcomes of the qualification and includes "overall integrated assessment" which evaluates the learner's ability to combine the various components and modules of the broader scope of knowledge, skills, competencies and attitudes represented by the exit-level outcomes, as a whole or as individual component-processes of the overall learning experience leading to the qualification.

Assignments, designed to meet the requirements of integrated assessment, accomplish/deliver:

- Integration of exit-level outcomes in a way that demonstrates that the purpose of the qualification as a whole has been achieved, either totally or within the components of the study programme.
- Demonstration of learner competence through evaluation.
- Criterion-referenced assessment which:
 - Has been clearly explained to and is understood by the learners.
 - Can be applied in the Recognition of Prior Learning.

In the assessment of whether the desired outcomes have been achieved (or not), recognition is given to criteria and evaluation methods that adequately and appropriately achieve such assessment.

INTERNATIONAL COMPARABILITY

This Qualification was compared with many countries both in Africa and abroad. The following countries were chosen because that is where best practice is. This Qualification is ranked among similar sought-after qualifications offered by tertiary and other institutions in Australia, New Zealand, Hong Kong, Singapore, Kenya, Nigeria and the United Kingdom which were all analysed prior to the formulation of this Certificate in Quantity Surveying at NQF Level 4.

The Australian equivalent was considered to be an appropriate guide in developing the South African Certificate, a process which followed prescribed processes of broad and narrow consultation with Knowledge Experts operating in the construction industry, commerce, Built Environment professions, State Departments, tertiary and Further Education and Training (FET) institutions.

This Certificate meets prerequisite standards comparable with international benchmarks established for similar qualifications in the built environment professions, in keeping with the demands and quality assurance processes related to accreditation by the Royal Institution of Chartered Surveyors (represented in all Commonwealth member states) and the South African Council for the Quantity Surveying Profession.

ARTICULATION OPTIONS

Completion of the Certificate in Quantity Surveying and subject to institutional entrance requirements having been met, provides both horizontal and vertical options leading to a variety of other qualifications in quantity surveying:

This Qualification articulates horizontally with the following Qualifications:

- ID 20487: National Certificate: Hydrographic Surveying at NQF Level 4.
- ID 20488: National Certificate: Photogrammetry Surveying at NQF Level 4.
- ID 20486: National Certificate: Surveying at NQF Level 4.

This Qualification articulates vertically with the following Qualifications:

- Diploma: Quantity Surveying at NQF Level 5.
- ID 3969: Bachelor's Degree: Quantity Surveying at NQF Level 6.

MODERATION OPTIONS

- Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with an appropriate Education, Training, and Quality Assurance (ETQA) Body or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

- Any institution offering learning that will enable the achievement of this qualification must be accredited as a provider with the relevant ETQA or with an ETQA that has a Memorandum of Understanding with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.

- Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards as well as in the exit level outcomes described in the qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

For an applicant to register as an assessor, the applicant needs:

- Well-developed interpersonal skills, subject matter and assessment experience.
- To be competent in the planning and conducting assessment of learning outcomes as described in the unit standards Conduct Outcomes-based assessment at NQF level 5.
- Well-developed subject matter expertise within Quantity Surveying.
- Qualification in Quantity Surveying at or above the level of the qualification.
- To be registered with the relevant Education and Training Quality Assurance Body.
- Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence).

Assessment competencies and subject matter experience of the assessor can be established by recognition of prior learning.

NOTES

Supplementary Information:

Specified Requirements:

Specified requirements include legal and legislative specific requirements contained in one or more of the following documents:

Legal:

- Act 1: The Quantity Surveying Profession Act No 49 of 2000.
- Act 2: The Council for the Built Environment Act No 43 of 2000.
- Act 3: The National Environmental Management Act No 107 of 1998.
- Act 4: The Occupational Health and Safety Act No 85 of 1993.
- Act 5: The Compensation for Occupational Injuries and Diseases Act No 130 of 1993.
- Act 6: The South African Qualifications Authority Act No 58 of 1995.
- Act 7: The Skills Development Act No 97 of 1998.

Context Specific issues:

Specifications, agreements and policies and procedures: The S A Bureau of Standards Specifications (as appropriate).

