No. 222 **16 March 2007**

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

Mining and Minerals

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 73 April 2007.*** All correspondence should be marked **Standards Setting – Mining and Minerals** 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:
General Education and Training ***Certificate:*** Mining and Minerals Processes

SAQA QUAL ID	***QUALIFICATION TITLE***		
58267	General Education and Training Certificate: Mining and Minerals Processes		
SGB		***PROVIDER***	
SGB Mining and Minerals			
ETQA			
QUALIFICATION TYPE	***FIELD***	***SUBFIELD***	
National Certificate	6 - Manufacturing, Engineering and-Technology	Fabrication and Extraction	
ABET BAND	***MINIMUM CREDITS***	***NQF LEVEL***	***QUAL CLASS***
Undefined	120	Level 1	Regular-Unit Stds Based
REGISTRATION STATUS	***SAQA DECISION NUMBER***	***REGISTRATION START DATE***	***REGISTRATION END DATE***
Draft - Prep for P Comment			

PURPOSE AND RATIONALE OF THE QUALIFICATION
Purpose:

This qualification is aimed at persons who work (such as current practising mining and process operators) or intend working (new employees) within a mining and minerals context, and who seek to acquire recognition of essential knowledge regarding the Mining and Minerals Sector and related operations. This qualification would also be beneficial for community-based learners as it would afford them the opportunity to understand the environment they are living in and this in turn would be advantageous for employers in the area as this situation can lead to a supply of individuals with relevant foundational knowledge.

Qualifying learners will be able to:

- Demonstrate an understanding of the mining and minerals processes, ores mined and the commodities produced.
- Demonstrate an understanding of the influence of the engineering skills to support the entire mining and minerals processes.
- Demonstrate an understanding of the impact of mining and beneficiation on the economy.
- Demonstrate an understanding of health and safety and environmental regulations that apply within the mining and minerals context.
- Apply life skills that will enhance understanding of workplace processes within the Mining and Minerals Sector.
- Communicate and solve problems in a variety of ways.
- Understand scientific concepts and explain the impact of scientific phenomena on the environment.

This qualification introduces a basic understanding of the key terms, rules, concepts and principles of the sub-field Fabrication and Extraction that will enable learners to be informed workers in the industry. It provides a balanced learning experience that allows flexible access to learning in further education and productive employment in the Mining and Minerals Sector.

Rationale:

The General Education and Training Certificate (GETC): Mining and Minerals Processes is needed for foundational knowledge of processes required in the mining industry. This is considered critical, as learners will acquire the grounding necessary for further development as miners, operators, trade workers or technicians. In addition this qualification seeks to provide a link for learners to easily articulate from **ABET** Level 3.

This is a replacement qualification for the GETC: Introduction to Mining and Minerals Sector registered on the NQF.

In a recently commissioned study by the Mining Qualifications Authority of Scarce and Critical Skills in the Mining and Minerals Sector, a conclusion drawn is that "technical skills, health and safety and communication are the areas in which most skills upgrading should take place, while areas such as machine maintenance, engineering and **ABET** also require more training." This GETC would very adequately support and form the basis for development of the technical skills gap identified in the study. It was also indicated in this study report that "the set of information analysed for the purpose of this study indicates that there is a need for the upgrading of 17 **854** employees." Therefore the Mining and Minerals Sector is committed to establishing a structured mechanism in place for the attainment of necessary technical skills of which the foundation/grounding may be obtained through the outcomes incorporated in this GETC.

This reviewed qualification **also** assists with affording learners within mining communities the opportunity to extend their knowledge and understanding of mining processes without any detriment to their health and safety.

For learners to achieve the qualification they may elect to gain outcomes in any of the specialisation areas indicated below:

- Mining.
- Cement, lime, aggregates and sand sector.
- Diamond processing.
- Jewellery manufacture.
- Metallurgy.

The specialisation elected will afford learners the opportunity to articulate to FET qualifications in that specified area.

Examples of such qualifications incorporated into the Mining and Minerals Sector qualifications framework are:

- National Certificate in Minerals Processing: NQF Level **2.**
- National Certificate in Diamond Processing: NQF Level 2.
- National Certificate in Jewellery Manufacture in a Mass Production Environment.
- National Certificate in Mining Operations underground Hardrock: NQF Level **2.**

It must also be noted that as mining and minerals legislation in terms of mining rights has been amended, various role-players are entering the sector as small and medium type organisations. For these individuals it **is** critical that they gain an understanding of business and entrepreneurial skills **so** that they become people that are fully integrated into the sector.

RECOGNIZE PREVIOUS LEARNING?
Y

LEARNING ASSUMED TO BE IN PLACE

It is assumed that candidates embarking on learning towards this qualification are already competent in the following areas:
- Communication and Numeracy at ABET Level 3.

