

Government Gazette Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID-AFRIKA

Vol. 519

Pretoria, 19 September 2008

No. 31428

CONTENTS • INHOUD

<i>No.</i>	<i>Page No.</i>	<i>Gazette No.</i>
------------	---------------------	------------------------

GOVERNMENT NOTICES**South African Qualifications Authority***Government Notices*

984	National Standards Bodies Regulations: Standards Generating Body (SGB) for Electrical Engineering and Construction.....	3	31428
985	do.: do	41	31428
986	do.: Standards Generating Body (SGB) for Human Resource Management and Practices.....	81	31428

GOVERNMENT NOTICES

SOUTH AFRICAN QUALIFICATIONS AUTHORITY

No. 984

19 September 2008



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

Electrical Engineering and 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.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 20 October 2008**. All correspondence should be marked **Standards Setting – Electrical Engineering and Construction** addressed to

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



DR S BHIKHA
DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Electrical Engineering

SAQA QUAL ID	QUALIFICATION TITLE		
63790	National Certificate: Electrical Engineering		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	12 - Physical Planning and Construction	Electrical Infrastructure Construction	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	133	Level 3	Regular-Unit Stds Based

This qualification replaces:

Qual ID	Qualification Title	NQF Level	Min Credits	Replacement Status
48475	National Certificate: Electrical Engineering	Level 3	127	Will occur as soon as 63790 is registered

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

The purpose of this qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to work effectively within various industries, making use of electrical engineering knowledge and skills to meet the challenges of such an environment.

Qualifying learners will also be able to relate their learning to scientific and technological principles and concepts. They will also be able to maintain and support the various policies and procedures related to the safety, health, environment and quality systems that govern their workplace. This qualification will enable the learner to find employment as a skilled worker or become self employed as a single phase worker in the electrical field.

Qualifying learners at NQF Level 3 will be able to:

- > Understand electrical equipment and protection technology and interpret integrated circuit schematics.
- > Install and commission electrical equipment on integrated electrical circuits.
- > Maintain and repair electrical equipment on integrated electrical circuits.
- > Evaluate and solve familiar problems pertaining to electrical equipment, integrated electrical circuits and related processes.
- > Accept responsibility for utilising and maintaining equipment without working under direct supervision.

The status and relevance of this qualification will attract and retain quality learners and employees, and is the second step along a recognised and meaningful career path. Qualifying learners will be able to relate the tasks and processes to scientific and technological principles and concepts. They will also be able to maintain and support the various policies and procedures integral to safety, health and the environment. Learner achievements in this

qualification will also serve as a basis for further learning to engage in more complex installation, maintenance and repair activities and processes.

Rationale:

This is the second of a three-level qualification series that reflect the workplace-based needs of the electrical field that is expressed by employers and employees, both now and for the future. This electrical engineering qualification provides the intermediate competencies required to work on integrated electrical circuits and installations. This qualification provides the learner with accessibility to be employed within the electrical engineering field and provides the flexibility to pursue different careers across various industry sectors and articulate within industries such as:

- > Manufacturing and Engineering.
- > Energy Sector.
- > Mining.
- > Chemical.
- > Transport.
- > Other related engineering industry sectors.

This qualification will enhance the status and productivity of the learner as well as contribute to improved quality, production rate and growth within the engineering sector. The range of typical learners at this level could include individuals preparing to qualify in occupations or trades such as:

- > Electrician.
- > Domestic Appliance Repair.

This intermediate set of skills acquired at NQF Level 3 enables the learner to work on integrated circuits and installations. Further learning at NQF Level 4 will enable the learner to work on integrated systems and installations and operate as a skilled worker performing Artisan duties in the electrical field.

This qualification could assist with the achievement of national government and industrial development policies and strategies to grow a pool of scarce and other related skills in support of sustainable economic growth. People working in the electrical engineering fields require specialized technical skills and knowledge in order to meet the requirements of continually changing environment of the various industries. Through its design, this qualification will meet the needs of learners within the electrical engineering sectors who require technical expertise and essential knowledge needed to earn formal qualifications. This qualification facilitates access for previously disadvantaged groups and other learners to acquire the technical knowledge and skills that are required as well as provide access and mobility into higher-level more specialised occupations. This will allow the learner greater employability and support the development of small and medium enterprises (SME).

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

This qualification assumes learners obtained a National Certificate in Electrical Engineering NQF Level 2 or an equivalent qualification. If the learner does not already have such a qualification, learning in preparation for this qualification would also have to include:

- > Language and Maths at NQF Level 2.
- > Introductory concepts of Science and Technology related to electrical engineering, materials and tools used in installation processes.
- > An ability to install designated electrical equipment and circuits.

- > Occupational health, safety and environmental practices within the electrical environment.
- > An understanding of procedures related to workplace relationships, roles and responsibilities.

Recognition of Prior Learning:

This qualification can be obtained wholly or in part through the recognition of prior learning (RPL). The learner should be thoroughly briefed on the process. Support and guidance should be provided. The process should not be so onerous as to prevent learners from taking up the RPL option in obtaining the qualification.

Access to the Qualification:

Access to this qualification is open and the learner must be physically able to perform the outcomes as specified in the unit standards and be able to differentiate between various colours applicable to the industry. The learner must also have skills related to and knowledge of designated electrical circuits and equipment at NQF Level 2 or equivalent.

QUALIFICATION RULES

Fundamental Component:

The fundamental component consists of 20 credits in the field of Communication and 16 credits in the field of Mathematical Literacy. All unit Standards in the fundamental component are compulsory.

Core Component:

The compulsory unit standards in the Core Component of this qualification reflect the generic competencies required in the field of Electrical Engineering for all industrial environments. The learner must demonstrate competence in the Core Component for the total of 77 credits.

Elective Component:

This component consists of several specialisations each with its own set of unit standards. Learners are to choose a specialisation area and complete a minimum of 20 credits from the unit standards listed under that specialisation area so as to attain a minimum of 133 credits required for certification purposes.

Specialisation Area 1:

Mining:

Unit Standard Title; Level; Credits:

- > Design and Install Electrical Wire Ways; NQF Level 3; 8 Credits.
- > Fault Find, Test and Repair Domestic Appliances; NQF Level 3; 6 Credit.
- > Inspect, operate and maintain high mast lighting structures; NQF Level 3; 7 Credits.
- > Install/replace mini substations and ring-main units/switches; NQF Level 3; 6 credits.
- > Install batteries; NQF Level 3; 4 Credits.
- > Install or replace Medium Voltage transformers; NQF Level 3; 6 Credits.
- > Perform work on energised low voltage networks; NQF Level 3; 8 Credits.
- > Operate on MV radial networks; NQF Level 3; 20 Credits.
- > Construct, maintain and dismantle MV overhead lines; NQF Level 3; 14 Credits.
- > Maintain electrical mini substations; NQF Level 3; 3 Credits.
- > Carry out a detailed inspection and repair defects on explosion prevention apparatus; NQF Level 3; 6 Credits.
- > Use and care for MV electrical test instruments; NQF Level 3; 3 Credits.

- > Test, diagnose and locate a fault on a MV/HV electrical cable; NQF Level 3; 9 Credits.
- > Isolate a 3 phase transformer and carry out tap changes; NQF Level 3; 2 Credits.
- > Maintain the electrical system of a surface mining production machine; NQF Level 3; 5 Credits.
- > Maintain the electrical system of winder installations; NQF Level 3; 5 Credits.
- > Maintain the electrical system of conveyor installations; NQF Level 3; 5 Credits.
- > Install and maintain an electrical supply unit in a production section; NQF Level 3; 5 Credits.

Specialisation Area 2:

Electrical Construction:

Unit Standard Title; Level; Credits:

- > Design and Install Electrical Wire Ways; NQF Level 3; 8 Credits.
- > Perform work on energised low voltage networks; NQF Level 3; 8 Credits.
- > Install and maintain a solar hot water system; NQF Level 3; 5 Credits.
- > Demonstrate an understanding of energy efficiency; NQF Level 3; 4 Credits.
- > Lower, inspect, service and maintain a stand - alone battery charging wind turbine; NQF Level 3; 5 Credits.
- > Fault find and repair a stand - alone battery charging wind turbine; NQF Level 3; 5 Credits.
- > Operate on MV radial networks; NQF Level 3; 20 Credits.
- > Use a Graphical User Interface (GUI)-based spreadsheet application to create and edit spreadsheets; NQF Level 2; 4 Credits.
- > Complete certificate of compliance for a single phase domestic installation; NQF Level 4; 5 Credits.
- > Produce business plans for a new venture; NQF Level 4; 8 Credits.
- > Manage finances of a new venture; NQF Level 4; 5 Credits.
- > Tender to secure business for a new venture; NQF Level 4; 5 Credits.
- > Apply the principles of costing and pricing to a business venture; NQF Level 4; 6 Credits.
- > Demonstrate an understanding of an entrepreneurial profile; NQF Level 4; 5 Credits.
- > Interpret basic financial statements; NQF Level 4; 3 Credits.

Specialisation Area 3:

Chemical:

Unit Standard Title; Level; Credits:

- > Design and Install Electrical Wire Ways; NQF Level 3; 8 Credits.
- > Perform work on energised low voltage networks; NQF Level 3; 8 Credits.
- > Carry out a detailed inspection and repair defects on explosion prevention apparatus; NQF Level 3; 6 Credits.

Specialisation Area 4:

Electrical Distribution:

Unit Standard Title; Level; Credits:

- > Maintain and repair a high voltage security fence system; NQF Level 3; 4 Credits.
- > Fault Find, Test and Repair Domestic Appliances; NQF Level 3; 6 Credit.
- > Construct, maintain and dismantle MV overhead lines; NQF Level 3; 14 Credits.
- > Install/replace mini substations and ring-main units/switches; NQF Level 3; 6 Credits.
- > Install or replace Medium Voltage transformers; NQF Level 3; 6 Credits.

- > Perform work on energised low voltage networks; NQF Level 3; 8 Credits.
- > Maintain electrical mini substations; NQF Level 3; 3 Credits.
- > Use and care for MV electrical test instruments; NQF Level 3; 3 Credits.
- > Test, diagnose and locate a fault on a MV/HV electrical cable; NQF Level 3; 9 Credits.
- > Isolate a 3 phase transformer and carry out tap changes; NQF Level 3; 2 Credits.
- > Demonstrate an understanding of energy efficiency; NQF Level 3; 4 Credits.
- > Operate on MV radial networks; NQF Level 3; 20 Credits.

Specialisation Area 5:

Electrical Generation:

Unit Standard Title; Level; Credits:

- > Maintain and repair a high voltage security fence system; NQF Level 3; 4 Credits.
- > Fault Find, Test and Repair Domestic Appliances; NQF Level 3; 6 Credits.
- > Install batteries; NQF Level 3; 4 Credits.
- > Install or replace Medium Voltage transformers; NQF Level 3; 6 Credits.
- > Maintain electrical mini substations; NQF Level 3; 3 Credits.
- > Test, diagnose and locate a fault on a MV/HV electrical cable; NQF Level 3; 9 Credits.
- > Isolate a 3 phase transformer and carry out tap changes; NQF Level 3; 2 Credits.
- > Maintain the electrical system of conveyor installations; NQF Level 3; 5 Credits.
- > Demonstrate an understanding of energy efficiency; NQF Level 3; 4 Credits.