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	120373	Contribute to project initiation, scope definition and scope change control	Level 4	9
Core	14415	Describe and interpret the composition, role-players, processes and role of the construction industry	Level 4	4
Core	120372	Explain fundamentals of project management	Level 4	5
Core	14418	Monitor and control cost and production of construction work activities and implement productivity improvements	Level 4	12
Core	120387	Monitor, evaluate and communicate simple project schedules	Level 4	4
Core	120375	Participate in the estimation and preparation of cost budget for a project or sub project and monitor and control actual cost against budget	Level 4	6
Core	14426	Read, interpret and use construction drawings and specifications	Level 4	10
Core	14428	Set out construction work areas	Level 4	10
Core	14429	Supervise health and safety on a construction project	Level 4	6
Core	244490	Undertake elementary descriptive quantification	Level 4	5
Core	120379	Work as a project team member	Level 4	8
Elective	120134	Apply technical knowledge and understanding of Contract Works Insurance	Level 4	4
Elective	14414	Calculate construction quantities and develop a work plan	Level 4	8
Elective	120376	Conduct project documentation management to support project processes	Level 4	6
Elective	120374	Contribute to the management of project risk within own field of expertise	Level 4	5
Elective	14425	Perform site administration functions	Level 4	10
Elective	120386	Provide procurement administration support to a project	Level 4	7
Elective	15141	Manage construction resources	Level 5	10
Elective	15140	Understand and apply building construction methods	Level 5	10
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Fundamental	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Fundamental	119462	Engage in sustained oral/signed communication and evaluate spoken/signed texts	Level 4	5
Fundamental	119469	Read/view, analyse and respond to a variety of texts	Level 4	5
Fundamental	9016	Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4
Fundamental	119471	Use language and communication in occupational learning programmes	Level 4	5
Fundamental	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Fundamental	119459	Write/present/sign for a wide range of contexts	Level 4	5



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Undertake elementary descriptive quantification***

SAQA US ID	UNIT STANDARD TITLE		
244490	Undertake elementary descriptive quantification		
ORIGINATOR		PROVIDER	
SGB Quantity Surveying			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Physical Planning, Design and Management	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	5

SPECIFIC OUTCOME 1

Understand the format of typical price determination documents.

SPECIFIC OUTCOME 2

Understand standard terminology used in price determination documentation.

SPECIFIC OUTCOME 3

Understand and describe uses of price determination documents.

SPECIFIC OUTCOME 4

Understand and describe the processes adopted in compiling price determination documents.

SPECIFIC OUTCOME 5

Understand and demonstrate formula usage for mensuration.

**SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)**

In accordance with Regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Quantity Surveying

registered by Organising Field 12, Physical Planning and Construction, publishes the following Qualification and Unit Standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the Qualification and Unit Standards. The full Qualification and Unit Standards can be accessed via the SAQA web-site at www.saqa.org.za. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, SAQA House, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the Qualification and Unit Standards should reach SAQA at the address below and **no later 13 August 2007**. All correspondence should be marked **Standards Setting – Quantity Surveying** and addressed to

The Director: Standards Setting and Development
SAQA

Attention: Mr. D. Mphuthing

Postnet Suite 248

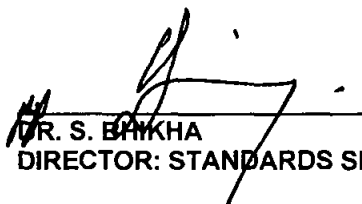
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R. S. BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:**National Diploma: Quantity Surveying**

SAQA QUAL ID	QUALIFICATION TITLE		
58799	National Diploma: Quantity Surveying		
ORIGINATOR	PROVIDER		
SGB Quantity Surveying			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Diploma	12 - Physical Planning and Construction.	Physical Planning, Design and Management	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	240	Level 5	Regular-Unit Stds Based

PURPOSE OF THE QUALIFICATION

Rationale and Purpose:

Quantity Surveying is acknowledged as an independent profession within the context of the built environment world-wide. Registered Quantity Surveying Technicians, i.e. persons who have been awarded this Diploma in Quantity Surveying and who are registered with the South African Council for the Quantity Surveying Profession in terms of the Quantity Surveying Profession Act 2000 (Act No 49 of 2000) enjoy due recognition and financial reward in terms of their specialised skills and technical competence in the application of basic technical knowledge and techniques related to quantity surveying in the Built Environment, including:

- Planning for Construction Projects.
- Project Cost Management, Procurement and Administration.
- Specialised Management Services.
- Support Competencies.

