No. 902

28 September 2007



SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

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

Telecommunications

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

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

Comment on the Qualification and Unit Standards should reach SAQA at the address below and *no later than 26 October 2007*. All correspondence should be marked **Standards Setting** – **Telecommunications** 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



QUALIFICATION: Further Education and Training Certificate: Telecommunication Network

	Opera			
SAQA QUAL ID	QUALIFICATION TITLE			
59057	Further Education and Training Certificate: Telecommunication Network			
ORIGINATOR		PROVIDER		
SGB Telecommunications	3			
QUALIFICATION TYPE	FIELD	SUBFIELD		
Further Ed and Training Cert	6 - Manufacturing, Engineering and Technology	Engineering and Related Design		
ABET BAND	MINIMUM CREDITS	NQF LEVEL	QUAL CLASS	
Undefined	150	Level 4	Regular-Unit Stds Based	

PURPOSE OF THE QUALIFICATION

Purpose:

This qualification will equip a person to perform duties in the Network Operations environment within the telecommunications Industry. Telecommunications covers a wide range of specialisation areas.

This qualification provides the competencies required for the following:

- ICT Network Management and surveillance.
- TCP/IP Networks Operations.
- CPE Installation and Maintenance.
- Transport Systems Operations.
- Telecommunication Cable Maintenance.
- Telecommunication Cable Installation.
- Telecommunication Line Operations.
- Indoor Plant Installation.

Each specialisation area encompasses a unique, autonomous job function. The qualifying learner will have acquired the knowledge and be able to function as a competent operations specialist in one of the specialisation areas listed above. Multiple specialisations is not a requirement for this qualification although natural progression is desirable and allowed.

The competencies required for this qualification may be acquired through learnerships or skills programs. Acquiring this qualification has the benefit of addressing problems historically associated with non-OBE training where newly qualified people struggled to get employment due to a lack of experiential training in the workplace.

Rationale:

The Telecommunications landscape has been impacted tremendously by the onset of Convergence, Legislation and Regulation, and by the rapid evolution and expansion of new data and network services enabled by Next Generation technologies and telecommunications infrastructure.

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No qualification in telecommunications networks operations currently exists to accurately address the skills requirements posed by industry evolution and development.

This qualification therefore aims to address the skills development needs of specifically the Telecommunications Network Operations environment.

The qualification provides prospective candidates with specialization areas from which to elect, in anticipation of career choices in the ICT sector. The knowledge and skills obtained during the learning process towards this qualification provides the learner with a set of competencies that can be applied and are in demand in the ICT environment.

This will enhance the learner's opportunities to gain employment in areas as diverse as security systems, data networks, broadcasting and mobile communication.

The qualification enables learners to perform first-line installation, operations, and maintenance in the disciplines listed above.

This qualification provides learnership opportunities for entrants to the ICT industry and also for current ICT workers to receive recognition for prior learning.

This qualification was developed to address the needs of the industry in a format which supports the objectives of the NQF:

• To create an integrated national framework for learning achievements.

- Facilitate access to, and mobility and progression within education, training and career paths.
- Enhance the quality of education and training.

• Accelerate the redress of past unfair discrimination in education, training and employment opportunities.

• Contribute to the full personal development of each learner and the social and economic development of the nation at large.

RECOGNIZE PREVIOUS LEARNING?

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LEARNING ASSUMED IN PLACE

It is assumed that the learner is already competent in maths and communication at NQF Level 3.

Recognition of Prior Learning:

This qualification may be achieved through the recognition of prior learning, which includes formal, non-formal learning and work experience. To achieve the qualification through RPL, the learner must present him/herself to be assessed against the integrated assessment criteria of this qualification.

Any learner wishing to be assessed to achieve credits in respect of any of the unit standards specified in this qualification may arrange for an RPL assessment.

Access to the Qualification:

There is open access to the qualification. An item of consideration is the diversity of functions which are covered. Some of these require colour recognition and/or bipedal mobility which will affect the employment options for someone who acquires this qualification but is handicapped in this way.

QUALIFICATION RULES

Source: National Learners' Records Database

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Rules regarding NQF Levels, credits, and qualification.

The qualification consists of a minimum combination of 150 credits. The specialisation area (elected cluster) will determine the actual number of credits required.

Rules regarding Fundamentals:

All fundamental unit standards are compulsory for this qualification (56 credits).

These fundamental credits are made up as follows:

- Communication: 20 credits at NQF Level 4.
- Second Language: 20 credits at NQF Level 3.
- Mathematics: 16 credits at NQF Level 4.

Core:

All core unit standards are compulsory (76 credits).