Specialisation Area 6:

Transport:

Unit Standard Title; Level; Credits:

- > Design and Install Electrical Wire Ways; NQF Level 3; 8 Credits.
- > Fault find a photovoltaic supplied system; NQF Level 3; 8 Credits.
- > Fault Find, Test and Repair Domestic Appliances; NQF Level 3; 6 Credits.
- > Inspect, operate and maintain high mast lighting structures; NQF Level 3; 7 Credits.
- > Construct, maintain and dismantle MV overhead lines; NQF Level 3; 14 Credits.
- > Install/replace mini substations and ring-main units/switches; NQF Level 3; 6 Credits.
- > Install batteries; NQF Level 3; 4 Credits.

Specialisation Area 7:

Renewable Energy:

Unit Standard Title; Level; Credits:

- > Fault find a photovoltaic supplied system; NQF Level 3; 8 Credits.
- > Install and maintain a solar hot water system; NQF Level 3; 5 Credits.
- > Demonstrate an understanding of energy efficiency; NQF Level 3; 4 Credits.
- > Lower, inspect, service and maintain a stand - alone battery charging wind turbine; NQF Level 3; 5 Credits.
- > Fault find and repair a stand - alone battery charging wind turbine; NQF Level 3; 5 Credits.

EXIT LEVEL OUTCOMES

1. Install and commission electrical equipment in integrated circuits.

2. Demonstrate the ability to test, fault find, maintain and repair electrical equipment and installations in integrated circuits.
3. Demonstrate operational knowledge of mathematical, technological and theoretical concepts during the execution of tasks with an ability to read, interpret technical drawings, sketch electrical/electronic wiring diagrams and construct basic electronic circuits.
4. Apply safety procedures as embedded in each unit standard.
5. Demonstrate the ability to gather and interpret information from a range of sources and apply solutions to familiar problems related to working in the electrical engineering field with some scope for personal decision-making and responsibility.

Critical Cross-Field Outcomes:

These are embedded in the unit standards, which make up the qualification and are thus also reflected in the Exit Level Outcomes of the qualification.

The Critical Cross-Field Outcomes are supported by the Exit Level Outcomes as follows:

Identifying and solving problems in which responses display that responsible decisions using critical thinking have been made:

- > Solving problems related to the installation and maintenance of electrical machinery, components and circuits.

Working effectively with others as a member of a team, group, organization and community:

- > All tasks and work-related experience are performed within a team environment.
- > Taking into account, the safety of others.
- > Communicating with production, quality control and supervisory personnel and/or clients.

Organising and managing oneself and one's activities responsibly and effectively:

- > Related to planning and preparation for installation and maintenance activities.
- > Developing best practice behaviour in work performance and adhering to standard operating procedures.
- > Focussing on housekeeping, safe practices and care and storage of tools and equipment.

Collecting, analyzing, organizing and critically evaluating information:

- > Completion of technical reports related to the job activity.
- > Interpret findings to solve familiar problems during the execution of electrical tasks.

Communicating effectively using visual, mathematical and/or language skills:

- > Execution of commands and completion of technical reports related to the job activity.
- > Communicating as a part of a team.

Using science and technology effectively and critically, showing responsibility toward the environment and health of others:

- > Application of science and technology during the installation and maintenance of electrical machinery, components and circuits.
- > Relating to the safety of others and paying attention to environmental issues.

- > Solving problems and applying science and technology to the job activity.

Demonstrate an understanding of the world as a set of related systems by recognizing that problem contexts do not exist in isolation:

- > Integrating the task with the functionality of electrical installations.
- > Solving problems through the integration of various sources of information.
- > Demonstrating and understanding of related systems through the use of general and specific channels of communication when dealing with peers, production, quality control and supervisory personnel and/or clients.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

- 1.1 Components and equipment relating to the installation of integrated electrical circuits are identified and installed according to specifications.
- 1.2 Components and equipment in integrated electrical circuits are connected according to diagrams.
- 1.3 Relevant control/protection devices are selected and applied according to safe operating parameters.
- 1.4 Integrated circuit installations are commissioned according to statutory requirements.

Associated Assessment Criteria for Exit Level Outcome 2:

- 2.1 Integrated electrical circuits to be worked on are isolated and secured according to work procedures.
- 2.2 Integrated electrical circuits and components are inspected for non-conformance.
- 2.3 Correct operation of equipment in integrated electrical circuits is tested and verified according to requirements.
- 2.4 Faults are identified and faulty equipment in integrated electrical circuits is repaired or replaced according to work procedures.
- 2.5 Electrical equipment and installations are maintained and repaired according to work procedures.
- 2.6 Conditions in integrated electrical circuits are monitored and recorded according to work procedures.

Associated Assessment Criteria for Exit Level Outcome 3:

- 3.1 Principles of electrical engineering are applied in the interpretation and problem solving of integrated circuit electrical drawings and diagrams.
- 3.2 The principles and operation of protection in integrated electrical circuits are demonstrated in accordance with circuit and equipment specifications.
- 3.3 Basic electronic circuits are interpreted and constructed according to circuit diagrams and components provided.

Associated Assessment Criteria for Exit Level Outcome 4:

- 4.1 Oral and written instructions are interpreted and carried out as required by relevant electrical and safety procedures.
- 4.2 Communication with superiors, peers and clients is conducted effectively according to industry procedures.
- 4.3 Knowledge of statutory requirements pertaining to integrated installations and equipment is applied in accordance with relevant codes.
- 4.5 Relevant on-site health and safety requirements are demonstrated as required.

Associated Assessment Criteria for Exit Level Outcome 5:

- 5.1 Known solutions to familiar and simple unfamiliar problems within the electrical construction and maintenance environment are identified and applied according to standard practices.
- 5.2 Energy efficiency and related environmental issues that enable the learner to resolve problems in the work environment are identified and discussed.
- 5.3 Written reports on basic problems and hazards are drafted according to work procedures.

Integrated Assessment:

Integrated assessment during the implementation of this qualification provides an opportunity for learners to show that they are able to integrate knowledge, skills and values integral to a range of unit standards and practical contexts. Some assessment aspects will demand practical demonstration.

Assessors will be required to collect evidence of the learner's competence by:

- > Observing the learner at work (both in primary activities, as well as other interactions) or by relevant simulations.
- > Asking questions and initiating formative discussions to assess understanding.
- > Evaluating records and reports.

A detailed portfolio of evidence is required to prove the practical, applied and foundational competencies of the learner.

INTERNATIONAL COMPARABILITY

This qualification forms part of a progression across the three levels of the Further Education and Training band. The international comparability section for the field of Electrical Engineering applies to Levels 2, 3 and 4 of the qualification series.

The qualification series was compared to similar outcomes-based qualifications in New Zealand, Australia, United Kingdom, and to some African countries in the Southern African Development Community (SADC); Mozambique, Namibia, Botswana, Zimbabwe, as well as countries in the East African Community (EAC); Kenya, Tanzania and Uganda.

SADC:

Mozambique, Zimbabwe and Zambia:

Amongst the Southern African Development Community (SADC) there are countries which align with the United Kingdom's model of Vocational Education and Training (VET), through the London City and Guilds qualification framework and the National Vocational Qualification system (NVQ). Despite the fact that SADC countries are not as industrialised as the United Kingdom, it could be concluded that countries using the British qualifications compare favourably to similar South African qualifications as discussed under the U.K. section. In all SADC countries researched, none currently have an active training infrastructure in electrical engineering.

Botswana:

The Botswana Training Authority website provides information on the development and co-ordination of an integrated and standards-based vocational training system. At this present time, focus on the development of standards-based qualifications through a Botswana Vocation Education and Training System (BVET) has focused on the Wholesale and Retail and Tourism sectors.

Currently, electricians in Botswana are trained through the apprenticeship system. The length and duration of the practical and theoretical components differ slightly to the South African

apprenticeship system, but the learning competencies are similar, with a focus on the predominant diamond mining and small local manufacturing and engineering industries.

Namibia:

There are currently no qualifications or unit standards for electrical training registered on the Namibian Training Framework.

EAC:

In Kenya, Tanzania, and Uganda, the three member states of the East African Community (EAC), no comparable qualification systems and related infrastructure could be identified.

Through enquiry and research in the Mining and Chemical sectors, it has been established that training, in the field of electrical engineering, of foreign nationals from Mozambique, Nigeria, Tanzania as well as, Zambia and Zimbabwe employed in International companies, takes place in South Africa. These candidates are trained in-house and achieve company certificates for Unit Standards completed.

New Zealand:

The South African 'National Certificate: Electrical Engineering Level 2 has elements of both Levels 2 and 3 of the New Zealand 'National Certificate in Electrical Engineering'. Although NZ qualifications are also unit standard based, the focus of the NZ unit standards at Level 2 [NQF Ref: 0174] and 3 [NQF Ref: 0223] is largely on knowledge acquisition whereas the practical competencies are assessed only at Level 4.

In New Zealand, a learner could register for the Level 4 qualification over a 3-4 year period and be awarded the Level 2 and 3 certificates as well because the Level 4 NZ qualification shares credit/unit standards with both Levels 2 and 3 qualifications. Holders of the NZ NC in Electrical Engineering (Electrician for Registration) (Level 4) [NQF Ref: 1195] can apply to the Electrical Workers Registration Board (EWRB) for electrical registration and practising license. The SA Electrical Engineering qualifications in comparison require competencies achieved at Levels 2 and 3 or through RPL processes to gain entry to Level 4 and a further trade test before full licensing is achieved. The NZ Level 5 qualification [NQF Ref: 0951] focuses mainly on management skills and business skills in the elective component but the core electrical unit standards are similar to the level of those in the SA Level 4 qualification.

United Kingdom:

To qualify as an electrician in the U.K. the learner must have the Electrotechnical Services NVQ at Level 3, which is awarded by City & Guilds (2356) and EMTA Awards Limited. As another option in England, Wales and Northern Ireland, an apprentice between the ages of 16-19 may sign up with an electrical contractor or building company. An alternative for those not eligible for apprenticeship or direct access into the NVQ is the City & Guilds (2330) Technical Certificate in Electrotechnical Technology Levels 2 and 3 at a college. Graduates would then need to gain employment in the industry to complete the NVQ. These technical certificates would compare with the SA National certificates: Electrical Engineering Levels 2 & 3. The NVQ (Level 3) compares with the SA Level 4 qualification.

Australia:

The following information was obtained on the website: <http://www.ntis.au> (National Information Training System) with regards to qualifications in electrical engineering training streams in Australia.

"Australian Apprenticeships" is the new name for the scheme formerly known as 'New Apprenticeships'.

Australian Apprenticeships encompass all apprenticeships and traineeships. They combine time at work with training and can be full-time, part-time or school-based. The change of name and appearance is the first step in a range of improvements to be introduced in Australian Apprenticeships. The qualifications for electricians cover:

- > ASCO4311-11 General Electrician.
- > ANZSCO341111 Electrician (General).

Comments:

> Apprenticeships and VET programmes: In all the examples found, learning is vocational-based. In some countries (England, Scotland, New Zealand and Australia) these are called "modern apprenticeships". These take the form of two categories, namely a programme-led apprenticeship where learners are able to follow a vocational programme at a college and then seek employment as trainees/apprentice/interns in order to qualify as artisans; and an employer-led apprenticeship, in which learners are engaged in a formal contract of learning and most learning is workplace-based. In most cases learners "earn while they learn".