Learners are:

- Equipped to apply technical quantity surveying skills as employees, under the direction and supervision of a competent person who possesses appropriate skills and experience.
- Eligible for employment in numerous spheres of the economy, which include private sector consultancies and professional firms, public sector employment (State, provincial and local authorities), tertiary/adult basic/further education and training, financial institutions, property development enterprises, research organisations, and construction companies.
- Empowered to build their personal career paths through undertaking further learning programmes with a view to articulation towards obtaining additional qualifications associated with the built environment.

While demand for quantity surveying skills in the construction industry is influenced by economic factors, for example, capital investment in property development projects, the skills and knowledge-base acquired by holders of this qualification afford opportunities for employment in sectors other than construction, for example, manufacturing industries, retailing, and maintenance (structures of all types).

This qualification is intended to assist all relevant stakeholders and role-players, such as potential employers operating in the built environment or other fields related to physical planning and construction, curriculum developers and providers of learning programmes, all education and training bodies and relevant moderators as well as learners and their parents, to understand the notion of and criteria determining the level and the outcomes of the teaching/learning programme associated with this qualification, which is bound by discipline-specific, basic vocational knowledge and techniques related to quantity surveying and has been developed by consensus amongst a widely representative group of Knowledge Experts operating in the Built Environment who support the scope, complexity of learning and competencies to be acquired by learners undertaking this programme of study.

Typically, a programme leading to the award of a Diploma in Quantity Surveying aims to develop diplomates who will possess demonstrable, specific skills and competencies to:

- Analyse and suggest solutions to well-defined and frequently-encountered problems related to the built environment.
- Deal with basic commercial and management issues.
- Communicate effectively on all matters to which their skills and competencies have been applied.
- Use and apply information technology.
- Interpret and apply fundamental economic and legal principles.
- Execute tasks requiring numerical and quantification expertise.
- Apply knowledge of technology related to the Built Environment.

The principal purposes of this qualification are to provide learners with basic vocational knowledge, techniques, associated skills and competencies related to quantity surveying in the construction and property industries:

- Equip learners with a foundation for further intellectual development and opportunities for gainful employment and rewarding contributions to society.
- Provide the built environment professions with Diplomates who possess contextually-specific technical skills.
- Produce learners who are prepared for and understand the principles of:
 - Life-long learning.
 - Critical citizenship.
 - A wide range of issues which are crucial to the welfare of society, e.g. upliftment, empowerment and transformation.
- Contribute towards a learner's capacity to meet the prerequisites for statutory registration as a Registered QS Technician with the South African Council for the Quantity Surveying Profession in terms of the Quantity Surveying Profession Act 2000 (as amended).

This qualification is for persons who meet the:

- Formal requirements for admission as candidates for the diploma (set by institutional discretion).
- Additional institution-specific requirements related to minimum access standards for particular disciplines.
- Appropriate RPL requirements which provide access to candidates who do not comply with formal prerequisites for admission.

In addition, this qualification is for persons who desire to undertake further study leading to enhancement of their qualification/s.

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

It is assumed that learners are already competent in the following:

- Mathematical Literacy at NQF Level 4.
- Communication at NQF Level 4.
- Physical Science at NQF Level 4.

It is important to note that learners who do not have a clear understanding of mathematics and science may have difficulty in successfully completing this qualification programme.

In addition, learners who apply for admission to this programme should be able to:

- Comprehend what they have learned.
- Communicate it reliably, accurately and comprehensively in the required medium of instruction.
- Take responsibility for their own learning progress and competence development within a well-structured and managed learning environment.
- Evaluate their own performance.

Recognition of Prior Learning:

This Qualification may be achieved in part or completely through RPL, which includes formal, informal and non-formal learning and work experience.