Recognition of Prior Learning:

This qualification can be achieved wholly or in part through recognition of prior learning in terms of the criteria laid out.

Evidence can be presented in a variety of forms, including international or previous local qualifications, reports, testimonials mentioning functions performed, work records, portfolios, videos of practice and performance records.

Access to the qualification:

This qualification is open to anyone with access to learning and/or work experience opportunities in the areas reflected in the exit level outcomes and unit standards.

QUALIFICATION RULES
Credits and rules of combination

Credits towards this qualification are to be achieved as follows:

Fundamental:

All 64 credits are compulsory and are to be achieved.

- All 23 Communications credits from the list specified are required.
- All 17 Mathematical Literacy credits from the list specified are required.
- All 17 Natural Science credits from the list specified are required.
- All 7 Life Skills credits from the specified list are required.

Core:

All 36 credits are compulsory and are to be achieved.

Elective:

A minimum of 20 credits to be achieved from One of the specified specialisation areas:

- Specialisation Area: Mining

This Specialisation has four streams:

- Underground Hardrock.
- Underground Coal.
- Surface Mining.
- Small Scale Mining.

- Underground Hardrock Mining:

The following unit standards totaling 17 credits must be achieved:

Unit Standard Title; Level; Credits

> Demonstrate knowledge and understanding of the relevant terminology used in mining operation - range of underground coal, surface, underground hardrock; Level **1;** Credits **3.**
> Read, interpret and produce basic engineering drawings; Level **2;** 6 Credits.
> Demonstrate an understanding of legal terms and requirements related to rockbreaking operations; Level **2; 2** Credits.
> Demonstrate knowledge of the most common harmful gases and vapours; Level **1; 1** Credits.
> **Follow** basic health and safety practices underground.; Level **2; 2** Credits.
> Describe the basic environmental factors of ventilating an underground working place to ensure a safe and healthy working environment; Level **2;** 3 Credits.

Total: **17**

A further 3 credits must be achieved from the list below that totals **10** credits to make up a minimum of **120** credits for the qualification.

Unit Standard Title; Level; Credits

◦ Demonstrate an understanding of typical basic underground hard rock mining processes and layouts; Level **1; 2** Credits.
◦ Manage personal finances; Level **1;** 8 Credits.

Total: **10**

◦ Underground Coal Mining:

The following unit standards totaling **17** credits must be achieved.

Unit Standard Title; Level; Credits

◦ Demonstrate knowledge and understanding of the relevant terminology used in mining operation - range of underground coal, surface, underground hardrock; Level **1;** 3 Credits.
◦ Read, interpret and produce basic engineering drawings; Level **2;** 6 Credits.
◦ Demonstrate an understanding of legal terms and requirements related to rockbreaking operations; Level 2; 2 Credits.
◦ Demonstrate knowledge of the most common harmful gases and vapours; Level **1; 1** Credits.
◦ Follow basic health and safety practices underground.; Level ; 2 Credits.
◦ Describe the basic environmental factors of ventilating an underground working place to ensure a safe and healthy working environment; Level **2;** 3 Credits.

Total: **17**

A further 3 credits must be achieved from the list below that totals **11** credits to make up a minimum of **120** credits for the qualification.

Unit Standard Title; Level; Credits

◦ Demonstrate knowledge and understanding to work in an u/g coal mine; Level 1; 8 Credits.
◦ Demonstrate a basic knowledge and understanding of typical u/g coal mining processes and layouts ; Level **1;** 3 Credits.

Total: **11**

◦ Surface Mining:

The following unit standards totaling **12** credits must be achieved.

Unit Standard Title; Level; Credits

◦ Demonstrate knowledge and understanding of the relevant terminology used in mining operation - range of underground coal, surface, underground hardrock; Level 1; 3 Credits.
◦ Read, interpret and produce basic engineering drawings; Level 2; 6 Credits.
◦ Demonstrate an understanding of legal terms and requirements related to rockbreaking operations; Level 2; **2** Credits.
◦ Demonstrate knowledge of the most common harmful gases and vapours; Level 1; 1 Credits.

Total: 12

A further 8 credits must be achieved from the list below that totals 25 credits to make up a minimum of 120 credits for the qualification.

Unit Standard Title; Level; Credits

◦ Demonstrate knowledge and understanding to work in a surface mine; Level 1; 8 Credits.
◦ Demonstrate a basic knowledge and understanding of typical surface mining processes and layouts; Level 1; 6 Credits.
◦ Operate a personal computer system; Level 1; 3 Credits.
◦ Manage personal finances; Level 1; 8 Credits.