> International qualifications researched, do not lead to three different qualifications, but in most cases culminate in one qualification over a four-year period. It is only in the vocational context, that we find the tendency to "break up" the traditional trades into levels of learning. This practice is endemic of those countries which have a close association with outcomes-based methodology and standards-based qualifications development.

References:

- > New Zealand: (www.nzqa.govt.nz).
- > Australia: (www.ntis.gov.au; www.aqf.edu.au).
- > U.K.: (www.aset.ac.uk; www.learn-direct-advise.co.uk).
- > Botswana: (www.bota.org.bw; www.unesco.org).
- > Namibia: (www.nta.com).

ARTICULATION OPTIONS

The qualification was designed to enable qualifying learners to move from one engineering context to another and still get recognition for successful learning achievements in the previous context. This means that credit accumulation towards certification could be obtained across industries.

Vertical Articulation:

- > ID 48474: National Certificate: Electrical Engineering NQF Level 4.

Horizontal Articulation:

- > ID 49056: National Certificate: Domestic Appliance Repair NQF Level 3.
- > Fundamental learning at this level applies to equivalent credit accrual for engineering-related qualifications at NQF Level 3.

MODERATION OPTIONS

- > Anyone assessing a learner against this qualification must be registered as an assessor with a relevant ETQA.

- > Any institution or learning provider offering learning towards the achievement of this qualification should be accredited as a provider with a relevant ETQA.
- > Moderation of assessment should be overseen by a relevant ETQA according to the moderation guidelines provided for in this qualification, as well as the agreed ETQA guidelines.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by a relevant ETQA as a minimum requirement:

1. Assessors should be in possession of an appropriate qualification, namely:
 - > Electrical Engineering at NQF Level 4 and a minimum of 2 years related experience.
 - > An artisan qualification in Electrical Engineering (Trade test certificate or completed contract of apprenticeship) with a minimum of 2 years related experience.

OR

 - > Subject matter experience, which may be established through recognition of prior learning (RPL).
2. Evidence of competency in a unit standard related to assessment theory, processes and practices.
3. Good inter-personal skills and the ability to:
 - > Maintain national and local industry standards.
 - > Act in the interest of the learner.
 - > Understand the need for transformation to redress the legacies of the past.
 - > Respect the cultural background and language of the learner.
4. Registration as an assessor with a relevant ETQA.

NOTES

This unit standard replaces unit standard 48475, "National Certificate: Electrical Engineering", Level 3, 127 credits.

This qualification is the result of the combined review process which considered the following qualifications and replaces the following:

- > ID 48475: National Certificate: Electrical Engineering NQF Level 3.
- > ID 13640: Chemical Electrical NQF Level 3.

A generic qualification was developed to give meaning to NQF objectives to provide articulation possibilities, enable learners to get recognition for learning achievements across economic sub-sectors and to support the notion of life long learning.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119472	Accommodate audience and context needs in oral/signed communication	Level 3	5
Fundamental	9010	Demonstrate an understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations	Level 3	2
Fundamental	9013	Describe, apply, analyse and calculate shape and motion in 2-and 3-dimensional space in different contexts	Level 3	4
Fundamental	119457	Interpret and use information from texts	Level 3	5
Fundamental	9012	Investigate life and work related problems using data and probabilities	Level 3	5

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119467	Use language and communication in occupational learning programmes	Level 3	5
Fundamental	7456	Use mathematics to investigate and monitor the financial aspects of personal, business and national issues	Level 3	5
Fundamental	119465	Write/present/sign texts for a range of communicative contexts	Level 3	5
Core	259078	Install and commission electrical metering units, measuring instruments and control devices	Level 2	8
Core	10270	Construct Basic Electronic Circuits	Level 3	4
Core	258966	Inspect and test a single phase domestic installation	Level 3	10
Core	259077	Install and commission direct-on-line AC rotating machines and control gear	Level 3	10
Core	259038	Maintain and repair direct-on-line AC rotating machines and control gear	Level 3	8
Core	258965	Maintain lighting systems	Level 3	4
Core	9530	Manage work time effectively	Level 3	3
Core	258959	Operate on Low Voltage networks	Level 3	12
Core	258961	Repair and maintain electric power tools	Level 3	6
Core	258977	Understand basic electronic theory and components	Level 3	4
Core	258968	Wire and commission domestic or commercial electrical circuits	Level 3	8
Elective	10244	Maintain and repair a high voltage security fence system	Level 2	4
Elective	258918	Select, use and care for electrical measuring and testing instruments	Level 2	4
Elective	116937	Use a Graphical User Interface (GUI)-based spreadsheet application to create and edit spreadsheets	Level 2	4
Elective	259097	Carry out a detailed inspection and repair defects on explosion prevention apparatus	Level 3	6
Elective	258969	Construct, maintain and dismantle Medium Voltage overhead networks	Level 3	14
Elective	116674	Demonstrate an understanding of energy efficiency	Level 3	4
Elective	259037	Design and install electrical wire ways	Level 3	8
Elective	258924	Fault Find, Test and Repair Domestic Appliances	Level 3	6
Elective	113869	Fault find a photovoltaic supplied system	Level 3	8
Elective	113875	Inspect, operate and maintain high mast lighting structures	Level 3	7
Elective	258964	Inspect, test and maintain earthing and negative return systems on 3-kV DC traction substations	Level 3	7
Elective	114660	Install Medium Voltage transformers	Level 3	6
Elective	116678	Install and maintain a solar hot water system	Level 3	5
Elective	258963	Install and maintain an electrical supply unit in a production section	Level 3	5
Elective	258997	Install batteries	Level 3	4
Elective	258958	Install or replace mini substations and ring-main units/switches	Level 3	6
Elective	258930	Isolate a three-phase transformer and carry out tap changes	Level 3	2
Elective	259057	Maintain the electrical system of a surface mining production machine	Level 3	5
Elective	259018	Maintain the electrical system of conveyor installations	Level 3	5
Elective	258940	Maintain the electrical system of winder installations	Level 3	5
Elective	259058	Perform work on energised Low Voltage networks	Level 3	8
Elective	259117	Test and maintain electrical mini substations	Level 3	3
Elective	258933	Test, diagnose and locate a fault on a high voltage electrical cable	Level 3	9
Elective	114594	Apply the principles of costing and pricing to a business venture	Level 4	6
Elective	113898	Complete certificate of compliance for a single phase domestic installation	Level 4	5
Elective	114598	Demonstrate an understanding of an entrepreneurial profile	Level 4	5
Elective	113884	Fault find and repair a stand-alone battery charging wind turbine	Level 4	5
Elective	117156	Interpret basic financial statements	Level 4	4
Elective	113885	Lower, inspect service and maintain a stand-alone battery charging wind turbine	Level 4	5
Elective	114586	Manage finances of a new venture	Level 4	5

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	113900	Operate on Medium Voltage radial networks	Level 4	20
Elective	114592	Produce business plans for a new venture	Level 4	8
Elective	114593	Tender to secure business for a new venture	Level 4	5

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION

None



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Fault Find, Test and Repair Domestic Appliances***

SAQA US ID	UNIT STANDARD TITLE		
258924	Fault Find, Test and Repair Domestic Appliances		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10268	Fault Find, Test and Repair Domestic Appliances	Level 3	6	Will occur as soon as 258924 is registered

SPECIFIC OUTCOME 1

Plan to do fault finding and repair to domestic appliances.

SPECIFIC OUTCOME 2

Conduct fault finding and testing of domestic appliances.

SPECIFIC OUTCOME 3

Repair domestic appliances.

SPECIFIC OUTCOME 4

Conclude appliance repair.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Isolate a three-phase transformer and carry out tap changes

SAQA US ID	UNIT STANDARD TITLE		
258930	Isolate a three-phase transformer and carry out tap changes		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	2

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the requirements pertaining to tap changing.

SPECIFIC OUTCOME 2

Prepare to change tap settings.

SPECIFIC OUTCOME 3

Change tap settings.

SPECIFIC OUTCOME 4

Restore power, and perform reporting and housekeeping duties.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Test, diagnose and locate a fault on a high voltage electrical cable***

SAQA US ID	UNIT STANDARD TITLE		
258933	Test, diagnose and locate a fault on a high voltage electrical cable		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	9

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
11775	Test, diagnose and locate a fault on a high voltage electrical cable	Level 3	9	Will occur as soon as 258933 is registered

SPECIFIC OUTCOME 1

Explain the requirements pertaining to testing and fault location on high voltage cables.

SPECIFIC OUTCOME 2

Prepare to test.

SPECIFIC OUTCOME 3

Test and locate fault.

SPECIFIC OUTCOME 4

Perform reporting and housekeeping practices.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain the electrical system of winder installations

SAQA US ID		UNIT STANDARD TITLE	
258940		Maintain the electrical system of winder installations	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the factors critical to maintaining the electrical system of winder installations.

SPECIFIC OUTCOME 2

Prepare to maintain the electrical system of winder installations.

SPECIFIC OUTCOME 3

Maintain the electrical system of winder installations.

SPECIFIC OUTCOME 4

Test the electrical system of winder operations and prepare for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install or replace mini substations and ring-main units/switches***

SAQA US ID	UNIT STANDARD TITLE		
258958	Install or replace mini substations and ring-main units/switches		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113891	Install / replace mini substations and ring-main units / switches	Level 3	6	Will occur as soon as 258958 is registered

SPECIFIC OUTCOME 1

Plan to install mini substation, ring-main unit or switch.

SPECIFIC OUTCOME 2

Prepare to install mini substation, ring-main unit or switch.

SPECIFIC OUTCOME 3

Remove the mini substation, ring-main unit or switch.

SPECIFIC OUTCOME 4

Install mini substation, ring-main unit or switch.

SPECIFIC OUTCOME 5

Complete work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Operate on Low Voltage networks

SAQA US ID	UNIT STANDARD TITLE		
258959	Operate on Low Voltage networks		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	12

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113865	Operate on low voltage networks	Level 3	12	Will occur as soon as 258959 is registered

SPECIFIC OUTCOME 1

Plan and prepare to operate on Low Voltage networks.

SPECIFIC OUTCOME 2

Switch apparatus on Low Voltage networks.

SPECIFIC OUTCOME 3

Isolate apparatus on Low Voltage networks.

SPECIFIC OUTCOME 4

Safety test and earth apparatus on Low Voltage networks.

SPECIFIC OUTCOME 5

Restore supply to Low Voltage networks.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Repair and maintain electric power tools***

SAQA US ID	UNIT STANDARD TITLE		
258961	Repair and maintain electric power tools		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
14135	Repair and maintain electric power tools	Level 3	3	Will occur as soon as 258961 is registered

SPECIFIC OUTCOME 1

Plan to repair and maintain electrical power tools.

SPECIFIC OUTCOME 2

Prepare to repair and maintain electrical power tools.

SPECIFIC OUTCOME 3

Testing and fault finding on electrical power tools.

SPECIFIC OUTCOME 4

Repair and maintain electrical power tools.

SPECIFIC OUTCOME 5

Complete repairs and maintenance to electrical power tools.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install and maintain an electrical supply unit in a production section***

SAQA US ID	UNIT STANDARD TITLE		
258963	Install and maintain an electrical supply unit in a production section		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the factors critical to install and maintain an electrical supply unit in a production section.

SPECIFIC OUTCOME 2

Prepare to install and maintain an electrical supply unit in a production section.

SPECIFIC OUTCOME 3

Install and maintain an electrical supply unit in a production section.