Persons desiring entrance to the programme leading to the award of this qualification are:

- Advised, assisted and supported (portfolio compilation, orientation to required levels of competence, substantiation of their claims regarding prior skills/experience, planning of progression).
- Evaluated and assessed in accordance with their claims regarding prior skills and experience gained (portfolio review, implementation of assessment/evaluation methods, recommendations arising from the assessment/evaluation processes).
- Provided with quality management/assurance objectives to support the achievement of competence leading to the award of the qualification (assessment of competence in respect of required outcomes, auditing, approval, recommendation, reporting).

Access to the Qualification:

Access to this Qualification is open bearing in mind learning assumed to be in place.

QUALIFICATION RULES

All Core and Fundamental Unit Standards totalling 224 are compulsory. Learners also have to choose a minimum of 16 credits from the Elective to make a total of 240 in order to be awarded the qualification.

EXIT LEVEL OUTCOMES

1. Apply technical knowledge and techniques and understanding of quantity surveying practice relative to construction project development.
2. Demonstrate knowledge of core theory, practice and basic methodology used in quantity surveying and other disciplines operating in the built environment.
3. Display competence related to fundamental modes of inquiry employed in the practice of quantity surveying and other disciplines operating in the built environment, in response to well-defined and frequently-encountered problems.

4. Interpret construction- and other domain-related issues by applying various systems of enquiry appropriate to the discipline of quantity surveying and its allied professions.

5. Communicate in a variety of ways within a quantity surveying environment.

Critical Cross-Field Outcomes:

This qualification promotes, in particular, the following critical cross-field outcomes:

- Identifying and solving problems in which responses display that responsible decisions using critical and creative thinking have been made when:
 - Identifying and developing component shapes for a quantity surveying activity.
 - Obtaining information where instructions or information on drawings is insufficient.
 - Identifying and pro-actively reporting on non-availability of resources and materials.
- Working effectively with others as a member of a team, group, organisation, and community during:
 - Activities involving clients, co-workers and other trades on site.
 - Communicating and receiving advice from supervisor.
- Organising and managing oneself and one's activities responsibly and effectively when:
 - Setting out the work area and preparing to fabricate and install components.
 - Performing activities in accordance with industry standards.
 - Selecting quantity surveying tools and equipment in accordance with the requirements of the task.
 - Ensuring tools, equipment and quantity surveying materials are securely stored.
 - Maintaining minimum quantities of quantity surveying materials in accordance with task requirements.
 - Safety equipment and clothing is selected and prepared in accordance with legislative requirements.
- Collecting, analysing, organising and critically evaluating information to better understand and explain by:
 - Carrying out written site instructions issued by the client, correctly and efficiently.
 - Correctly interpreting information contained in drawings.
 - Setting out work areas from provided control positions and levels in accordance with instructions and drawings.
- Communicating effectively using visual, mathematical and/or language skills in the modes of oral and/or written persuasion when:
 - Issuing clear verbal instructions to team members.
 - Actively listening to feedback received from team members.
 - Evaluating and reporting problem situations to the client.
- Using science and technology effectively and critically, showing responsibility towards the environment and health of others when:
 - By applying the appropriate tools and materials for different quantity surveying activities.
- Demonstrating an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation when:
 - The inter-relatedness of the fabrication and installation of components to quantity surveying systems.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1. Basic setting-out of construction works, using appropriate survey equipment, is described.
2. Construction drawings and specifications are interpreted accurately.
3. Compiling and submission of tenders for construction projects are demonstrated.
4. Estimates, tenders and contractual documents for construction projects are correctly analysed and interpreted programmes, budgets, strategies, facilities and information systems are compiled based on estimates, tenders and contractual documents for construction projects.
5. Taking off of quantities for small or simple load bearing- and framed structures and application of the information in project administration is demonstrated.
6. Compilation of price determination documents is explained and demonstrated.
7. Administrative support relative to construction projects, including recordkeeping, implementation of reporting and administrative systems and taking off quantities for interim payment certificates, is demonstrated.
8. Application of information contained in contract documentation for the financial and contractual management of construction projects is demonstrated.