Electives:

There are 9 specialisation area clusters.

Each of the 8 clusters:

• Focuses on competencies required in different specialisation areas of telecommunications operations.

• Will contribute different credit counts to the total credit count of the qualification.

• Require that the learner obtain all the credit in the cluster.

A minimum of 18 credits is required from the elective component to make up 150 credits required to obtain the qualification.

The following rules apply for specialisation areas:

Elective Cluster 01: Specialisation Area 1 (ICT Network Management and surveillance).

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

• ID 246663; Perform surveillance on Information and Communications technology networks; Level 5; 10 credits.

• ID 114052; Demonstrate appropriate customer care in the context of IT support according to a service level agreement (SLA); Level 5; 8 credits.

Elective Cluster 02: Specialisation Area 2 (TCP/IP Networks):

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

• ID 246672; Perform operations on Internet Protocol networks; Level 5; 11 credits.

Source: National Learners' Records Database

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Elective Cluster 03: Specialisation Area 3 (Customer Premises Equipment (CPE) Installation and Maintenance):

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

• ID 246685; Configure and commission electronic equipment for ISDN products and services; Level 4; 4 credits.

- ID 10482; Perform customer equipment fault clearance; Level 4; 24 credits.
- ID 10453; Schedule customer equipment installation; Level 4; 4 credits.
- ID 10452; Recover customer equipment; Level 4; 5 credits.

Elective Cluster 04: Specialisation Area 4 (Transport Systems):

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

• ID 246680; Demonstrate an Understanding of Telecommunications Transport Concepts and Principles; Level 3; 8 credits.

• ID 246681; Perform operational activities on- SDH_PDH systems; Level 4: 17 credits.

• ID 246666; Perform operational activities on- Multi-channel Optical Fibre systems; Level 4; 3 credits.

• ID 246722; Perform Indoor Optical Fibre Testing; Level 4; 3 credits.

Elective Cluster 05: Specialisation Area 5 (Telecommunication Cable Maintenance):

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

• ID 246724; Perform operational activities on pressurised transmission mediums; Level 4; 7 credits.

• ID 246720; Perform operational activities on Non-Metallic Telecommunication Media; Level 5: 16 credits.

• ID 246657; Maintain Metallic Telecommunication Cables; Level 5: 16 credits.

Elective Cluster 06: Specialisation Area 6 (Telecommunication Cable Installation):

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

- ID 246723; Terminate Metallic Telecommunication Cables; Level 4; 8 credits.
- ID 246721; Install Distribution Point Cable; Level 4; 10 credits.
- ID 246719; Erect and haul optic cables for telecommunication purposes; Level 4; 8 credits.
- ID 246661; Join Metallic Telecommunication Cables; Level 4; 10 credits.
- ID 246662; Test Metallic Telecommunication Cables; Level 5; 16 credits.

Source: National Learners' Records Database

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Elective Cluster 07: Specialisation Area 7 (Telecommunication Line Operations):

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

• ID 12313; Provide lightning and power protection for structures or equipment; Level 5; 24 credits.

• ID 246676; Perform operational activities on Telecommunication lines in the vicinity of overhead power lines; Level 3; 5 credits.

Elective Cluster 08: Specialisation Area 8 (Indoor Plant Installation):

This cluster on its own complies with the elective requirements for this qualification. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

- ID 10450; Prepare site for installation; Level 4; 12 credits.
- ID 246682; Install small network elements; Level 4; 8 credits.
- ID 246675; Install large network elements; Level 4; 12 credits.

Elective Cluster 09: Specialisation Area 9 (Supplementary):

Learners may not elect this cluster or portions hereof as a stand-alone specialisation but may select unit standards from this cluster to supplement any of the other clusters. The following unit standards are included:

Unit Standard ID; Unit Standard Name; Level; Credits:

- ID 246654; Apply personal mastery skills in the ICT environment; Level 4; 6 credits.
- ID 246671; Demonstrate and apply fundamental people skills in the ICT environment; Level 4; 6 credits.
- ID 246669; Apply system thinking skills in the ICT environment; Level 4; 5 credits.
- ID 246673; Demonstrate an understanding of the principles of VSAT satellite communications; Level 4; 6 credits.
- ID 10473; Perform equipment/software upgrades; Level 4; 4 credits.
- ID 246668; Perform operational activities on Digital Loop Carrier systems; Level 4; 3 credits.
- ID 246665; Demonstrate an understanding of- and perform operational activities on- Digital Microwave Radio systems; Level 4; 15 credits.
- ID 246664; Install an Asymmetrical Digital Subscriber Line; Level 4; 4 credits.
- ID 246678; Perform acceptance and commissioning on network elements; Level 5; 12 credits.