SPECIFIC OUTCOME 4

Test the electrical supply unit and prepare for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Inspect, test and maintain earthing and negative return systems on 3-kV DC traction substations

SAQA US ID	UNIT STANDARD TITLE		
258964	Inspect, test and maintain earthing and negative return systems on 3-kV DC traction substations		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	7

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Communicate clearly and concisely without misunderstanding with relevant role players and complete relevant documentation.

SPECIFIC OUTCOME 2

Plan to maintain earthing and negative return systems on 3-kV DC traction substations.

SPECIFIC OUTCOME 3

Prepare to maintain earthing and negative return systems on 3-kV DC traction substations.

SPECIFIC OUTCOME 4

Inspect and maintain earthing and negative return systems on 3-kV DC traction substations.

SPECIFIC OUTCOME 5

Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain lighting systems

SAQA US ID	UNIT STANDARD TITLE		
258965	Maintain lighting systems		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10269	Maintain lighting System	Level 3	4	Will occur as soon as 258965 is registered

SPECIFIC OUTCOME 1

Explain the requirements pertaining to maintaining lighting systems.

SPECIFIC OUTCOME 2

Prepare to maintain a lighting system.

SPECIFIC OUTCOME 3

Maintain lighting systems.

SPECIFIC OUTCOME 4

Prepare and test the maintained lighting systems for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Inspect and test a single phase domestic installation

SAQA US ID	UNIT STANDARD TITLE		
258966	Inspect and test a single phase domestic installation		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	10

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113893	Test and inspect a single phase domestic installation	Level 3	10	Will occur as soon as 258966 is registered

SPECIFIC OUTCOME 1

Plan the electrical installation tests to be done.

SPECIFIC OUTCOME 2

Inspect the electrical installation.

SPECIFIC OUTCOME 3

Test the electrical installation.

SPECIFIC OUTCOME 4

Complete the required test and inspection documentation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Wire and commission domestic or commercial electrical circuits

SAQA US ID	UNIT STANDARD TITLE		
258968	Wire and commission domestic or commercial electrical circuits		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10265	Wire and commission domestic electrical circuits	Level 3	8	Will occur as soon as 258968 is registered

SPECIFIC OUTCOME 1

Plan to wire and commission domestic or commercial circuits.

SPECIFIC OUTCOME 2

Prepare to wire and commission domestic or commercial circuits.

SPECIFIC OUTCOME 3

Wire domestic or commercial circuits.

SPECIFIC OUTCOME 4

Commission domestic or commercial circuits.

SPECIFIC OUTCOME 5

Complete the wiring and commissioning of domestic or commercial circuits.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Core 63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Construct, maintain and dismantle Medium Voltage overhead networks

SAQA US ID		UNIT STANDARD TITLE	
258969		Construct, maintain and dismantle Medium Voltage overhead networks	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	14

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Plan and prepare to construct, maintain and dismantle Medium Voltage networks.

SPECIFIC OUTCOME 2

Construct Medium Voltage networks.

SPECIFIC OUTCOME 3

Inspect, maintain and repair Medium Voltage networks.

SPECIFIC OUTCOME 4

Dismantle Medium Voltage networks.

SPECIFIC OUTCOME 5

Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand basic electronic theory and components

SAQA US ID	UNIT STANDARD TITLE		
258977	Understand basic electronic theory and components		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114406	Understand basic electronic theory and components	Level 3	4	Will occur as soon as 258977 is registered

SPECIFIC OUTCOME 1

Understand and explain electron theory in terms of current flow.

SPECIFIC OUTCOME 2

Understand and explain the operation of basic electronic components.

SPECIFIC OUTCOME 3

Understand the operation of a P-N junction diode.

SPECIFIC OUTCOME 4

Understand the operation and function of power supplies.

SPECIFIC OUTCOME 5

Understand the operation and application of a transistor.

SPECIFIC OUTCOME 6

Understand the principles of opto-electronics and its applications.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install batteries***

SAQA US ID	UNIT STANDARD TITLE		
258997	Install batteries		
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113902	Install batteries	Level 3	4	Will occur as soon as 258997 is registered

SPECIFIC OUTCOME 1

Plan work task.

SPECIFIC OUTCOME 2

Prepare work area.

SPECIFIC OUTCOME 3

Installation of batteries.

SPECIFIC OUTCOME 4

Complete work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain the electrical system of conveyor installations

SAQA US ID		UNIT STANDARD TITLE	
259018		Maintain the electrical system of conveyor installations	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the factors critical to maintain electrical system of conveyor installations.

SPECIFIC OUTCOME 2

Prepare to maintain electrical system of conveyor installations.

SPECIFIC OUTCOME 3

Maintain electrical system of conveyor installations.

SPECIFIC OUTCOME 4

Test the maintained electrical system of conveyor installations.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Design and install electrical wire ways***

SAQA US ID	UNIT STANDARD TITLE		
259037	Design and install electrical wire ways		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10258	Design and Install Electrical Wire Ways	Level 3	8	Will occur as soon as 259037 is registered

SPECIFIC OUTCOME 1

Plan to install electrical wire ways.

SPECIFIC OUTCOME 2

Prepare to install electrical wire ways.

SPECIFIC OUTCOME 3

Install electrical wire ways.

SPECIFIC OUTCOME 4

Complete the installation of wire ways.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain and repair direct-on-line AC rotating machines and control gear

SAQA US ID	UNIT STANDARD TITLE		
259038	Maintain and repair direct-on-line AC rotating machines and control gear		
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
14134	Maintain and repair single phase AC machines and control gear	Level 3	6	Will occur as soon as 259038 is registered

SPECIFIC OUTCOME 1

Explain the requirements pertaining to maintaining and repairing direct-on-line AC rotating machines and control gear.

SPECIFIC OUTCOME 2

Prepare to maintain and repair direct-on-line AC rotating machines and control gear.

SPECIFIC OUTCOME 3

Maintain and repair direct-on-line AC rotating machines and control gear.

SPECIFIC OUTCOME 4

Test the direct-on-line AC rotating machines and control gear for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Core 63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain the electrical system of a surface mining production machine

SAQA US ID	UNIT STANDARD TITLE		
259057	Maintain the electrical system of a surface mining production machine		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the factors critical to maintaining the electrical system of a surface mining machine.

SPECIFIC OUTCOME 2

Prepare to maintain the electrical system of a surface mining production machine.

SPECIFIC OUTCOME 3

Maintain the electrical system of a surface mining production machine.

SPECIFIC OUTCOME 4

Test the electrical system of a surface mining production machine and prepare for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Perform work on energised Low Voltage networks

SAQA US ID	UNIT STANDARD TITLE		
259058	Perform work on energised Low Voltage networks		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113889	Perform work on energised low voltage networks	Level 3	8	Will occur as soon as 259058 is registered

SPECIFIC OUTCOME 1

Prepare to do work on energised Low Voltage networks.

SPECIFIC OUTCOME 2

Perform work on energised Low Voltage networks.

SPECIFIC OUTCOME 3

Complete the work task.

SPECIFIC OUTCOME 4

Carry out routine inspections of equipment used for work on energised Low Voltage networks.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install and commission direct-on-line AC rotating machines and control gear

SAQA US ID	UNIT STANDARD TITLE		
259077	Install and commission direct-on-line AC rotating machines and control gear		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	10

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10261	Install and Commission Single Phase AC Machines and Control Gear	Level 3	8	Will occur as soon as 259077 is registered

SPECIFIC OUTCOME 1

Plan and prepare for the work task.

SPECIFIC OUTCOME 2

Install direct-on-line AC rotating machines and control gear.

SPECIFIC OUTCOME 3

Connect direct-on-line AC rotating machines and control gear.

SPECIFIC OUTCOME 4

Commission direct-on-line AC rotating machines and control gear.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Core 63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install and commission electrical metering units, measuring instruments and control devices

SAQA US ID	UNIT STANDARD TITLE		
259078	Install and commission electrical metering units, measuring instruments and control devices		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10260	Install and commission electrical measuring instruments and control devices	Level 3	5	Will occur as soon as 259078 is registered

SPECIFIC OUTCOME 1

Explain the procedure and requirements to install electrical metering units or measuring instruments and control devices.

SPECIFIC OUTCOME 2

Plan to install and connect electrical metering units or measuring instruments with their relative control devices.

SPECIFIC OUTCOME 3

Prepare, install and connect electrical metering units or measuring instruments and control devices.

SPECIFIC OUTCOME 4

Commission electrical metering units or measuring instruments.

SPECIFIC OUTCOME 5

Complete work activity.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out a detailed inspection and repair defects on explosion prevention apparatus

SAQA US ID	UNIT STANDARD TITLE		
259097	Carry out a detailed inspection and repair defects on explosion prevention apparatus		
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	6

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the requirements pertaining to a detailed inspection on explosion prevention apparatus.

SPECIFIC OUTCOME 2

Prepare to inspect the apparatus.

SPECIFIC OUTCOME 3

Inspect and repair the apparatus.

SPECIFIC OUTCOME 4

Restore the apparatus to operational status.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Test and maintain electrical mini substations

SAQA US ID	UNIT STANDARD TITLE		
259117	Test and maintain electrical mini substations		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the factors critical to carry out a detailed electrical inspection on a mini substation.

SPECIFIC OUTCOME 2

Prepare to inspect a mini substation.

SPECIFIC OUTCOME 3

Inspect the mini substation.

SPECIFIC OUTCOME 4

Test the mini substation and prepare for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63790	National Certificate: Electrical Engineering	Level 3

No. 985

19 September 2008

**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

Electrical Engineering and 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.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 20 October 2008**. All correspondence should be marked **Standards Setting – Electrical Engineering and 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@saga.org.za

DR S BHIKHA

DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

QUALIFICATION:
National Certificate: Electrical Engineering

SAQA QUAL ID		QUALIFICATION TITLE	
63789		National Certificate: Electrical Engineering	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
QUALIFICATION TYPE	FIELD	SUBFIELD	
National Certificate	12 - Physical Planning and Construction	Electrical Infrastructure Construction	
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS
Undefined	140	Level 2	Regular-Unit Stds Based

This qualification replaces:

Qual ID	Qualification Title	NQF Level	Min Credits	Replacement Status
48473	National Certificate: Electrical Engineering	Level 2	143	Will occur as soon as 63789 is registered

PURPOSE AND RATIONALE OF THE QUALIFICATION

Purpose:

The purpose of this qualification is to provide learners, education and training providers and employers with the standards and the range of learning required to work effectively within various industries, making use of electrical engineering knowledge and skills to meet the challenges of such an environment.

Qualifying learners will also be able to relate their learning to scientific and technological principles and concepts. They will also be able to maintain and support the various policies and procedures related to the safety, health, environment and quality systems that govern their workplace.

Qualifying learners at NQF Level 2 will be able to perform trade-related skills, with specific reference to:

- > Use engineering tools, measuring instruments and electrical technology.
- > Read, interpret and produce basic electrical engineering drawings and circuits.
- > Apply hand skills applicable to electrical installation and maintenance.
- > Understand and apply basic electrical installation assembly techniques to install, maintain, repair, overhaul or recondition designated circuits, electrical machines and sub-components.
- > Understand basic electrical theory and the application in relation to the maintenance and function of machines.

With this understanding, learners will be able to participate in workplace activities. The foundational learning in this Qualification would serve as a basis for further learning where they will engage in more advanced installation, maintenance and repair activities.