Associated Assessment Criteria for Exit Level Outcome 2:

1. Development of quality systems and procedures are demonstrated in accordance with applicable construction projects.
2. Benefits of interaction with other role-players in achieving equitable solutions to problems encountered within the Built Environment are described.
3. Ways in which successful interaction with stakeholders affected by construction projects may be achieved, are identified.
4. Structured property-related plans, strategies and actions that benefit society in fair and equitable ways and improve the quality of community life are identified.
5. A range of viable solutions to frequently-encountered problems related to Built Environment projects, which include, but are not restricted to, economic and environmental protection factors, is described.

Associated Assessment Criteria for Exit Level Outcome 3:

1. Preparation for implementation of a construction project, including analysis of tender and estimate documentation to generate programmes, budgets, strategies, facilities and information systems, is described.
2. Management of procurement and allocation of construction resources, including human resources, is described.
3. Measurement, management and reporting on construction activity production, productivity and resource costs is explained.
4. Management of the financial aspects of construction contracts, which includes but is not restricted to establishing and implementing project costing and reporting systems and reviewing the financial status of projects, is demonstrated.

Associated Assessment Criteria for Exit Level Outcome 4:

1. Roles and functions of various consultants and stakeholders involved in the procurement and delivery of Built Environment projects are described.
2. The capacity to integrate technical and construction assembly knowledge and skills, is demonstrated.
3. Construction projects in terms of construction methods, technologies and materials requirements, are explained.
4. Analysis of the principles and outcomes of their own work within current Built Environment professional practice and construction projects is demonstrated.
5. Development, implementation, management and monitoring procedures of on-site Health and Safety (H & S) Plans, including HIV / AIDS in the workplace, are described.

6. Awareness of ethics in the workplace is demonstrated and the need to adhere to codes of professional conduct is explained.

Associated Assessment Criteria for Exit Level Outcome 5:

1. Competence in both oral and written communication is demonstrated.
2. Effective spoken, written and interpretation skills are demonstrated relative to correspondence and reports.
3. Construction drawings and specifications, price determination documents and technical information related to all matters to which their skills and competence have been applied, are explained, using correct terminology.
4. Benefits of communication and interaction with other roleplayers encountered within the Built Environment, are explained and illustrated with examples.
 - o Range: Examples include, but are not restricted to, construction assembly problems, economic, financial and contractual matters.
5. Computer software packages are used within the Quantity Surveying environment.

Integrated assessment:

Learning and assessment are integrated throughout the programme. Continuous formative assessment is applied to ensure that learners receive feedback on their progress towards the achievement of specific learning outcomes. Summative assessment concerned with the evaluation of the learning achievements relative to the exit-level outcomes of the qualification includes "overall integrated assessment" which evaluates the learner's ability to combine the various components and modules of the broader scope of knowledge, skills, competencies and attitudes represented by the exit-level outcomes, as a whole or as individual component-processes of the overall learning experience leading to the qualification.

Assignments, designed to meet the requirements of integrated assessment, accomplish/deliver:

- Integration of exit-level outcomes in a way that demonstrates that the purpose of the qualification as a whole has been achieved, either totally or within the components of the study programme.
- Demonstration of learner competence through evaluation.
- Criterion-referenced assessment which:
 - o Has been clearly explained to and is understood by the learners.
 - o Can be applied in the Recognition of Prior Learning.

In the assessment of whether the desired outcomes have been achieved (or not), recognition is given to criteria and evaluation methods that adequately and appropriately achieve such assessment.

ARTICULATION OPTIONS

Vertical Articulation is possible with:

- ID 49094: Bachelor's Degree in Quantity Surveying at NQF Level 6.

Horizontal Articulation is possible with:

- ID 20447: National Diploma: Surveying at NQF Level 5.

MODERATION OPTIONS

● Anyone assessing a learner or moderating the assessment of a learner against this Qualification must be registered as an assessor with an appropriate Education, Training, and Quality Assurance (ETQA) Body or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

- Any institution offering learning that will enable the achievement of this qualification must be accredited as a provider with the relevant ETQA or with an ETQA that has a Memorandum of Understanding with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA or by an ETQA that has a Memorandum of Understanding with the relevant ETQA, according to the ETQA's policies and guidelines for assessment and moderation.
- Moderation must include both internal and external moderation of assessments at exit points of the Qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards as well as in the exit level outcomes described in the qualification.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

For an applicant to register as an assessor, the applicant needs:

- Well-developed interpersonal skills, subject matter and assessment experience.
- To be competent in the planning and conducting assessment of learning outcomes as described in the unit standards Conduct Outcomes-based assessment at NQF Level 5.
- Well-developed subject matter expertise within Quantity Surveying.
- A Qualification in Quantity Surveying at or above NQF Level 5.
- To be registered with the relevant Education and Training Quality Assurance Body.