Additional standards from this qualification or any other SAQA field or sub-field may be elected for additional credits or competencies over and above the requirements as set out in the rules as stated above.

There are 9 elective clusters, 8 providing a variety of specialisation areas; one fulfils the role of supplementary cluster.

Each of the 8 clusters:

 Focuses on competencies required in different specialisation areas of telecommunications operations.

Will contribute different credit counts to the total credit count of the qualification.
 Source: National Learners' Records Database
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• Require that the learner obtain all the credit in the cluster.

EXIT LEVEL OUTCOMES

A learner will be able to:

1. List and explain the elements that comprise a current and a next generation telecommunication network.

2. Explain the uses of telecommunication protocols and telecommunication principles.

3. Explain the characteristics and benefits of available telecommunications products and services in both the commodity and value added (VAS) ranges.

4. Commission, maintain, diagnose faults, and repair telecommunication equipment.

5. Function in the workforce management and network management environment.

ASSOCIATED ASSESSMENT CRITERIA

Associated Assessment Criteria for Exit Level Outcome 1:

1.1 The areas of the telecommunication network are listed and their inter-relationships are explained by means of descriptive schematic diagrams.

1.2 The elements comprising specific areas of the telecommunication network are listed and their inter-relationships are explained by means of descriptive schematic diagrams.
1.3 Functions of the current and next generation telecommunication networks and their elements are listed, explained and compared using comparative tables and written descriptions.
1.4 The concepts and principles relating to the elements comprising a specific Area of the telecommunication network are explained by means of descriptive schematic diagrams and paragraphs.

Associated Assessment Criteria for Exit Level Outcome 2:

2.1 The uses of concepts and Principles relating to dedicated telecommunication protocols are explained using illustrative diagrams of frame structures and written descriptions.2.2 Concepts and principles related to electrical and electronic circuits and components are

explained and applied in simple circuits. 2.3 The concepts and principles relating to telecommunication connection protocols are

2.3 The concepts and principles relating to telecommunication connection protocols are explained using diagrams showing frame structures for each of the different protocols.
2.4 The concepts and principles relating to telecommunication service protocols are explained.

using illustrative diagrams and written explanations.

2.5 The Concepts and principles related to radio transmission circuits and components are explained using diagrams.

Associated Assessment Criteria for Exit Level Outcome 3:

3.1 Features and advantages of a range of products are listed and described using tables and written descriptions.

3.2 A range of products are compared using tables and written descriptions.

3.3 Features and advantages of a range of services are listed and described using tables and written descriptions.

3.4 A range of services are compared using tables and written descriptions.

3.5 The functions of the various VAS platforms are described using written descriptions.

Associated Assessment Criteria for Exit Level Outcome 4:

Source: National Learners' Records Database

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4.1 Customer Premises Equipment was commissioned or maintained or diagnosed and repaired according to requisite operating procedures and standards.

4.2 Network elements or network access devices were installed or commissioned or acceptance tested according to specifications and appropriate standards.

4.3 Operation and maintenance on telecommunications equipment was done according to specifications and appropriate standards.

4.4 The operating status of voice or non-voice systems was monitored diagnosed and rectified using the ICT Network Management platforms and the processes or procedure/s appropriate to the situation.

Associated Assessment Criteria for Exit Level Outcome 5:

5.1 Functions, procedures and processes used in a workforce management system are listed and explained and applied in the work environment.

5.2 A fault condition is detected, reported, monitored and concluded on a workforce management system.

5.3 A new installation request is captured, scheduled monitored and concluded on a workforce management system according to prescribed work procedures.

5.4 Customer care and support is provided on telecommunication products and services according to agreements, commitments and prescribed work procedures.

Integrated Assessment:

Integrated assessment of the learner needs to be undertaken using the necessary assessment tools (viz. ETQA approved assessor guides) to ensure consistent integrated assessment. The setting of assessor guides can be performed by the ETQA itself or a nominated body or bodies.

Assessment can be institutional and/or workplace based, but must be done by a registered assessor who is a subject matter expert on the unit standards being assessed. These assessments must contain direct evidence of all assessment criteria in the unit standard or standards being assessed or, if evidence is inferred, this inference and supporting evidence must be concisely and clearly substantiated and explained with reference to the individual assessment criteria.

External moderation will be undertaken as required, to ensure that the quality of NQF standards are maintained nationally.

INTERNATIONAL COMPARABILITY

The South African telecommunications environment is sophisticated, influenced and responsive to international developments in technology, products and services. It is furthermore impacted by globalization, convergence and regulatory issues. These factors all combine to highlight the requirement for specialist telecommunications qualifications.