Rationale:

This is the first of a three-level qualification series that reflect the workplace-based needs of the electrical field that is expressed by employers and employees, both now and for the future. This electrical engineering qualification provides the foundational competencies required to work on designated electrical circuits and installations. This qualification provides the learner with accessibility to be employed within the electrical engineering field and provides the flexibility to pursue different careers across various industry sectors and articulate within industries such as:

- > Manufacturing and Engineering.
- > Energy Sector.
- > Mining.
- > Chemical.
- > Transport.
- > Other related engineering industry sectors.

This qualification will enhance the status and productivity of the learner as well as contribute to improved quality, production rate and growth within relevant electrical sectors. The range of typical learners at this level could include individuals preparing to qualify in occupations or trades such as:

- > Electrician.
- > Domestic Appliance Repair.

This electrical engineering qualification provides the foundational competencies required to work on designated electrical circuits and installations. An intermediate set of skills to work on integrated circuits and installations would be acquired at NQF Level 3 with the learner able to work on integrated systems and installations and operate as a skilled worker performing Artisan duties in the electrical field upon graduating at NQF Level 4.

This qualification could assist with the achievement of national government and industrial development policies and strategies to grow a pool of scarce and other related skills in support of sustainable economic growth. People working in the electrical engineering fields require specialized technical skills and knowledge in order to meet the requirements of continually changing environment of the various industries. Through its design, this qualification will meet the needs of learners within the electrical engineering sectors who require technical expertise and essential knowledge needed to earn formal qualifications. This qualification facilitates access for previously disadvantaged groups and other learners to acquire the technical knowledge and skills that are required as well as provide access and mobility into higher-level more specialised occupations. This will allow the learner greater employability and support the development of small and medium enterprises (SME).

RECOGNIZE PREVIOUS LEARNING?

Y

LEARNING ASSUMED IN PLACE

It is assumed that learners are already competent in:

- > Communication and Mathematical Literacy at NQF Level 1.
- > Basic concepts of Natural and/or Engineering Science and Technology.
 - > The term 'Basic' throughout the Qualification refers to 'Base, Fundamental, simplest or lowest in-level' and is consistent in literature dealing with electricity.

Recognition of Prior Learning:

This qualification can be obtained wholly or in part through the recognition of prior learning (RPL). The learner should be thoroughly briefed on the process. Support and guidance should

be provided. The process should not be so onerous as to prevent learners from taking up the RPL option in obtaining the qualification.

Access to the Qualification:

Access to this qualification is open. However, it is assumed that learners have completed a National Certificate at NQF Level 1 in a trade-related sub-field or an equivalent qualification. The learner must be physically able to perform the outcomes as specified in the unit standards and be able to differentiate between various colours applicable to the industry.

QUALIFICATION RULES

Fundamental Component:

The fundamental component consists of 20 credits in the field of Communication and 16 credits in the field of Mathematical Literacy. All unit Standards in the fundamental component are compulsory.

Core Component:

The compulsory unit standards in the Core Component of this qualification reflect the generic competencies required in the field of Electrical Engineering for all industrial environments. The learner must demonstrate competence in the Core Component for the total of 84 credits.

Elective Component:

This component consists of several specialisations each with its own set of unit standards. Learners are to choose a specialisation area and complete a minimum of 20 credits from the unit standards listed under that specialisation area so as to attain a minimum of 140 credits required for certification purposes.

Specialisation area 1:

Mining:

Unit Standard Title; Level; Credits:

- > Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
- > Carry out basic gas welding, brazing and cutting in an electrical environment; Level 2; 8 Credits.
- > Handle and Care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
- > Identify, handle and assemble Medium or High voltage line hardware and related materials; Level 2; 4 Credits.
- > Inspect and clean Medium or High voltage yards and enclosures; Level 2; 2 Credits.
- > Carry out a detailed inspection on an overhead trolley line; Level 2; 4 Credits.
- > Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
- > Install low voltage transformers; Level 2; 6 Credits.
- > Construct, maintain and dismantle LV overhead networks; Level 2; 10 Credits.
- > Carry out close inspection and repair defects on a flameproof enclosure; Level 2; 2 Credits.
- > Carry out a detailed inspection on an isolated overhead line; Level 2; 3 Credits.

Specialisation area 2:

Electrical Construction:

Unit Standard Title; Level; Credits:

- > Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
- > Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
- > Operate a personal computer system; Level 1; 3 Credits.
- > Use a Graphical User Interface (GUI)-based word processor to create and edit documents; Level 1; 4 Credits.
- > Construct, maintain and dismantle LV overhead networks; Level 2; 10 Credits.

Specialisation area 3:

Chemical:

Unit Standard Title; Level; Credits:

- > Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources; Level 2; 3 Credits.
- > Handle and care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
- > Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
- > Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
- > Carry out close inspection and repair defects on a flameproof enclosure; Level 2; 2 Credits.

Specialisation area 4:

Electrical Distribution:

Unit Standard Title; Level; Credits:

- > Ensure safety at road works; Level 2; 2 Credits.
- > Handle and care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
- > Identify, handle and assemble Medium or High voltage line hardware and related materials; Level 2; 4 Credits.
- > Inspect and clean Medium or High voltage yards and enclosures; Level 2; 2 Credits.
- > Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
- > Maintain servitudes, wayleaves and clearances; Level 2; 5 Credits.
- > Construct, maintain and dismantle LV overhead networks; Level 2; 10 Credits.
- > Carry out a detailed inspection on an isolated overhead line; Level 2; 3 Credits.

Specialisation area 5:

Electrical Generation:

Unit Standard Title; Level; Credits:

- > Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.
- > Perform basic fire fighting Level 2; 4 Credits.
- > Perform basic first aid Level 2; 4 Credits.
- > Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
- > Install low voltage transformers; Level 2; 6 Credits.

Specialisation area 6:

Transport:

Unit Standard Title; Level; Credits:

- > Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
- > Carry out basic gas welding, brazing and cutting in an electrical environment; Level 2; 8 Credits.
- > Install low voltage transformers; Level 2; 6 Credits.
- > Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources; Level 2; 3 Credits.
- > Handle and care for portable electrical earthing gear and related equipment; Level 2; 2 Credits.
- > Maintain batteries, battery rooms or tripping rooms; Level 2; 7 Credits.

Specialisation area 7:

Renewable Energy:

Unit Standard Title; Level; Credits:

- > Carry out basic electric arc welding in an electrical environment; Level 2; 8 Credits.
- > Develop a learning plan and a portfolio for assessment; Level 2; 6 Credits.
- > Install low voltage transformers; Level 2; 6 Credits.
- > Operate a personal computer system; Level 1; 3 Credits.
- > Use a Graphical User Interface (GUI)-based word processor to create and edit documents; Level 1; 4 Credits.
- > Install and commission photovoltaic supplied water pump; Level 2; 3 Credits.
- > Inspect, service and maintain a photovoltaic supplied pump; Level 2; 2 Credits.

EXIT LEVEL OUTCOMES

1. Understand the procedures for electrical installations and be able to install electrical equipment and installations and select, use and maintain basic tools.
2. Demonstrate the ability to carry out routine maintenance on electrical equipment and installations.
3. Demonstrate a basic operational knowledge of mathematical, technological and theoretical concepts during the execution of tasks with an ability to read, interpret technical drawings and sketch basic electrical wiring diagrams.
4. Operate safely and efficiently in a working environment.
5. Apply known solutions to familiar and well-defined problems related to working in the electrical engineering field with a basic understanding of forms of energy, energy efficiency and safety and environmental awareness.

Critical Cross-Field Outcomes:

These are embedded in the unit standards, which make up the qualification and are thus also reflected in the Exit Level Outcomes of the qualification.

The critical cross-field outcomes are supported by the exit level outcomes as follows:

Identifying and solving problems in which responses display that responsible decisions using critical thinking have been made:

- > Solving problems related to the installation and maintenance of electrical machinery, components and circuits.

Working effectively with others as a member of a team, group, organization and community:

- > All tasks and work-related experience are performed within a team environment.
- > Taking into account, the safety of others.
- > Communicating with production, quality control and supervisory personnel and/or clients.

Organising and managing oneself and one's activities responsibly and effectively:

- > Related to planning and preparation for installation and maintenance activities.
- > Developing best practice behaviour in work performance and adhering to standard operating procedures.
- > Focussing on housekeeping, safe practices and care and storage of tools and equipment.

Collecting, analyzing, organizing and critically evaluating information:

- > Completion of technical reports related to the job activity.
- > Interpret findings to solve familiar problems during the execution of electrical tasks.

Communicating effectively using visual, mathematical and/or language skills:

- > Execution of commands and completion of technical reports related to the job activity.
- > Communicating as a part of a team.

Using science and technology effectively and critically, showing responsibility toward the environment and health of others:

- > Application of science and technology during the installation and maintenance of electrical machinery, components and circuits.
- > Relating to the safety of others and paying attention to environmental issues.
- > Solving problems and applying science and technology to the job activity.

Demonstrate an understanding of the world as a set of related systems by recognizing that problem contexts do not exist in isolation:

- > Integrating the task with the functionality of electrical installations.
- > Solving problems through the integration of various sources of information.
- > Demonstrating and understanding of related systems through the use of general and specific channels of communication when dealing with peers, production, quality control and supervisory personnel and/or clients.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

- 1.1 Knowledge of and an understanding of tools, components and equipment is demonstrated relating to installation of designated circuits/wire ways.
- 1.2 The application, identification and installation of different types and sizes of cables, conductors and cable accessories is understood in the context of designated circuits.
- 1.3 The application of, identification and installation of different types of wire ways, luminaries and measuring instruments is undertaken in accordance with drawings, plans and specified requirements.
- 1.4 Appropriate hand tools, power tools (fixed and portable), components and measuring instruments are selected and used in accordance with standard operating procedures.
- 1.5 Knowledge of and application of statutory requirements pertaining to designated installations is demonstrated.

Associated Assessment Criteria for Exit Level Outcome 2:

- 2.1 Designated circuits to be worked on are isolated and secure.
- 2.2 Correct application of cleaning materials, solvents and appliances is demonstrated.
- 2.3 The principles and operation of circuit and equipment protection is demonstrated in designated circuits.
- 2.4 Cleaning and inspection Isolated electrical equipment is cleaned and inspected and repairs are carried out in designated circuits and components.

Associated Assessment Criteria for Exit Level Outcome 3:

- 3.1 Basic principles of electricity are understood and applied to designated circuits and equipment.
- 3.2 Electrical drawings and diagrams relating to designated circuits are read and interpreted.
- 3.3 Principles of operation of electrical components utilised in designated circuits are understood and described.
- 3.4 Electrical units of measurement are understood and utilised in the context of designated circuits.

Associated Assessment Criteria for Exit Level Outcome 4:

- 4.1 Verbal and simple written instructions are understood and executed in the performance of the designated task.
- 4.2 Peers and supervisors communicate effectively with in an effective manner in the workplace.
- 4.3 Efficient operation as a team member is demonstrated.
- 4.4 Knowledge and understanding of personal and occupational health and safety practices in a commercial, industrial or domestic energy environment is applied according to standard operating procedures and safety requirements.
- 4.5 Basic problems and hazards are recognised and verbally reported accorded to workplace requirements.
- 4.6 Specified reporting and recording requirements are complied in respect of:
 - a. Reporting to supervisor.
 - b. Submitting reports.