Total: 25

◦ Small Scale Mining:

The following unit standards totaling 12 credits must be achieved.

Unit Standard Title; Level; Credits

◦ Demonstrate knowledge and understanding of the relevant terminology used in mining operations - range of underground coal, surface, underground hardrock; Level 1; 3 Credits.
◦ Read, interpret and produce basic engineering drawings; Level 2; ***6*** Credits.
◦ Demonstrate an understanding of legal terms and requirements related to rockbreaking operations; Level 2; 2 Credits.
◦ Demonstrate knowledge of the most common harmful gases and vapours; Level 1; 1 Credits.

Total: 12

A further 8 credits must be achieved from the list below that totals 25 credits to make up a minimum of 120 credits for the qualification.

Unit Standard Title; Level; Credits

◦ Demonstrate a basic understanding of small-scale mining; Level 1; 3 Credits.
◦ Demonstrate a basic understanding of the history of small-scale mining; Level 1; ▮ Credits.
◦ Demonstrate a basic understanding of where to obtain information **on** mineral deposits in South Africa; Level 1; 1 Credits.
◦ Demonstrate a basic understanding of the statutory requirements for the establishment of a small scale mine; Level 1; 2 Credits.
◦ Discuss entrepreneurship and identify, assess and develop entrepreneurial qualities; Level 1; 2 Credits.
◦ Identify, analyse and select various business opportunities; Level 1; 3 Credits.
◦ Demonstrate an understanding of a general business plan and apply it to a selected business; Level 1; 7 Credits.

- Demonstrate the ability to start and run a business and adapt to a changing business environment; Level 1; 3 Credits.
- Operate a personal computer system; Level 1; 3 Credits.

Total: 25

- Specialisation Area: Cement, Lime, Aggregates and Sand (CLAS)

One of the following unit standards, totaling 2 credits must be achieved.

Unit Standard Title; Level; Credits

- Demonstrate a basic understanding of cement manufacturing; Level 2; 2 Credits OR.
- Demonstrate a basic understanding of lime manufacturing; Level 2; 2 Credits OR.
- Demonstrate a basic understanding of aggregates manufacturing; Level 2; 2 Credits OR.
- Demonstrate a basic understanding of the dimension stone industry; Level 2; 2 Credits.

Total: 2

A further 18 credits must be achieved from the list below that totals 40 credits to make up a minimum of 120 credits for the qualification.

Unit Standard Title; Level; Credits

- Demonstrate understanding and knowledge of different activities related to the processing of minerals in the mining & minerals sector; Level 1; 14 Credits.
- Discuss entrepreneurship and identify, assess and develop entrepreneurial qualities; Level 1; 2 Credits.
- Identify, analyse and select various business opportunities; Level 1; 3 Credits.
- Demonstrate an understanding of a general business plan and apply it to a selected business; Level 1; 7 Credits.
- Demonstrate the ability to start and run a business and adapt to a changing business environment; Level 1; 3 Credits.
- Operate a personal computer system; Level 1; 3 Credits.
- Manage personal finances; Level 1; 8 Credits.

Total: 40

- Specialisation Area: Diamond Processing

The following unit standards, totaling 9 credits must be achieved.

Unit Standard Title; Level; Credits

- Describe the structure of the diamond processing industry; Level 1; 3 Credits.
- Describe the history of diamond processing; Level 1; 2 Credits.
- Explain the requirements for security of diamonds; Level 1; 1 Credits.
- Process control systems in processing diamond gemstones; Level 1; 1 Credits.
- Demonstrate a basic understanding of the use of tools and equipment used for processing diamond gemstones; Level 1; 2 Credits.

Total: 9

A further 11 credits must be achieved from the list below that totals 26 credits to make up a minimum of 120 credits for the qualification.

Unit Standard Title; Level; Credits

- Discuss entrepreneurship and identify, assess and develop entrepreneurial qualities; Level 1; 2 Credits.
- Identify, analyse and select various business opportunities; Level 1; 3 Credits.
- Demonstrate an understanding of a general business plan and apply it to a selected business; Level 1; 7 Credits.
- Demonstrate the ability to start and run a business and adapt to a changing business environment; Level 1; 3 Credits.
- Operate a personal computer system; Level 1; 3 Credits.
- Manage personal finances; Level 1; 8 Credits.

Total: 26

- Specialisation Area: Jewellery Manufacturing

The following unit standards, totaling **8** credits must be achieved.

Unit Standard Title; Level; Credits

- Identify and maintain categories of merchandise in the jewellery Industry.; Level **1**; 3 Credits.
- Identify tools required for manufacturing hand made jewellery; Level 1; **1** Credits.
- Demonstrate an understanding of the value of jewellery; Level 1; 2 Credits.
- Demonstrate an understanding of the workshop set-up for Handmade jewellery; Level **1**; 2 Credits.