The project task team conducted research in numerous countries. No evidence was found of suitable qualifications that would address the emerging needs of operational staff in the telecommunications Network Operations workspace.

The study confirmed that a need existed for this qualification, which would offer choices to the learner in specialized work areas as dictated by the industry.

Face to face discussions were held with representatives from the following organizations Australia and New Zealand during a visit to these countries in November 2005:

- Telstra Australia.
- ZTE Australia (Chinese telecommunications equipment supplier represented in Australia).
- Telecomm New Zealand.

Source: National Learners' Records Database

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Alcatel New Zealand (telecommunications equipment partner to Telecomm New Zealand).

In South Africa and abroad, tertiary institutions (both public and private) provide the required theory learning, but there are no providers in formal education that offered skills or experiential learning.

As a result, the experiential training of Telecommunications Technicians in South Africa was done in-house by the larger operators and role-players in the local industry and expertise was accumulated through experience. It is the researchers' experience that such training was done in isolation, with no standardization.

The CiTT was compared to qualifications in the United Kingdom, New Zealand and Australia.

In addition, the African telecommunications training landscape was researched to determine the existence of any similar qualifications.

The task team then decided to focus the search on countries using a set of criteria deemed relevant, such as in countries with similar telecommunications infrastructures, demographics and challenges, as well as established academic learning and training infrastructures.

It was concluded that the comparison would be most useful in relation to two countries, namely New Zealand and the United Kingdom.

Both these countries are aligned to telecommunications standards bodies similar to South Africa, and are researching and rolling out similar Next Generation networks.

Sites Researched/Organisations Contacted:

Comprehensive scanning of the internet was done and personal interviews were conducted in Australia and New Zealand. This research revealed that telecommunications training is offered widely by a multitude of institutions, both public and private, in the two selected countries.

The following organisations, providers and company web sites were browsed to research how telecommunications skills development is done. The sites have been grouped per country. The information obtained from the websites was comprehensive and informative, negating the need for further contact.

UK and Ireland:

• Qualification and Curriculum Authority (UK): The Qualification and Curriculum Authority (QCA) in the United Kingdom are responsible for standards in education and training. Their site covers the schools curriculum, accreditation and monitoring of qualifications in schools, colleges and work, as well as research and statistics. http://www.qca.org.uk.

• Scottish Qualifications Authority (SQA): The web site was browsed and a search was made for telecommunications related information but none were found. The SQA was not contacted by email. http://www.sqa.org.uk/.

• National Qualifications Authority of Ireland: (NQAI): The web site was browsed and a search was made for telecommunications related information but none were found. The NQAI was not contacted by email. http://www.nqai.ie/.

• Edexcel is a provider that provides academic and vocational qualifications. The telecommunications qualifications offered through this institute have relevance in that they provide guidance and structure to the proposed CiTT. The web site was browsed but Edexcel was not contacted by email. http://www.edexcel.org.uk.

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Australia and New Zealand:

Telecommunications qualifications in Australia and New Zealand were examined and found to have relevance to the structure of the CiTT.

Also, the qualifications Standards bodies allowed comparison in terms of the appropriate level of the CiTT. The websites were browsed but no further contact was made.

• Australian Qualifications Authority: http://www.aqf.edu.au.

• The National Training Information Service (Australia): The Australian government's National Training Information Service web site provides information on the qualifications, qualification structures and the unit standards registered on the AQF. http://www.ntis.gov.au.

• The unit standards in different streams were downloaded and evaluated; the contents were used to structure and guide our own development of the qualification and unit standards as submitted.

• Notwithstanding the structural differences between the unit standards the RSA unit standards are broadly in line with the Australian unit standards in terms of scope and detail.

 \circ Thirty-two registered telecommunications qualifications were listed on the NTIS website at the time that the research was conducted. A recent search - 2006-07-17 provided the same results.

• New Zealand Qualifications Authority (NZQA): The web site was browsed but the NZQA was not contacted by email. http:// www.nzqa.govt.nz.

 \circ A recent search (17th July 2006) revealed that there were no telecommunications qualifications registered on the NZQA.

 \circ However, certain unit standards were downloaded and evaluated for the purpose of structuring and guiding development of this qualification.

• The RSA unit standards are broadly in line with, but are more detailed than, the NZ unit standards.

Africa/SADEC:

• Botswana Training Authority (BOTA): No qualifications or unit standards in telecommunications are listed. BOTA has registered 164 unit standards for 3 sectors, trainers and assessors, wholesale and retail, and Information and Communications Technology) http://www.bota.org.bw.