Detailed documentary proof of educational qualification, practical training undergone, and experience gained by the applicant must be provided (Portfolio of evidence). Assessment competencies and subject matter experience of the assessor can be established by recognition of prior learning.

NOTES

Specified requirements:

Specified requirements include legal and legislative specific requirements contained in one or more of the following documents:

Legal:

- Act 1: The Quantity Surveying Profession Act No 49 of 2000.
- Act 2: The Council for the Built Environment Act No 43 of 2000.
- Act 3: The National Environmental Management Act No 107 of 1998.
- Act 4: The Occupational Health and Safety Act No 85 of 1993.
- Act 5: The Compensation for Occupational Injuries and Diseases Act No 130 of 1993.
- Act 6: The South African Qualifications Authority Act No 58 of 1995.
- Act 7: The Skills Development Act No 97 of 1998.

Context specific issues:

- Specifications, agreements and policies and procedures:
 - The S A Bureau of Standards Specifications (as appropriate).

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Core	7784	Communicate in a business environment	Level 4	6
Core	12761	Demonstrate an understanding of macroeconomic principles as they apply to the South African business	Level 4	8

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
		environment		
Core	110475	Demonstrate and apply a knowledge and understanding of the basic economic concepts central to local economic development	Level 4	6
Core	13952	Demonstrate basic understanding of the Primary labour legislation that impacts on a business unit	Level 4	8
Core	12181	Demonstrate knowledge and understanding of basic investment techniques	Level 4	2
Core	14415	Describe and interpret the composition, role-players, processes and role of the construction industry	Level 4	4
Core	117156	Interpret basic financial statements	Level 4	4
Core	14426	Read, interpret and use construction drawings and specifications	Level 4	10
Core	14428	Set out construction work areas	Level 4	10
Core	244490	Undertake elementary descriptive quantification	Level 4	5
Core	7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
Core	9224	Implement policies regarding HIV/AIDS in the workplace	Level 5	4
Core	120378	Support the project environment and activities to deliver project objectives	Level 5	14
Core	15150	Understand and apply principles relating to the installation of services in building	Level 5	7
Core	244583	Understand the basic principles of South African mercantile law	Level 5	10
Core	244588	Undertake basic descriptive quantification	Level 5	15
Core	115442	Understand and apply building construction technology	Level 6	20
Core	244592	Undertake intermediate descriptive quantification	Level 6	30
Elective	14473	Develop and produce computer aided drawings	Level 4	4
Elective	15137	Apply contract documentation	Level 5	10
Elective	244595	Demonstrate an understanding of macro-economic principles	Level 5	12
Elective	244599	Demonstrate an understanding of micro-economic principles	Level 5	12
Elective	120360	Demonstrate understanding of financial and accounting principles for public entities	Level 5	12
Elective	15144	Develop and manage quality systems and procedures on a construction project	Level 5	12
Elective	15146	Manage construction project administration	Level 5	8
Elective	15141	Manage construction resources	Level 5	10
Elective	15148	Manage financial aspects of a construction project	Level 5	8
Elective	15136	Manage health and safety on a construction project	Level 5	6
Elective	15143	Manage human resources on a construction project	Level 5	7
Elective	15138	Understand and apply structural principles	Level 5	7
Elective	244555	Understand the basic principles of management theory and practice	Level 5	12
Elective	115453	Understand and apply mathematical systems for commercial applications	Level 6	18
Elective	115448	Understand and apply statistical techniques for business and research applications	Level 6	18
Fundamental	15139	Manage productivity on a construction project	Level 5	12
Fundamental	15145	Prepare for a construction project	Level 5	15
Fundamental	15147	Tender for construction projects	Level 5	12
Fundamental	15140	Understand and apply building construction methods	Level 5	10



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand the basic principles of management theory and practice

SAQA US ID	UNIT STANDARD TITLE		
244555	Understand the basic principles of management theory and practice		
ORIGINATOR	PROVIDER		
SGB Quantity Surveying			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Physical Planning, Design and Management		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Understand the basic principles of contemporary management theory.