Total: 8

A further 12 credits must be achieved from the list below that totals 26 credits to make up a minimum of 120 credits for the qualification.

Unit Standard Title; Level; Credits

- Discuss entrepreneurship and identify, assess and develop entrepreneurial qualities; Level 1; 2 Credits.
- Identify, analyse and select various business opportunities; Level 1; 3 Credits.
- Demonstrate an understanding of a general business plan and apply it to a selected business; Level 1; 7 Credits.
- Demonstrate the ability to start and run a business and adapt to a changing business environment; Level 1; 3 Credits.
- Operate a personal computer system; 'Level 1; 3 Credits.
- Manage personal finances; Level **1; *8*** Credits.

Total: 26

- Specialisation Area: Metallurgy

The following unit standard, totaling 14 credits must be achieved.

Unit Standard Title; Level; Credits

- Demonstrate understanding and knowledge of different activities related to the processing of minerals in the mining & minerals sector; Level 1; 14 Credits.

Total: 26

A further 6 credits must be achieved from the list below that totals **28** credits to make up a minimum of **120** credits for the qualification.

Unit Standard Title; Level; Credits

- Demonstrate knowledge and understanding of the relevant terminology used in mining operation - range of underground coal, surface, underground hardrock; Level 1; 3 Credits.
- Read, interpret and produce basic engineering drawings; Level 1; 6 Credits.
- Demonstrate an understanding of legal terms and requirements related to rockbreaking operations; Level **1; 2** Credits.
- Demonstrate knowledge of the most common harmful gases and vapours; Level **1;** 1 Credits.
- Follow basic health and safety practices underground.; Level **2; 2** Credits.
- Describe the basic environmental factors of ventilating an undergroundworking place to ensure a safe and healthy working environment; Level **2;** 3 Credits.
- Operate a personal computer system; Level **1;** 3 Credits.
- Manage personal finances; Level **1; 8** Credits.

Total: **28**

EXIT LEVEL OUTCOMES

1. Communicate and solve problems in a variety of ways.
Range: This includes demonstrating basic knowledge and understanding of scientific concepts as applied within the mining and minerals context.
2. Demonstrate an understanding of the Mining and Minerals workplace processes.
Range: Covers application of life skills, quality and business operation.
3. Demonstrate an understanding of Occupational health, safety and environmental regulations that apply within the mining and minerals context.
4. Demonstrate an understanding of the mining and minerals processes, ores mined and the commodities produced.
5. Demonstrate an understanding of the impact of mining and beneficiation on the economy.
6. Demonstrate an understanding of the influence of the engineering skills to support the mining and minerals processes.
Range:

- Air, water and electricity distribution.
- Waste.
- Road, rail, conveyor, and pipe transport.
- Manufacturing.

Consistency of Exit Level Outcomes with Critical Cross Field Outcomes (CCFOs)

The following CCFO's have been addressed in this qualification:

SAQA Critical Cross-Field Outcomes; Equivalent Exit Level Outcome

- Identifying and solving problems in which responses display that responsible decisions using critical thinking have been made.; Exit Level Outcomes **1**, **2,** 3.
- Working effectively with others as a member of a team, group, organization and community.; Exit Level Outcomes **1,4,** 5, 6.
- Organising and managing oneself and one's activities responsibly and effectively; Exit Level Outcome **2, 4,** 5, **6.**
- Collecting, analyzing, organizing and critically evaluating information.; Exit Level Outcomes **2,** 3, **4, 5, 6.**
- Communicating effectively using visual, mathematical and/or language skills; Exit Level Outcomes **1, 4,** 5, **6.**

• Using science and technology effectively and critically, showing responsibility toward the environment and health of others; Exit Level Outcome s 2, 3 , 4, 6.
• Demonstrating an understanding of the world as a set of related systems by recognizing that problem contexts do not exist in isolation; Exit Level Outcomes 1, 2, 3, 4, 5, 6.

ASSOCIATED ASSESSMENT CRITERIA

1.
• Effective verbal and written communication is conducted within the mining and minerals sector in line with specified requirements.
• Reading and comprehension is in accordance with specified requirements.
• Mathematical principles and techniques are understood, explained and applied in the context of the mining and minerals sector in line with specified requirements.
• Scientific principles are understood and applied in the context of the mining and minerals sector.
• The impact of science on the person and environment is understood and explained.

2.
• Life orientation is demonstrated in the context of the mining and minerals workplace.
Range: Cultural diversity, time management, substance abuse and aids awareness.
• Quality principles are explained and applied within the mining industry workplace.
• The key factors of business operation and key tools to measure and manage a business; is explained in relation to the requirements of the mining and minerals sector.