• Namibia and Ethiopia: No qualifications or unit standards in telecommunications are listed in any Namibian or Ethiopian websites researched. The United Nations Economic Commission for Africa study conducted research in the ICT environment which highlighted the shortage of ICT skills in those countries and the lack of infrastructure or opportunities to address this dilemma. The report is accessible on the following link: http://www.uneca.org/aisi/nici/.

Other:

Comparisons were primarily focused on English-speaking countries and developed economies. This approach was followed for various reasons:

• The required benchmarking demanded due to the convergence of the ICT sector worldwide.

• The ongoing and rapid enhancement of technology growth in the telecommunications sector.

- Web sites presented in English.
- Alignment of comparable qualifications with national standards.

ARTICULATION OPTIONS

This qualification was developed to allow for further study in Information and Communication Technology and related fields at Higher Education levels once they are developed.

Source: National Learners' Records Database

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Vertical Options:

• This program will serve as the exit point from Certificate in CPE Level 3.

• This program will serve as the exit point into various NQF Level 5 qualifications:

• Programme in Telecommunications which is currently in the conceptual stage and will address the fields of IP, Fixed Line, Product Development and Mobility.

o ID 48872; National Certificate: Information Technology (Systems Development).

o ID 48573; National Certificate: Information Technology: Systems Support.

Horizontal Options:

• This program will serve as an exit point into ICT qualifications on NQF Level 4:

o ID 24294; FETC: Information Technology: Systems Development.

• ID 24293; FETC: Information Technology: Technical Support.

MODERATION OPTIONS

• A person assessing a learner or moderating the assessment of a learner against this qualification must be registered as an assessor, at the appropriate level, with the relevant ETQA.

• Any institution offering learning that will enable the achievement of this qualification must be approved as a provider with the relevant ETQA.

• Assessment and moderation of assessment will be overseen by the relevant ETQA according to the ETQA's policies and guidelines for assessment and moderation; in terms of agreements reached around assessment and moderation between ETQAs (including professional bodies).

• Moderation must include both internal and external moderation of assessments at exit points of the qualification, unless ETQA policies specify otherwise. Moderation should also encompass achievement of the competence described both in individual unit standards, exit level outcomes as well as the integrated competence described in this qualification.

• Moderation should also encompass achievement of the competence described both in individual unit standards as well as the integrated competence described in the qualification.

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

• To ensure that national standards are maintained, the final assessment should be conducted on the following basis, which will be under the control of the relevant ETQAs.

CRITERIA FOR THE REGISTRATION OF ASSESSORS

The criteria to register as an assessor include the following:

• Assessors should be registered as assessors with the relevant ETQA, in accordance with the policies and procedures defined by the ETQA.

• Have a relevant academic qualification or equivalent recognition, at a level higher than the qualification being assessed. In addition the person will need to have at least two years industry experience relevant to the unit standard to be assessed by him/her.

• All registered assessors must at least have met the requirements of the generic assessor standard, and should be certificated by the ETDP SETA or by the relevant ETQA in agreement with the ETDP SETA in this regard.

Source: National Learners' Records Database

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 For the assessment of ICT specific unit standards, assessors must have competency in the skills specified in the unit standard or specialisation area.

NOTES

Importance of assessment to the standards set to support this qualification:

 All unit standards in this gualification's rules of combination are deemed equally important in the awarding of the qualification.

• If the criteria for the awarding of a unit standard which is listed in the rules of combination, for the combination which a learner proposes, are not met the learner may not be awarded the qualification.

• If a skill grouping or items of knowledge is deemed important enough to accredit as a meaningful cluster, a unit standard is sourced or developed to support and accredit this.

• If a unit standard is deemed important enough to source or develop, the specific outcomes of this unit standard are all considered outcomes which are crucial to the awarding/achievement of the unit standard to which the specific outcomes belong.

• If a specific outcome is deemed important enough to be included as part of a unit standard, each of the assessment criteria of this specific outcome is considered key to the awarding/achievement of the specific outcome to which the assessment criterion belongs.

• If a competency (skill or item of knowledge) is deemed important in, and to support the learning towards, the achievement of a unit standard but not important enough to uniquely assess against and thus not important enough to prevent or allow the awarding of a unit standard, this competency is listed in the embedded knowledge. This is done to ensure that the competency is included in the curriculum developed for this gualification or used in the learning towards the qualification.