Associated Assessment Criteria for Exit Level Outcome 5:

- 5.1 Known solutions to familiar and well-defined problems within the electrical construction and maintenance environment are identified and applied according to standard practices.
- 5.2 Energy efficiency and related environmental issues that enable a learner to resolve problems in the work environment are identified and discussed.

Integrated Assessment:

Integrated assessment during the implementation of this qualification provides an opportunity for learners to show that they are able to integrate knowledge, skills and values integral to a range of unit standards and practical contexts. Some assessment aspects will demand practical demonstration.

Assessors will be required to collect evidence of the learner's competence by:

- > Observing the learner at work (both in primary activities, as well as other interactions) or by relevant simulations.
- > Asking questions and initiating formative discussions to assess understanding.
- > Evaluating records and reports.

A detailed portfolio of evidence is required to prove the practical, applied and foundational competencies of the learner.

INTERNATIONAL COMPARABILITY

This qualification forms part of a progression across the three levels of the Further Education and Training band. The international comparability section for the field of Electrical Engineering applies to NQF Levels 2, 3 and 4 of the qualification series.

The qualification series was compared to similar outcomes-based qualifications in New Zealand, Australia, United Kingdom, and to some African countries in the Southern African Development Community (SADC); Mozambique, Namibia, Botswana, Zimbabwe, as well as countries in the East African Community (EAC); Kenya, Tanzania and Uganda.

SADC:

Mozambique, Zimbabwe and Zambia:

Amongst the Southern African Development Community (SADC) there are countries which align with the United Kingdom's model of Vocational Education and Training (VET), through the London City and Guilds qualification framework and the National Vocational Qualification system (NVQ). Despite the fact that SADC countries are not as industrialised as the United Kingdom, it could be concluded that countries using the British qualifications compare favourably to similar South African qualifications as discussed under the U.K. section. In all SADC countries researched, none currently have an active training infrastructure in electrical engineering.

Botswana:

The Botswana Training Authority website provides information on the development and co-ordination of an integrated and standards-based vocational training system. At this present time, focus on the development of standards-based qualifications through a Botswana Vocation Education and Training System (BVET) has focused on the Wholesale and Retail and Tourism sectors.

Currently, electricians in Botswana are trained through the apprenticeship system. The length and duration of the practical and theoretical components differ slightly to the South African apprenticeship system, but the learning competencies are similar, with a focus on the predominant diamond mining and small local manufacturing and engineering industries.

Namibia:

There are currently no qualifications or unit standards for electrical training registered on the Namibian Training Framework.

EAC:

In Kenya, Tanzania, and Uganda, the three member states of the East African Community (EAC), no comparable qualification systems and related infrastructure could be identified.

Through enquiry and research in the Mining and Chemical sectors, it has been established that training, in the field of electrical engineering, of foreign nationals from Mozambique, Nigeria, Tanzania as well as, Zambia and Zimbabwe employed in International companies, takes place in South Africa. These candidates are trained in-house and achieve company certificates for Unit Standards completed.

New Zealand:

The South African 'National Certificate: Electrical Engineering Level 2 has elements of both Levels 2 and 3 of the New Zealand 'National Certificate in Electrical Engineering'. Although NZ qualifications are also unit standard based, the focus of the NZ unit standards at Level 2 [NQF Ref: 0174] and 3 [NQF Ref: 0223] is largely on knowledge acquisition whereas the practical competencies are assessed only at Level 4.

In New Zealand, a learner could register for the Level 4 qualification over a 3-4 year period and be awarded the Level 2 and 3 certificates as well because the level 4 NZ qualification shares credit/unit standards with both levels 2 and 3 qualifications. Holders of the NZ NC in Electrical Engineering (Electrician for Registration) (Level 4) [NQF Ref: 1195] can apply to the Electrical Workers Registration Board (EWRB) for electrical registration and practising license. The SA Electrical Engineering qualifications in comparison require competencies achieved at levels 2 and 3 or through RPL processes to gain entry to level 4 and a further trade test before full licensing is achieved. The NZ level 5 qualification [NQF Ref: 0951] focuses mainly on management skills and business skills in the elective component but the core electrical unit standards are similar to the level of those in the SA Level 4 qualification.

United Kingdom:

To qualify as an electrician in the U.K. the learner must have the Electrotechnical Services NVQ at Level 3, which is awarded by City & Guilds (2356) and EMTA Awards Limited. As another option in England, Wales and Northern Ireland, an apprentice between the ages of 16-19 may sign up with an electrical contractor or building company. An alternative for those not eligible for apprenticeship or direct access into the NVQ is the City & Guilds (2330) Technical Certificate in Electrotechnical Technology Levels 2 and 3 at a college. Graduates would then need to gain employment in the industry to complete the NVQ. These technical certificates would compare with the SA National certificates: Electrical Engineering Levels 2 & 3. The NVQ (Level 3) compares with the SA Level 4 qualification.

Australia:

The following information was obtained on the website: <http://www.ntis.au> (National Information Training System) with regards to qualifications in electrical engineering training streams in Australia.

"Australian Apprenticeships" is the new name for the scheme formerly known as 'New Apprenticeships'.

Australian Apprenticeships encompass all apprenticeships and traineeships. They combine time at work with training and can be full-time, part-time or school-based. The change of name and appearance is the first step in a range of improvements to be introduced in Australian Apprenticeships. The qualifications for electricians cover:

- > ASCO4311-11 General Electrician.
- > ANZSCO341111 Electrician (General).

Comments:

> Apprenticeships and VET programmes: In all the examples found, learning is vocational-based. In some countries (England, Scotland, New Zealand and Australia) these are called "modern apprenticeships". These take the form of two categories, namely a programme-led apprenticeship where learners are able to follow a vocational programme at a college and then seek employment as trainees/apprentice/interns in order to qualify as artisans; and an employer-led apprenticeship, in which learners are engaged in a formal contract of learning and most learning is workplace-based. In most cases learners "earn while they learn".

> International qualifications researched, do not lead to three different qualifications, but in most cases culminate in one qualification over a four-year period. It is only in the vocational context, that we find the tendency to "break up" the traditional trades into levels of learning. This practice is endemic of those countries which have a close association with outcomes-based methodology and standards-based qualifications development.

References:

- > New Zealand: www.nzqa.govt.nz.
- > Australia: www.ntis.gov.au; www.aqf.edu.au.
- > U.K.: www.aset.ac.uk; www.learn-direct-advise.co.uk.
- > Botswana: www.bota.org.bw; www.unesco.org.
- > Namibia: www.nta.com.

ARTICULATION OPTIONS

The qualification was designed to enable qualifying learners to move from one electrical engineering context to another and still get recognition for successful learning achievements in the previous context. This means that credit accumulation towards certification could be obtained across industries.

Vertical articulation:

- > ID 63790: National Certificate: Electrical Engineering, NQF Level 3.
- > ID 49056: National Certificate: Domestic Appliance Repair, NQF Level 3.

Horizontal articulation:

Fundamental learning at this level applies to equivalent credit accrual for engineering-related qualifications at NQF Level 2. Other horizontal articulation options may exist and need further investigation in cases where recognition of prior learning is sought.

MODERATION OPTIONS

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

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The following criteria should be applied by a relevant ETQA as a minimum requirement:

Assessors should be in possession of an appropriate qualification, namely:

- > Electrical Engineering at least NQF Level 3 or higher and a minimum of 2 years related experience.
- Or
- > An artisan qualification in Electrical Engineering (Trade test certificate or completed contract of apprenticeship) with a minimum of 2 years related experience.
- Or
- > Subject matter experience, which may be established through recognition of prior learning (RPL).

Evidence of competency in a unit standard related to assessment theory, processes and practices.

Good inter-personal skills and the ability to:

- > Maintain national and local industry standards.
- > Act in the interest of the learner.
- > Understand the need for transformation.
- > Respect for the cultural background and language of the learner.

Registration as an assessor with a relevant ETQA.

NOTES

This qualification replaces qualification 48473, "National Certificate: Electrical Engineering", Level 2, 143 credits.

A generic qualification was developed to give meaning to NQF objectives to provide articulation possibilities, enable learners to get recognition for learning achievements across.

UNIT STANDARDS

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Fundamental	119463	Access and use information from texts	Level 2	5
Fundamental	9009	Apply basic knowledge of statistics and probability to influence the use of data and procedures in order to investigate life related problems	Level 2	3
Fundamental	7480	Demonstrate understanding of rational and irrational numbers and number systems	Level 2	3
Fundamental	9008	Identify, describe, compare, classify, explore shape and motion in 2-and 3-dimensional shapes in different contexts	Level 2	3
Fundamental	119454	Maintain and adapt oral/signed communication	Level 2	5
Fundamental	119460	Use language and communication in occupational learning programmes	Level 2	5
Fundamental	7469	Use mathematics to investigate and monitor the financial aspects of personal and community life	Level 2	2
Fundamental	9007	Work with a range of patterns and functions and solve problems	Level 2	5
Fundamental	119456	Write/present for a defined context	Level 2	5
Core	258925	Apply and maintain safety in a working environment	Level 2	5
Core	258932	Apply soldering techniques	Level 2	2
Core	258935	Design and construct a single phase circuit	Level 2	5
Core	12466	Explain the individual's role within business	Level 2	4
Core	259017	Identify, inspect, clean and maintain electrical rotating machines	Level 2	6
Core	258957	Identify, inspect, use, maintain and care for engineering hand tools	Level 2	6
Core	258960	Install electric wire ways	Level 2	6
Core	258942	Install luminaires	Level 2	4
Core	258919	Install or replace electrical metering units or measuring instrument	Level 2	4
Core	258921	Install, join and terminate Low Voltage cables and conductors	Level 2	8
Core	258937	Install, maintain or replace Low Voltage distribution boards, protection devices and components	Level 2	6
Core	258962	Maintain transformers	Level 2	5
Core	9881	Mark off basic regular engineering shapes	Level 2	6
Core	258918	Select, use and care for electrical measuring and testing instruments	Level 2	4
Core	10255	Select, use and care for power tools	Level 2	5
Core	258967	Understand fundamentals of electricity	Level 2	8
Elective	116932	Operate a personal computer system	Level 1	3

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Elective	116938	Use a Graphical User Interface (GUI)-based word processor to create and edit documents	Level 1	4
Elective	258931	Carry out a close inspection and repair defects on a flameproof enclosure	Level 2	2
Elective	258929	Carry out a detailed electrical inspection on an isolated overhead line	Level 2	3
Elective	110387	Carry out a detailed inspection on an overhead trolley line	Level 2	4
Elective	258939	Carry out basic electric arc welding in an electrical environment	Level 2	8
Elective	258920	Carry out basic gas welding, brazing and cutting in an electrical environment	Level 2	8
Elective	258936	Construct, maintain and dismantle Low Voltage overhead networks	Level 2	10
Elective	258928	Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources such as gas	Level 2	3
Elective	12465	Develop a learning plan and a portfolio for assessment	Level 2	6
Elective	258923	Ensure safety at road works in urban areas	Level 2	2
Elective	258938	Handle and care for portable electrical earthing gear and related equipment	Level 2	2
Elective	258922	Identify, handle and assemble Medium or High Voltage line hardware and related materials	Level 2	4
Elective	258941	Inspect and clean Medium or High voltage yards and enclosures	Level 2	2
Elective	258926	Inspect service and maintain a photovoltaic supplied pump	Level 2	3
Elective	258927	Install and commission photovoltaic supplied water pump	Level 2	3
Elective	10234	Install low voltage transformers	Level 2	6
Elective	258917	Maintain batteries, battery rooms or tripping units	Level 2	7
Elective	258934	Maintain servitudes, wayleaves and clearances	Level 2	5
Elective	113859	Repair and service small gas appliances	Level 2	4

LEARNING PROGRAMMES RECORDED AGAINST THIS QUALIFICATION**None**



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain batteries, battery rooms or tripping units

SAQA US ID	UNIT STANDARD TITLE		
258917	Maintain batteries, battery rooms or tripping units		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	7

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114671	Maintain batteries and battery rooms	Level 2	7	Will occur as soon as 258917 is registered

SPECIFIC OUTCOME 1

Plan work task.