3.
• Occupational health and safety issues are explained and applied within the mining and minerals context.
• Occupational environmental issues related to working in the mining and minerals sector and related contexts are explained and applied.

4.
• The processes used for the attainment of the various products are explained in accordance with the Mining Process Decomposition Model.
• The kinds of minerals and the related products mined are identified and explained in accordance with site specified requirements.
• The characteristics of different kinds of economic minerals are explained with examples.

5.
• The importance of the mining and beneficiation industry to the South African economy is explained with regards to the impact on Gross Domestic Product, imports and exports.
• The international importance of the South African Minerals Industry is explained in terms of the contribution of individual minerals to global production and global reserve.

6.
• Electrical engineering processes and procedures and their role as a supportive process for the mining processes are described and explained with examples.
• Mechanical engineering processes and procedures and their role as a supportive process for the mining processes are described and explained with examples.

Integrated Assessment:

Integrated assessment at the level of the qualification provides an opportunity for learners to show that they are able to integrate concepts, actions and ideas achieved across a range of unit standards and contexts.

Integrated assessment must evaluate the quality of observable performance as well as the thinking behind the performance, and must be based on a summative assessment guide.

The guide will spell out how the assessor will assess different aspects of the performance and will include:

- Observing the learner at work (both in the primary activity as well as other interactions).
- Asking questions and initiating short discussions to test understanding.
- Looking at records and reports in the portfolio and reviewing previous assessments.

In some cases inference will be necessary to determine competence depending on the nature and context within which performance takes place.

It is necessary to ensure that the fundamental part of the qualification is also targeted to ensure that while the competence may have been achieved in a particular context, learners are able to apply it in a range of other contexts and for further learning. The assessment should also ensure that all the critical cross-field outcomes have been achieved.

The learner may choose in which languages/he wants to be assessed. This should be established as part of a process of preparing the learner for assessment and familiarising the learner with the approach being taken.

While this is primarily a workplace-based qualification, evidence from other areas of endeavor may be introduced if pertinent to any of the exit-level outcomes. The assessment process should cover both the explicit tasks required for the qualification as well as the understanding of the concepts and principles that underpin the activities associated with the mining and minerals processes.

INTERNATIONAL COMPARABILITY

International comparability was conducted with the following countries:

- Australia.
- New Zealand.
- The United Kingdom.
- SADC.

Information was gathered from a variety of industrial sectors as this would give an indication of the approach taken for foundational occupationally-based learning in the world.

The following deduction can be made:

Internationally the approach taken in foundational education and training qualifications aligns broadly with the GETC approach. The qualifications are standards-based, learning is workplace-based, assessment is observation- and portfolio-based, and skills and knowledge are acquired, practiced and assessed within contexts relevant to the learner.

In Australia the Introductory Certificates include preparatory access and participation skills and knowledge such as:

- Literacy and numeracy.
- Communication skills.
- Working in teams.
- Workplace technology.
- Industry specific competencies.

In the United Kingdom, The Level 1 Certificate of Introduction to Retailing Certificate was looked at. The competency units included in this certificate are:

- Introducing the retail industry.
- Help maintain health, safety and security in a retail environment.
- Assist with product display to encourage sales.
- Contribute to good customer care.
- Work effectively in a retail team.

This GETC is also composed in a similar manner.

The New Zealand National Certificate in Glass and Glazing (Introduction - Level 2) was analysed. The purpose of the qualification is included:

This is a broad based, introductory qualification that recognizes the skills and knowledge required for entry into the glass and glazing industry. Holders of the certificate are able to demonstrate knowledge of the glazing industry from its history, processes, and materials through to manufacture. People will have interpersonal skills associated with customer service, an understanding of glass standards, legislative implications, ordeiing, pricing, and documentation.

The competency units of the qualification are listed below:

- Provide customer service in the glass and glazing industry.
- Demonstrate knowledge of the history of the glass and glazing industry.
- Demonstrate knowledge of glass industry terminology.
- Demonstrate knowledge of primary glass manufacture.
- Demonstrate knowledge of glass processes.
- Demonstrate knowledge of glass types and their application.
- Demonstrate knowledge of glazing materials.
- Demonstrate knowledge of glass properties.
- Demonstrate knowledge of the implications of legislation applicable to the glass industry.
- Demonstrate knowledge of glass standards.
- Select glass to meet the requirements of New Zealand Standard 4223: Part 3.
- Demonstrate knowledge of glass ordering requirements.
- Price the materials for simple glazing work.
- Demonstrate knowledge of documentation for glazing work.
- Demonstrate knowledge of plastics used in glazing.