	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	246660	Demonstrate an understanding Telecommunication Products and Services	Level 3	6
Core	246684	Demonstrate an understanding of Data Protocols Principles and Applications	Level 3	4
Core	246667	Demonstrate an understanding of Occupational Health, Safety and Environmental Legislations	Level 3	4
Core	246674	Demonstrate an understanding of Telecommunication switching systems	Level 3	3
Core	246683	Use a computer based workforce management system	Level 3	6
Core	114977	Use a spreadsheet package to produce and manage business documents	Level 3	3
Core	114978	Use a word processing package to produce business documents	Level 3	3
Core	246653	Apply fundamental financial skills and knowledge in the ICT environment	Level 4	6
Соге	246659	Demonstrate an Understanding of basic electrical and electronic principles	Level 4	5
Core	246655	Demonstrate an understanding of NGN networks	Level 4	1
Core	246658	Demonstrate an understanding of computing systems	Level 4	5
Core	246656	Demonstrate an understanding of the basic equipment and components used in a telecommunications environment	Level 4	5
Core	115391	Demonstrate an understanding of the principles of the internet and the world-wide-web	Level 4	3
Core	246670	Demonstrate an understanding of the value added services platforms used in a telecommunications	Level 4	2
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UNIT STANDARDS

Source: National Learners' Records Database

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	ID	UNIT STANDARD TITLE	LEVEL	CREDITS
Core	10324	Describe features, advantages and benefits of a range of products or services	Level 4	6
Core	246677	Perform Wiring and Maintenance on a Main Distribution Frame in the Telecommunications Environment	Level 4	8
Core	246679	Provide customer support on telecommunication services	Level 4	6
Elective	246680	Demonstrate an Understanding of Telecommunications Transport Concepts and Principles	Level 3	8
Elective	246676	Perform operational activities on Telecommunication lines in the vicinity of overhead power lines	Level 3	5
Elective	246654	Apply personal mastery skills in the ICT environment	Level 4	6
Elective	246669	Apply systems thinking skills in the ICT environment	Level 4	5
Elective	246685	Configure and commission electronic equipment for ISDN products and services	Level 4	4
Elective	246673	Demonstrate an understanding of the principles of satellite and VSAT satellite	e Level 4	6
Elective	246668	Demonstrate an understanding of- and perform operational activities on Digital Loop Carrier systems	Level 4	3
Elective	246671	Demonstrate and apply fundamental people skills in the	Level 4	6
Elective	246719	Erect and haul optic cables for telecommunication	Level 4	8
Flective	246664	Install an Asymmetrical Digital Subscribers Line		4
Elective	246721	Install distribution point cable		10
Elective	246675	Install large network elements	Level 4	12
Elective	246682	Install small network elements	Level 4	8
Elective	246661	loin metallic telecommunication cables		10
Elective	246722	Perform Indoor Ontical Fibre Testing	Level 4	3
Elective	10482	Perform customer equipment fault clearance		24
Elective	10473	Perform equipment/software upgrades	Level 4	4
Elective	246724	Perform operational activities on pressurised transmission mediums	Level 4	7
Elective	246681	Perform operational activities on- SDH PDH systems	Level 4	17
Elective	246665	Perform operational activities on-Digital Microwave Radio systems	Level 4	15
Elective	246666	Perform operational activities on-Multi-channel Optical Fibre Systems	Level 4	3
Elective	10450	Prepare site for installation	Level 4	12
Elective	10452	Recover customer equipment	Level 4	5
Elective	10453	Schedule customer equipment installation	Level 4	4
Elective	246723	Terminate metallic telecommunication cables	Level 4	8
Elective	114052	Demonstrate appropriate customer care in the context of IT support, according to a Service Level Agreement	Level 5	8
Elective	246657	Maintain metallic telecommunication cables	Level 5	16
Elective	246678	Perform acceptance and commissioning on network	Level 5	12
Elective	246720	Perform operational activities on Non-Metallic	Level 5	16
Elective	246672	Perform operations on Internet Protocol networks	l evel 5	11
Elective	246663	Perform surveillance on Information and Communications technology networks	Level 5	10
Elective	12313	Provide lightning and power protection for structures or equipment	Level 5	24
Elective	246662	Test metallic telecommunication cables	Level 5	16
Fundamental	119472	Accommodate audience and context needs in oral/signed	Level 3	5
Fundamental	110/57	communication		5
Fundamental	110467	Use language and communication in occupational		5
	110405	learning programmes		
	119400	contexts		3
Fundamerital	9015	Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life related problems	Level 4	6
Fundamental	119462	Engage in sustained oral/signed communication and evaluate spoken/signed texts	Level 4	5
Fundamental	119469	Read/view, analyse and respond to a variety of texts	Level 4	5
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ID	UNIT STANDARD TITLE	LEVEL	CREDITS
9016	Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts	Level 4	4
7468	Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues	Level 4	6
12153	Use the writing process to compose texts required in the business environment	Level 4	5
119459	Write/present/sign for a wide range of contexts	Level 4	5
	ID 9016 7468 12153 119459	ID UNIT STANDARD TITLE 9016 Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts 7468 Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues 12153 Use the writing process to compose texts required in the business environment 119459 Write/present/sign for a wide range of contexts	ID UNIT STANDARD TITLE LEVEL 9016 Represent analyse and calculate shape and motion in 2- and 3-dimensional space in different contexts Level 4 7468 Use mathematics to investigate and monitor the financial aspects of personal, business, national and international issues Level 4 12153 Use the writing process to compose texts required in the business environment Level 4 119459 Write/present/sign for a wide range of contexts Level 4