SPECIFIC OUTCOME 2

Prepare work area.

SPECIFIC OUTCOME 3

Inspect, clean and record data of a battery.

SPECIFIC OUTCOME 4

Inspect and clean battery room or tripping unit.

SPECIFIC OUTCOME 5

Completion of work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:**Select, use and care for electrical measuring and testing instruments**

SAQA US ID	UNIT STANDARD TITLE		
258918	Select, use and care for electrical measuring and testing instruments		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10237	Select, use and care for electrical measuring instruments	Level 2	4	Will occur as soon as 258918 is registered

SPECIFIC OUTCOME 1

Identify and read fixed electrical measuring instruments.

SPECIFIC OUTCOME 2

Identify and select portable electrical measuring instruments.

SPECIFIC OUTCOME 3

Use and interpret portable electrical measuring instrument readings.

SPECIFIC OUTCOME 4

Care for portable electrical measuring instruments.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2
Elective	63790	National Certificate: Electrical Engineering	Level 3



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install or replace electrical metering units or measuring instrument***

SAQA US ID		UNIT STANDARD TITLE		
258919		Install or replace electrical metering units or measuring instrument		
ORIGINATOR		PROVIDER		
SGB Electrical Engineering & Construction				
FIELD		SUBFIELD		
12 - Physical Planning and Construction		Electrical Infrastructure Construction		
ABET BAND		UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined		Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10233	Install or replace electrical metering units or measuring instrument	Level 2	4	Will occur as soon as 258919 is registered

SPECIFIC OUTCOME 1

Plan to Install and/or replace an electrical metering units or measuring instruments.

SPECIFIC OUTCOME 2

Install a metering unit or measuring instrument.

SPECIFIC OUTCOME 3

Replace a metering unit or measuring instrument.

SPECIFIC OUTCOME 4

Complete the Installing and/or replacing of a metering unit or measuring instrument on a panel.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out basic gas welding, brazing and cutting in an electrical environment

SAQA US ID	UNIT STANDARD TITLE		
258920	Carry out basic gas welding, brazing and cutting in an electrical environment		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114616	Carry out basic gas welding, brazing and cutting in an electrical environment	Level 2	8	Will occur as soon as 258920 is registered

SPECIFIC OUTCOME 1

Prepare for gas welding, brazing or cutting.

SPECIFIC OUTCOME 2

Apply basic gas welding techniques.

SPECIFIC OUTCOME 3

Describe and demonstrate the brazing process.

SPECIFIC OUTCOME 4

Apply basic gas cutting process.

SPECIFIC OUTCOME 5

Conclude the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Install, join and terminate Low Voltage cables and conductors*

SAQA US ID	UNIT STANDARD TITLE		
258921	Install, join and terminate Low Voltage cables and conductors		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114388	Install, joint and terminate Low Voltage cables and conductors	Level 3	8	Will occur as soon as 258921 is registered

SPECIFIC OUTCOME 1

Plan to install, join and terminate Low Voltage cables and conductors.

SPECIFIC OUTCOME 2

Prepare to install, join and terminate Low Voltage cables and conductors.

SPECIFIC OUTCOME 3

Install electrical cables and conductors.

SPECIFIC OUTCOME 4

Join low voltage cables.

SPECIFIC OUTCOME 5

Terminate electrical cables and conductors.

SPECIFIC OUTCOME 6

Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Core 63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify, handle and assemble Medium or High Voltage line hardware and related materials

SAQA US ID	UNIT STANDARD TITLE		
258922	Identify, handle and assemble Medium or High Voltage line hardware and related materials		
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113872	Identify, handle and assemble medium / high voltage line hardware and related materials	Level 2	4	Will occur as soon as 258922 is registered

SPECIFIC OUTCOME 1

Identify and handle the appropriate Medium or High Voltage line hardware.

SPECIFIC OUTCOME 2

Identify and handle the appropriate Medium Voltage equipment.

SPECIFIC OUTCOME 3

Assemble Medium or High Voltage line hardware.

SPECIFIC OUTCOME 4

Identify and handle related materials used during Medium or High Voltage line hardware assembly.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Ensure safety at road works in urban areas***

SAQA US ID	UNIT STANDARD TITLE		
258923	Ensure safety at road works in urban areas		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
13622	Ensure safety at road works in urban areas	Level 2	2	Will occur as soon as 258923 is registered

SPECIFIC OUTCOME 1

Plan the work task.

SPECIFIC OUTCOME 2

Ensure the safe loading and offloading of equipment and workers on vehicles for transporting.

SPECIFIC OUTCOME 3

Set-up temporary road signs.

SPECIFIC OUTCOME 4

Completion of the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Apply and maintain safety in a working environment***

SAQA US ID	UNIT STANDARD TITLE		
258925	Apply and maintain safety in a working environment		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
9839	Apply and maintain safety in an electrical environment	Level 1	5	Will occur as soon as 258925 is registered

SPECIFIC OUTCOME 1

Adhere to safety signs, regulations and procedures related to a working environment.

SPECIFIC OUTCOME 2

Care for safety equipment.

SPECIFIC OUTCOME 3

Follow appropriate safety procedures before, during and after job processes.

SPECIFIC OUTCOME 4

Report and record safety anomalies in accordance with worksite procedures.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Core 63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Inspect service and maintain a photovoltaic supplied pump***

SAQA US ID	UNIT STANDARD TITLE		
258926	Inspect service and maintain a photovoltaic supplied pump		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113864	Inspect service and maintain a photovoltaic supplied pump	Level 2	2	Will occur as soon as 258926 is registered

SPECIFIC OUTCOME 1

Plan to service and maintain a photovoltaic supplied pump.

SPECIFIC OUTCOME 2

Prepare to service and maintain a stand-alone photovoltaic supplied pump.

SPECIFIC OUTCOME 3

Service and maintain photovoltaic supplied pump.

SPECIFIC OUTCOME 4

Conclude the maintenance of a photovoltaic supplied pump.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install and commission photovoltaic supplied water pump

SAQA US ID	UNIT STANDARD TITLE		
258927	Install and commission photovoltaic supplied water pump		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113871	Install and commission photovoltaic supplied pump	Level 2	3	Will occur as soon as 258927 is registered

SPECIFIC OUTCOME 1

Plan to install and commission water pump.

SPECIFIC OUTCOME 2

Prepare to install, connect and commission a photovoltaic supplied water pump.

SPECIFIC OUTCOME 3

Install and connect a photovoltaic supplied water pump.

SPECIFIC OUTCOME 4

Connect a photovoltaic supplied water pump.

SPECIFIC OUTCOME 5

Commission a photovoltaic supplied water pump.

SPECIFIC OUTCOME 6

Complete installation, connection and commissioning of a photovoltaic supplied water pump.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources such as gas

SAQA US ID	UNIT STANDARD TITLE		
258928	Demonstrate an understanding of the uses and safety aspect associated with flammable energy sources such as gas		
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

The correct storage of flammable energy sources.

SPECIFIC OUTCOME 2

The correct procedures are followed concerning safety aspects.

SPECIFIC OUTCOME 3

Flammable energy sources are used safely.

SPECIFIC OUTCOME 4

Maintenance of appliances.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out a detailed electrical inspection on an isolated overhead line

SAQA US ID	UNIT STANDARD TITLE		
258929	Carry out a detailed electrical inspection on an isolated overhead line		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	3

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
116644	Carry out a detailed electrical inspection on an isolated overhead line	Level 2	3	Will occur as soon as 258929 is registered

SPECIFIC OUTCOME 1

Explain the requirements pertaining to the detailed inspection on an isolated overhead line.

SPECIFIC OUTCOME 2

Prepare to inspect the isolated overhead line.

SPECIFIC OUTCOME 3

Inspect the overhead line.

SPECIFIC OUTCOME 4

Test the overhead line and prepare for operation and/or production.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Carry out a close inspection and repair defects on a flameproof enclosure*

SAQA US ID		UNIT STANDARD TITLE	
258931		Carry out a close inspection and repair defects on a flameproof enclosure	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the requirements pertaining to a close inspection on flameproof enclosures.

SPECIFIC OUTCOME 2

Prepare to inspect the enclosure.

SPECIFIC OUTCOME 3

Inspect and repair the enclosure.

SPECIFIC OUTCOME 4

Perform reporting and housekeeping duties.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Apply soldering techniques***

SAQA US ID	UNIT STANDARD TITLE		
258932	Apply soldering techniques		
ORIGINATOR			PROVIDER
SGB Electrical Engineering & Construction			
FIELD			SUBFIELD
12 - Physical Planning and Construction			Electrical Infrastructure Construction
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113863	Apply soldering techniques	Level 2	2	Will occur as soon as 258932 is registered

SPECIFIC OUTCOME 1

Plan work task.

SPECIFIC OUTCOME 2

Prepare for soldering.

SPECIFIC OUTCOME 3

Perform soldering.

SPECIFIC OUTCOME 4

Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain servitudes, wayleaves and clearances

SAQA US ID	UNIT STANDARD TITLE		
258934	Maintain servitudes, wayleaves and clearances		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113851	Maintain servitudes, wayleaves and clearances	Level 2	5	Will occur as soon as 258934 is registered

SPECIFIC OUTCOME 1

Plan and prepare for maintenance of servitudes and wayleaves.

SPECIFIC OUTCOME 2

Maintain servitudes, wayleaves and clearances.

SPECIFIC OUTCOME 3

Maintain access gates, roads and prevent soil erosion.

SPECIFIC OUTCOME 4

Conclude the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Design and construct a single phase circuit

SAQA US ID	UNIT STANDARD TITLE		
258935	Design and construct a single phase circuit		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
11954	Design and construct a single phase circuit	Level 2	5	Will occur as soon as 258935 is registered

SPECIFIC OUTCOME 1

Identify symbols and components.

SPECIFIC OUTCOME 2

Sketch a basic circuit diagram.

SPECIFIC OUTCOME 3

Construct single-phase circuits.

SPECIFIC OUTCOME 4

Complete task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Construct, maintain and dismantle Low Voltage overhead networks

SAQA US ID		UNIT STANDARD TITLE	
258936		Construct, maintain and dismantle Low Voltage overhead networks	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	10

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Plan and prepare to construct, maintain and dismantle Low Voltage networks.

SPECIFIC OUTCOME 2

Construct Low Voltage networks.

SPECIFIC OUTCOME 3

Inspect, maintain and repair Low Voltage networks.

SPECIFIC OUTCOME 4

Dismantle Low Voltage networks.