The submitted GETC also includes the important components in the New Zealand qualification where the understanding of the sector is tested and assessed.

The following Course was also found:
- The Basic Prospecting Course (http://www.ycmines.ca/education.html).

The objective is to provide instruction in geology, exploration and mining through a delivery of a Basic Prospecting Course.

In the SADC region no account of training and assessment at this level could be found via an internet search. However, certain organisations conduct induction/orientation of new employees for them to gain an understanding of their organisational roles and needs as well as to orientate them on the generic health and safety practices and general administrative requirements.

From the above analysis, it can be concluded that the Mining and Minerals sector's need to qualify their learners at a foundational level finds comparison.

ARTICULATION OPTIONS

This qualification allows for both vertical and horizontal articulation.

Horizontal articulation can occur with the following qualification:

- GETC: Manufacturing, Engineering and Related Activities, NLRD ID: **23253.**
- GETC: Chemical Manufacturing Processes

Vertical articulation exists with:

- National Certificate in Diamond Process Operation - Level **2**
- National Certificate in Engineering Maintenance - Underground Hardrock Mining - Level **2,** NLRD ID: **21815.**
- National Certificate in Engineering Maintenance - Underground Coal Mining Level **2**
- National Certificate in Mining Operations - Level **2**
- National Certificate in Rockbreaking - Surface Mining -Level **2,** NLRD ID: **21842.**
- National Certificate in Minerals Processing - Level **2**
- National Certificate in Sulphuric Acid Production - Level **2,** NLRD ID: **58226.**
- National Certificate in Strata Control - Level **2.**

MODERATION OPTIONS

- Anyone assessing a learner or moderating the assessment of a learner against this unit standard must be registered as an assessor with the relevant Education, Training, 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 unit standard must be accredited as a provider with the relevant Education, Training, Quality, Assurance (ETQA) Body, or with an ETQA that has a Memorandum of Understanding with the relevant ETQA.

- Assessment and moderation of assessment will be overseen by the relevant Education, Training, Quality, Assurance (ETQA) Body, 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, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described in the Unit Standard.

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

CRITERIA FOR THE REGISTRATION OF ASSESSORS

Assessors should be in possession of:

- An appropriate qualification above the level of this qualification and preferably relevant workplace practical experience.
- Registration as an assessor with the relevant ETQA.

NOTES

N/A

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	243776	Demonstrate an understanding of quality principles used in the workplace	Level 1	6
Core	110121	Demonstrate knowledge of how a business works in the Mining and Minerals Sector	Level 1	2
Core	116527	Demonstrate knowledge pertaining to basic health and	Level 1	2

	ID	UNIT STANDARD TITLE	LEVEL	CREMTS
		safety principles in and around a workplace		
Core	243764	Demonstrate an understanding of natural (Macro) environmental principles	Level 1	6
Core	243774	Demonstrate a basic understanding of occupational hygiene principles	Level 1	7
Core	243772	Display understanding of the mechanical and electrical engineering discipline processes and procedures	Level 2	6
Core	243777	Understand the kinds of minerals and related products mined in the South Africa Mining & Minerals Sector and their importance to both the local stakeholders and within the global arena	Level 1	2
Core	243784	Demonstrate an understanding of the South African mining and mineral sector processes	Level I	5
Elective	115602	Demonstrate knowledge and understanding of the relevant terminology used in - range of underg al, surface, underground hard rock	Level 1	3
ti	1047	Demon a basic understanding of lime manufacturing	Level 2	2
ti	1045	Demon a basic understanding of cement manufacturing	Level 2	2
Elective	110149	Demonstrate a basic understanding of the statutory requirements for the establishment of a small-scale mine	Level 1	2
Elective	110145	Demonstrate a basic understanding of where to obtain information on mineral deposit in South Africa	Level 1	1
Elective	110140	Demonstrate a basic understanding of the history of small-scale mining	Level 1	1
Elective	110128	Demonstrate a basic understanding of small-scale mining	Level 1	3
Elective	110194	Demonstrate a basic knowledge and Understanding of typical surface mining processes and layouts	Level 1	6
Elective	110417	Demonstrate an understanding of typical basic underground hard rock mining processes and layouts	Level 1	2
Elective	110191	Demonstrate knowledge and ability to work in a surface mine	Level 1	8
Elective	119970	Identify tools required for manufacturing hand made jewellery	Level 1	1
Elective	119963	Identify and maintain categories of merchandise in the jewellery industry	Level 1	3
Elective	110219	Demonstrate a basic understanding of the use of tools and equipment used for processing diamonds	Level 1	2
Elective	119817	Describe Process Control Systems for Processing Diamond Gemstones	Level 1	1
Elective	10499	Explain the requirements for the security of diamonds	Level 1	1
Elective	110123	Describe the history of the diamond processing industry	Level 1	2
Elective	10495	Describe the structure of the diamond processing industry	Level 1	3
Elective	243779	Demonstrate a basic understanding of the dimension stone industry	Level 2	2
Ilective	10484	Demonstrate a basic understanding of the aggregates industry	Level 2	2
Ilective	12509	Manage personal finances	Level 1	8
Ilective	116932	Operate a personal computer system	Level 1	3
flective	10009	Demonstrate the ability to start and run a business and adapt to a changing business environment	Level 1	3
Ilective	10008	Write and present a simple business plan	Level 1	7
tlective	10007	Identify, analyse and select business opportunities	Level 1	3
Ilective	110430	Demonstrate understandino and knowledae of different activities related to the processing of minerals in the mining and minerals sector	Level 1	14
flective	119971	Demonstrate an understanding of the workshop set-up for handmade jewellery	Level 1	2
ilective	119965	Demonstrate an understanding of the value of jewellery	Level 1	2
Elective	110118	Demonstrate knowledge of the most common harmful gases and vapours	Level 1	1
Elective	9678	Follow basic health and safety practices underground	Level 2	5
Elective	116670	Describe the basic environmental factors of ventilating an underground working place to ensure a safe and healthy working environment	Level 2	3
Elective	110148	Demonstrate a basic knowledge and understanding of typical underground coal mining processes and layouts	Level 1	3