SPECIFIC OUTCOME 2

Understand the basic principles of financial management.

SPECIFIC OUTCOME 3

Understand the basic principles of marketing management.

SPECIFIC OUTCOME 4

Understand the basic principles of production management.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand the basic principles of South African mercantile law

SAQA US ID	UNIT STANDARD TITLE		
244583	Understand the basic principles of South African mercantile law		
ORIGINATOR		PROVIDER	
SGB Quantity Surveying			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Physical Planning, Design and Management		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	10

SPECIFIC OUTCOME 1

Understand South African law in historical and comparative perspective.

SPECIFIC OUTCOME 2

Demonstrate knowledge of the general principles of the law of contract and agency.

SPECIFIC OUTCOME 3

Understand the general principles of Purchase and Sale.

SPECIFIC OUTCOME 4

Understand the general principles of Leases.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Undertake basic descriptive quantification***

SAQA US ID	UNIT STANDARD TITLE		
244588	Undertake basic descriptive quantification		
ORIGINATOR		PROVIDER	
SGB Quantity Surveying			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Physical Planning, Design and Management	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	15

SPECIFIC OUTCOME 1

Critically appraise the project design.

SPECIFIC OUTCOME 2

Develop a logical approach to the sequence of measurement.

SPECIFIC OUTCOME 3

Take-off quantities on dimension paper.

SPECIFIC OUTCOME 4

Understand and apply measurement clauses.

SPECIFIC OUTCOME 5

Compile price determination documents in schedule format.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Undertake intermediate descriptive quantification***

SAQA US ID	UNIT STANDARD TITLE		
244592	Undertake intermediate descriptive quantification		
ORIGINATOR			PROVIDER
SGB Quantity Surveying			
FIELD			SUBFIELD
12 - Physical Planning and Construction			Physical Planning, Design and Management
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	30

SPECIFIC OUTCOME 1

Critically appraise the project design.

SPECIFIC OUTCOME 2

Develop a logical approach to the sequence of measurement.

SPECIFIC OUTCOME 3

Take-off quantities on dimension paper.

SPECIFIC OUTCOME 4

Understand and apply measurement clauses.

SPECIFIC OUTCOME 5

Compile price determination documents in schedule format.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Demonstrate an understanding of macro-economic principles*

SAQA US ID	UNIT STANDARD TITLE		
244595	Demonstrate an understanding of macro-economic principles		
ORIGINATOR	PROVIDER		
SGB Quantity Surveying			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Physical Planning, Design and Management		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Understand the concept of national income accounting.

SPECIFIC OUTCOME 2

Understand the principles of money, banking and monetary policy.

SPECIFIC OUTCOME 3

Understand key macro economic controversies facing policy makers.

SPECIFIC OUTCOME 4

Understand the basic principles of international trade and finance.



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of micro-economic principles

SAQA US ID	UNIT STANDARD TITLE		
244599	Demonstrate an understanding of micro-economic principles		
ORIGINATOR	PROVIDER		
SGB Quantity Surveying			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Physical Planning, Design and Management		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Understand the principles of demand, supply and equilibrium.

SPECIFIC OUTCOME 2

Understand the principles of consumer behaviour.

SPECIFIC OUTCOME 3

Understand the principles of the production function and the theory of production cost.

SPECIFIC OUTCOME 4

Understand the principles of different market forms and income distribution.

Printed by and obtainable from the Government Printer, Bosman Street, Private Bag X85, Pretoria, 0001

Publications: Tel: (012) 334-4508, 334-4509, 334-4510
 Advertisements: Tel: (012) 334-4673, 334-4674, 334-4504
 Subscriptions: Tel: (012) 334-4735, 334-4736, 334-4737
 Cape Town Branch: Tel: (021) 465-7531

Gedruk deur en verkrygbaar by die Staatsdrukker, Bosmanstraat, Privaatsak X85, Pretoria, 0001

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