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Qualification 59057

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UNIT STANDARD:

Apply fundamental financial skills and knowledge in the ICT environment

SAQA US ID	UNIT STANDARD TITLE		
246653	Apply fundamental financial sk	ills and knowledge in th	ne ICT environment
ORIGINATOR		PROVIDER	
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and A	Assembly
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate knowledge and understanding of fundamental accounting practice.

SPECIFIC OUTCOME 2

Demonstrate knowledge and understanding of fundamental economic principles.

SPECIFIC OUTCOME 3

Apply knowledge and skills in managing an ICT business.



UNIT STANDARD:

Apply personal mastery skills in the ICT environment

SAQA US ID	UNIT STANDARD TITLE		
246654	Apply personal mastery skills in	the ICT environment	
ORIGINATOR	PROVIDER		
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate an understanding of the different levels of communication.

SPECIFIC OUTCOME 2

Identify and list the different ego states of self-responsibility.

SPECIFIC OUTCOME 3

Demonstrate an understanding of the circle of influence.

SPECIFIC OUTCOME 4

Define and explain coaching.

20/08/2007



UNIT STANDARD:

Demonstrate an understanding of NGN networks

SAQA US ID	UNIT STANDARD TITLE		
246655	Demonstrate an understanding	of NGN networks	
ORIGINATOR	GINATOR PROVIDER		
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	1

SPECIFIC OUTCOME 1

Demonstrate a greater awareness and understanding of the reasons for implementing Next Generation Networks.

SPECIFIC OUTCOME 2

The migration from current networks to Next Generation Networks is explained with reference to Open Systems Interconnection (OSI) model.

SPECIFIC OUTCOME 3

Demonstrate an awareness of possible new services offered and their advantages.

SPECIFIC OUTCOME 4

Demonstrate an understanding of the Next Generation Network Technologies and architectures.

SPECIFIC OUTCOME 5

Describe the advantages of a converged network.



UNIT STANDARD:

Demonstrate an understanding of the basic equipment and components used in a telecommunications environment

SAQA US ID	UNIT STANDARD TITLE		
246656	Demonstrate an understanding	of the basic equipment an	d components used
	in a telecommunications enviro	nment	
ORIGINATOR		PROVIDER	
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	5

SPECIFIC OUTCOME 1

Identify and define components and functions/characteristics relating to Public Switched Telecommunications Network (PSTN).

SPECIFIC OUTCOME 2

Describe the operation of a telephone.

SPECIFIC OUTCOME 3

Demonstrate knowledge of the underlying technologies used in the telecommunications sector.

SPECIFIC OUTCOME 4

Demonstrate knowledge of the operation and use of networks and systems in telecommunication networks.

SPECIFIC OUTCOME 5

Explain the principles of the internet and the world-wide-web.

SPECIFIC OUTCOME 6

Demonstrate and understanding of ICT converged networks.

SPECIFIC OUTCOME 7

Demonstrate and understanding of the legislation required ICT converged networks.



UNIT STANDARD:

Maintain metallic telecommunication cables

SAQA US ID	UNIT STANDARD TITLE		
246657	Maintain metallic telecommuni	cation cables	
ORIGINATOR	PROVIDER		
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	16

SPECIFIC OUTCOME 1

Prepare for the maintenance of metallic telecommunication cables.

SPECIFIC OUTCOME 2

Maintain metallic transmission mediums.

SPECIFIC OUTCOME 3

Repair metallic telecommunication cables.

SPECIFIC OUTCOME 4

Conclude the maintenance of metallic telecommunication cables.



UNIT STANDARD:

Demonstrate an understanding of computing systems

SAQA US ID	UNIT STANDARD TITLE		
246658	Demonstrate an understanding	of computing systems	
ORIGINATOR	PROVIDER		
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly
ABET BAND	UNIT STANDARD TYPE	NQFLEVEL	CREDITS
Undefined	Regular	Level 4	5

SPECIFIC OUTCOME 1

Demonstrate the ability to work with numbering systems.