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	110217	Demonstrate knowledge and ability to work in an underground coal mine	Level 1	8
Elective	116659	Demonstrate an understanding of legal terms and requirements related to rockbreaking operations	Level 2	2
Elective	12215	Read, interpret and produce basic engineering drawings	Level 2	6
Fundamental	119635	Engage in a range of speaking/signing and listening interactions for a variety of purposes	Level 1	6
Fundamental	119640	Read/view and respond to a range of text types	Level 1	6
Fundamental	119636	Write/Sign for a variety of different purposes	Level 1	6
Fundamental	119631	Explore and use a variety of strategies to learn	Level 1	5
Fundamental	7451	Collect, analyse, use and communicate numerical data	Level 1	2
Fundamental	7450	Work with measurement in a variety of contexts	Level 1	2
Fundamental	7463	Describe and represent objects and the environment in terms of shape, space, time and motion	Level 1	2
Fundamental	7461	Use maps to access and communicate information concerning routes, location and direction	Level 1	1
Fundamental	7447	Working with numbers in various contexts	Level 1	6
Fundamental	7507	Demonstrate an understanding of the concept of science	Level 1	2
Fundamental	7508	Conduct an investigation in the natural science	Level 1	4
Fundamental	7509	Apply basic concepts and principles in the natural sciences	Level 1	5
Fundamental	14111	Demonstrate an understanding of how scientific skills and knowledge could contribute to sustainable use of resources	Level 1	2
Fundamental	119814	Describe the basic knowledge of HIV/ Aids, TB, STI's and substance abuse in the workplace	Level 1	1
Fundamental	14664	Demonstrate knowledge of diversity within different relationships in the South African society	Level 1	3
Fundamental	15091	Plan to manage one's time	Level 1	3

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of natural (Macro) environmental principles

SAQA US ID	*UNIT STANDARD TITLE*		
243764	Demonstrate an understanding of natural (Macro) environmental principles		
SGB		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 1	6
REGISTRATION STATUS	*REGISTRATION START DATE*	*REGISTRATION END DATE*	*SAQA DECISION NUMBER*
Draft - Prep for P Comment			

SPECIFIC OUTCOME 1
Demonstrate knowledge and comprehension of the atmosphere.

SPECIFIC OUTCOME 2
Explain and discuss environmental factors.

SPECIFIC OUTCOME 3
Explain and discuss the water cycle and the need for water conservation.

SPECIFIC OUTCOME 4
Explain and discuss water pollution.

SPECIFIC OUTCOME 5
Explain and discuss air pollution.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Display understanding of the mechanical and electrical engineering discipline processes and procedures

SAQA US ID	***UNIT STANDARD TITLE***		
243772	Display understanding of the mechanical and electrical engineering discipline		
SGB		***PROVIDER***	
SGB Mining and Minerals			
FIELD		***SUBFIELD***	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	***UNIT STANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level ***2***	6
REGISTRATION STATUS	***REGISTRATION START DATE***	***REGISTRATION END DATE***	***SAQA DECISION NUMBER***
Draft - Prep for P Comment			

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate a basic understanding of occupational hygiene principles

SAQA US ID	***UNIT STANDARD TITLE***		
243774	Demonstrate a basic understanding of occupational hygiene principles		
SGB		***PROVIDER***	
SGB Mining and Minerals			
FIELD		***SUBFIELD***	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	***UNIT STANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level 1	7
REGISTRATION STATUS	***REGISTRATION START DATE***	***REGISTRATION END DATE***	***SAQA DECISION NUMBER***
Draft - Prep for P Comment			

SPECIFIC OUTCOME 1
Demonstrate knowledge and comprehension of Occupational Hygiene in the working place.