SPECIFIC OUTCOME 5

Complete the work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install, maintain or replace Low Voltage distribution boards, protection devices and components

SAQA US ID	UNIT STANDARD TITLE		
258937	Install, maintain or replace Low Voltage distribution boards, protection devices and components		
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10248	Replace faulty components in a distribution board	Level 2	3	Will occur as soon as 258937 is registered
10254	Maintain electrical distribution boards, panels and enclosures	Level 2	6	Will occur as soon as 258937 is registered
10605	Inspect and clean a distribution board	Level 2	3	Will occur as soon as 258937 is registered
10607	Install a distribution board	Level 2	2	Will occur as soon as 258937 is registered
10634	Install or replace an earth leakage unit in a low voltage circuit	Level 2	3	Will occur as soon as 258937 is registered

SPECIFIC OUTCOME 1

Plan and prepare to install, maintain or replace Low Voltage distribution boards, protection devices and components.

SPECIFIC OUTCOME 2

Maintain Low Voltage distribution boards, protection devices and components.

SPECIFIC OUTCOME 3

Install or replace Low Voltage distribution boards, protection devices and components.

SPECIFIC OUTCOME 4

Conclude the maintenance of Low Voltage distribution boards, protective devices and components.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Handle and care for portable electrical earthing gear and related equipment

SAQA US ID	UNIT STANDARD TITLE		
258938	Handle and care for portable electrical earthing gear and related equipment		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113868	Handle and care of electrical earthing gear and related equipment	Level 2	2	Will occur as soon as 258938 is registered

SPECIFIC OUTCOME 1

Demonstrate knowledge of portable electrical earthing gear.

SPECIFIC OUTCOME 2

Identify and handle portable electrical earthing gear.

SPECIFIC OUTCOME 3

Inspect and care of portable earthing gear.

SPECIFIC OUTCOME 4

Inspect, handle and care of insulated operating rods.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Carry out basic electric arc welding in an electrical environment

SAQA US ID	UNIT STANDARD TITLE		
258939	Carry out basic electric arc welding in an electrical environment		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
114669	Carry out basic electric arc welding in an electrical environment	Level 2	8	Will occur as soon as 258939 is registered

SPECIFIC OUTCOME 1

Prepare the electric arc welding equipment for the task.

SPECIFIC OUTCOME 2

Prepare the metal surfaces for electric arc welding.

SPECIFIC OUTCOME 3

Apply basic electric arc welding techniques.

SPECIFIC OUTCOME 4

Conclude the task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Elective	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Inspect and clean Medium or High voltage yards and enclosures***

SAQA US ID		UNIT STANDARD TITLE	
258941		Inspect and clean Medium or High voltage yards and enclosures	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	2

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113887	Inspect and clean medium / high voltage yards and enclosures	Level 2	2	Will occur as soon as 258941 is registered

SPECIFIC OUTCOME 1

Plan to inspect and clean Medium or High Voltage yards and enclosures.

SPECIFIC OUTCOME 2

Inspect Medium or High Voltage yards, enclosures and conduct minor repairs where necessary.

SPECIFIC OUTCOME 3

Clean Medium or High Voltage yards and enclosures.

SPECIFIC OUTCOME 4

Conclude the task of inspecting and cleaning of Medium or High voltage yards and enclosures.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Elective 63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:***Install luminaires***

SAQA US ID	UNIT STANDARD TITLE		
258942	Install luminaires		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	4

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113879	Install luminaires	Level 2	4	Will occur as soon as 258942 is registered

SPECIFIC OUTCOME 1

Explain the requirements pertaining to the selection and methods of installation.

SPECIFIC OUTCOME 2

Prepare to install a luminaire.

SPECIFIC OUTCOME 3

Install the luminaire.

SPECIFIC OUTCOME 4

Prepare and test the luminaire for operation.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

ID	QUALIFICATION TITLE	LEVEL
Core 63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Identify, inspect, use, maintain and care for engineering hand tools

SAQA US ID	UNIT STANDARD TITLE		
258957	Identify, inspect, use, maintain and care for engineering hand tools		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10252	Identify, inspect, use, maintain and care for engineering hand tools	Level 2	6	Will occur as soon as 258957 is registered

SPECIFIC OUTCOME 1

Identify and select engineering hand tools.

SPECIFIC OUTCOME 2

Inspect engineering hand tools for serviceability.

SPECIFIC OUTCOME 3

Use engineering hand tools.

SPECIFIC OUTCOME 4

Maintenance and care of engineering hand tools.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Install electric wire ways

SAQA US ID	UNIT STANDARD TITLE		
258960	Install electric wire ways		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
10253	Install electric wire ways	Level 2	6	Will occur as soon as 258960 is registered

SPECIFIC OUTCOME 1

Plan to install electrical wire ways.

SPECIFIC OUTCOME 2

Prepare to install electrical wire ways.

SPECIFIC OUTCOME 3

Install Electrical Wire Ways.

SPECIFIC OUTCOME 4

Complete the installation of wire ways.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Maintain transformers

SAQA US ID	UNIT STANDARD TITLE		
258962	Maintain transformers		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	5

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113858	Maintain transformers	Level 2	5	Will occur as soon as 258962 is registered

SPECIFIC OUTCOME 1

Plan the work task.

SPECIFIC OUTCOME 2

Prepare to maintain transformers.

SPECIFIC OUTCOME 3

Maintain transformers.

SPECIFIC OUTCOME 4

Complete work task.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Understand fundamentals of electricity

SAQA US ID	UNIT STANDARD TITLE		
258967	Understand fundamentals of electricity		
ORIGINATOR	PROVIDER		
SGB Electrical Engineering & Construction			
FIELD	SUBFIELD		
12 - Physical Planning and Construction	Electrical Infrastructure Construction		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	8

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113877	Understand fundamentals of electricity	Level 2	8	Will occur as soon as 258967 is registered

SPECIFIC OUTCOME 1

Explain the basic concepts of electricity.

SPECIFIC OUTCOME 2

Explain magnetic theory.

SPECIFIC OUTCOME 3

Explain the basic fundamentals of power generation and distribution.

SPECIFIC OUTCOME 4

Apply and explain electrical units and symbols.

SPECIFIC OUTCOME 5

Draw and interpret series, parallel and series-parallel DC resistive circuits and calculate variables.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:*Identify, inspect, clean and maintain electrical rotating machines*

SAQA US ID		UNIT STANDARD TITLE	
259017		Identify, inspect, clean and maintain electrical rotating machines	
ORIGINATOR		PROVIDER	
SGB Electrical Engineering & Construction			
FIELD		SUBFIELD	
12 - Physical Planning and Construction		Electrical Infrastructure Construction	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 2	6

This unit standard replaces:

US ID	Unit Standard Title	NQF Level	Credits	Replacement Status
113876	Identify, inspect and clean electrical machines	Level 2	4	Will occur as soon as 259017 is registered

SPECIFIC OUTCOME 1

Plan task and prepare work area.

SPECIFIC OUTCOME 2

Clean, inspect, test and maintain AC rotating machines.

SPECIFIC OUTCOME 3

Clean, inspect, test and maintain DC rotating machines.

SPECIFIC OUTCOME 4

Complete activity.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

	ID	QUALIFICATION TITLE	LEVEL
Core	63789	National Certificate: Electrical Engineering	Level 2

No. 986

19 September 2008

**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

Human Resource Management and Practices

registered by Organising Field 03, Business, Commerce and Management Studies, publishes the following Unit Standards for public comment.

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

Comment on the Unit Standards should reach SAQA at the address below and ***no later than 29 October 2008***. All correspondence should be marked **Standards Setting – SGB for Human Resource Management and Practices** 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

UNIT STANDARD:

Demonstrate knowledge and understanding of South African Government planning, reporting and regulatory structures and their implications for Departmental planning processes

SAQA US ID	UNIT STANDARD TITLE		
259140	Demonstrate knowledge and understanding of South African Government planning, reporting and regulatory structures and their implications for Departmental planning processes		
ORIGINATOR		PROVIDER	
SGB Human Resource Management and Practices			
FIELD	SUBFIELD		
3 - Business, Commerce and Management Studies	Human Resources		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain Cabinet planning structures and related processes.

SPECIFIC OUTCOME 2

Explain the role of Treasury in the Government's planning cycle.

SPECIFIC OUTCOME 3

Explain monitoring and oversight mechanisms in the Public Service.

SPECIFIC OUTCOME 4

Demonstrate insight into how Government priorities are operationalised in a Department's planning processes.

SPECIFIC OUTCOME 5

Apply knowledge of the statutory framework governing strategic human resource planning in the Public Sector to a strategic Human Resource plan.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

None



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate analytical competencies needed for effective human resource planning in the Public Service

SAQA US ID	UNIT STANDARD TITLE		
259141	Demonstrate analytical competencies needed for effective human resource planning in the Public Service		
ORIGINATOR	PROVIDER		
SGB Human Resource Management and Practices			
FIELD	SUBFIELD		
3 - Business, Commerce and Management Studies	Human Resources		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Contextualise a Department within the Public Service.

SPECIFIC OUTCOME 2

Analyse workforce competencies required to achieve a Department's mandate.

SPECIFIC OUTCOME 3

Demonstrate analytical and thinking skills required for human resource planning.

SPECIFIC OUTCOME 4

Critically analyse research findings.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

None



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Demonstrate knowledge and insight into the relationship between strategic human resource planning and an organisation's strategic planning

SAQA US ID	UNIT STANDARD TITLE		
259143	Demonstrate knowledge and insight into the relationship between strategic human resource planning and an organisation's strategic planning		
ORIGINATOR	PROVIDER		
SGB Human Resource Management and Practices			
FIELD	SUBFIELD		
3 - Business, Commerce and Management Studies	Human Resources		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	3

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explain the role of a strategic plan in the achievement of an organisation's mandate.

SPECIFIC OUTCOME 2

Explain the role of a strategic human resource plan in enabling an organisation to reach its deliverables.

SPECIFIC OUTCOME 3

Discuss the importance of integrated human resource planning.

SPECIFIC OUTCOME 4

Develop a human resource intervention to meet changing or emerging needs.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

None



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Analyse qualitative and quantitative data required to inform a strategic human resource plan

SAQA US ID	UNIT STANDARD TITLE		
259145	Analyse qualitative and quantitative data required to inform a strategic human resource plan		
ORIGINATOR	PROVIDER		
SGB Human Resource Management and Practices			
FIELD	SUBFIELD		
3 - Business, Commerce and Management Studies	Human Resources		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	5

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Determine the type of data required to inform a strategic human resource plan.

SPECIFIC OUTCOME 2

Gather relevant qualitative and/or quantitative data.

SPECIFIC OUTCOME 3

Report research findings.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

None



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Monitor the on-going performance of a selected Public Service Department in the context of human resource planning

SAQA US ID		UNIT STANDARD TITLE	
259146		Monitor the on-going performance of a selected Public Service Department in the context of human resource planning	
ORIGINATOR		PROVIDER	
SGB Human Resource Management and Practices			
FIELD		SUBFIELD	
3 - Business, Commerce and Management Studies		Human Resources	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 6	3

This unit standard does not replace any other unit standard and is not replaced by another unit standard.

SPECIFIC OUTCOME 1

Explore different methods or techniques for monitoring performance in a selected Public Service Department.

SPECIFIC OUTCOME 2

Analyse the performance of a Department.

SPECIFIC OUTCOME 3

Identify critical human resource issues in a Department.

SPECIFIC OUTCOME 4

Adjust a departmental strategic human resource plan to address unforeseen challenges.

QUALIFICATIONS UTILISING THIS UNIT STANDARD

None