SPECIFIC OUTCOME 2
Explain and discuss environmental factors.

SPECIFIC OUTCOME 3
Explain and discuss the evaluation of environmental factors.

SPECIFIC OUTCOME 4
Explain the control of factors influencing occupational hygiene conditions in the working place.

SPECIFIC OUTCOME 5
Explain how to deal with abnormal occupational hygiene conditions in the working place.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of quality principles used in the workplace

SAQA US ID	***UNIT STANDARD TITLE***		
243776	Demonstrate an understanding of quality principles used in the workplace		
SGB		***PROVIDER***	
SGB Mining and Minerals			
FIELD		***SUBFIELD***	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	***UNIT STANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level 1	6
REGISTRATION STATUS	***REGISTRATION START DATE***	***REGISTRATION END DATE***	***SAQA DECISION NUMBER***
Draft - Prep for P			
Comment			

SPECIFIC OUTCOME 1
Define the terms Quality Assurance, Quality Control and Quality Management.

SPECIFIC OUTCOME 2
Explain the requirements and processes used to ensure effective Quality Control.

SPECIFIC OUTCOME 3
Describe the factors that affect product quality.

SPECIFIC OUTCOME 4
Demonstrate an understanding of the consequences of poor quality control.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand the kinds of minerals and related products mined in the South Africa Mining & Minerals Sector and their importance to both the local stakeholders and within the global arena

SAQA US ID	*UNIT STANDARD TITLE*		
243777	Understand the kinds of minerals and related products mined in the South Africa Mining & Minerals Sector and their importance to both the local stakeholders and within the global arena		
SGB		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 1	2
REGISTRATION STATUS	*REGISTRATION START DATE*	*REGISTRATION END DATE*	*SAQA DECISION NUMBER*
Draft - Prep for P Comment			

SPECIFIC OUTCOME 1
Demonstrate basic knowledge and understanding of the typical minerals found in South Africa.

SPECIFIC OUTCOME 2
Demonstrate basic knowledge and understanding of the importance of the **SA** Mining & Minerals to stakeholders in South Africa.

SPECIFIC OUTCOME 3
Demonstrate basic knowledge and understanding of the international importance of the South African minerals industry.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate a basic understanding of the dimension stone industry

SAQA US ID	*UNIT STANDARD TITLE*		
243779	Demonstrate a basic understanding of the dimension stone industry		
SGB		*PROVIDER*	
SGB Mining and Minerals			
FIELD		*SUBFIELD*	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	*UNIT STANDARD TYPE*	*NQF LEVEL*	*CREDITS*
Undefined	Regular	Level 2	2
REGISTRATION STATUS	*REGISTRATION START DATE*	*REGISTRATION END DATE*	*SAQA DECISION NUMBER*
Draft - Prep for P Comment			

SPECIFIC OUTCOME 1
Identify materials used for dimension stone.

SPECIFIC OUTCOME 2
Describe the extraction and processing of dimension stone.

SPECIFIC OUTCOME 3
Describe the nature of dimension stone products and applications.

SPECIFIC OUTCOME 4
Describe the dimension stone operations environment.

SPECIFIC OUTCOME 5
Demonstrate understanding of the statutory issues impacting on the dimension stone environment.

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of the South African mining and mineral sector processes

SAQA US ID	***UNIT STANDARD TITLE***		
243784	Demonstrate an understanding of the South African mining and mineral sector processes		
SGB		***PROVIDER***	
SGB Mining and Minerals			
FIELD		***SUBFIELD***	
6 - Manufacturing, Engineering and Technology		Fabrication and Extraction	
ABET BAND	***UNIT STANDARD TYPE***	***NQF LEVEL***	***CREDITS***
Undefined	Regular	Level 1	***5***
REGISTRATION STATUS	***REGISTRATION START DATE***	***REGISTRATION END DATE***	***SAQA DECISION NUMBER***
Draft - Prep for P Comment			

SPECIFIC OUTCOME 1
Identify and describe the mining phases and their impact on each other.

SPECIFIC OUTCOME 2
Demonstrate knowledge and understanding of the sub-processes of the process decomposition model's operational phase.

SPECIFIC OUTCOME 3
Identify and describe the support services required for the phases.