SPECIFIC OUTCOME 2

Demonstrate knowledge of logic gates.

SPECIFIC OUTCOME 3

Demonstrate knowledge of the general principles of logic devices.

SPECIFIC OUTCOME 4

Demonstrate knowledge of computer memory systems.

20/08/2007



UNIT STANDARD:

Demonstrate an Understanding of basic electrical and electronic principles

SAQA US ID	UNIT STANDARD TITLE			
246659	Demonstrate an Understanding	of basic electrical and electrical	ctronic principles	
ORIGINATOR	PROVIDER			
SGB Telecommunications				
FIELD		SUBFIELD		
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	5	

SPECIFIC OUTCOME 1

Use and describe the concepts and principles of electrical and electronic theory.

SPECIFIC OUTCOME 2

Perform network analysis in solving RLC circuits.

SPECIFIC OUTCOME 3

Use and describe the concepts and principles of alternating current theory.

SPECIFIC OUTCOME 4

Explain the principles of a transformer.

SPECIFIC OUTCOME 5

Demonstrate an understanding of the operating principles of a transistors.

SPECIFIC OUTCOME 6

Demonstrate an understanding of the capacitance theory.



UNIT STANDARD:

Demonstrate an understanding Telecommunication Products and Services

SAQA US ID	UNIT STANDARD TITLE		
246660	Demonstrate an understanding	Telecommunication Produ	cts and Services
ORIGINATOR		PROVIDER	
SGB Telecommunication	IS <u>.</u>		
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	6

SPECIFIC OUTCOME 1

Interpret client needs and specifications.

SPECIFIC OUTCOME 2

Determine and communicate product features, advantages and benefits.

SPECIFIC OUTCOME 3

Describe physical specifications of features, advantages and benefits.

SPECIFIC OUTCOME 4

Design and develop presentations for products and services.



UNIT STANDARD:

Join metallic telecommunication cables

SAQA US ID	UNIT STANDARD TITLE	· · · · · · · · · · · · · · · · · · ·		
246661	Join metallic telecommunication cables			
ORIGINATOR	PROVIDER			
SGB Telecommunication	SGB Telecommunications			
FIELD	SUBFIELD			
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	10	

SPECIFIC OUTCOME 1

Prepare for the jointing of metallic telecommunication cables.

SPECIFIC OUTCOME 2

Prepare cables for jointing.

SPECIFIC OUTCOME 3

Join metallic telecommunication cables.

SPECIFIC OUTCOME 4

Conclude the jointing of metallic telecommunication cables.

Source: National Learners' Records Database Unit Star

Unit Standard 246661

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UNIT STANDARD:

Test metallic telecommunication cables

SAQA US ID	UNIT STANDARD TITLE			
246662	Test metallic telecommunication	Test metallic telecommunication cables		
ORIGINATOR	PROVIDER			
SGB Telecommunicatio	SGB Telecommunications			
FIELD	SUBFIELD			
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL CREDITS		
Undefined	Regular	Level 5	16	

SPECIFIC OUTCOME 1

Prepare for the maintenance of metallic telecommunication cables.

SPECIFIC OUTCOME 2

Maintain metallic transmission mediums.

SPECIFIC OUTCOME 3

Repair metallic telecommunication cables.

SPECIFIC OUTCOME 4

Conclude the maintenance of metallic telecommunication cables.

20/08/2007



SOUTH AFRICAN QUALIFICATIONS AUTHORITY

UNIT STANDARD:

Perform surveillance on Information and Communications technology networks

SAQA US ID	UNIT STANDARD TITLE				
246663	Perform surveillance on Information and Communications technology networks				
ORIGINATOR	PROVIDER				
SGB Telecommunication	SGB Telecommunications				
FIELD	SUBFIELD				
6 - Manufacturing, Engin	acturing, Engineering and Technology		Engineering and Related Design		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL CREDITS			
Undefined	Regular	Level 5	10		

SPECIFIC OUTCOME 1

Demonstrate an understanding of ICT equipment management principles.

SPECIFIC OUTCOME 2

Perform operations on (TMN) Telecommunication Management Network network components.

SPECIFIC OUTCOME 3

Network element performance/faults/alarms/anomalies are reported and recorded.

SPECIFIC OUTCOME 4

Track network related performance/faults/alarms/anomalies.

SPECIFIC OUTCOME 5

Liaise, co-ordinate and communicate with internal clients, customer and/or vendors.

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UNIT STANDARD:

Install an Asymmetrical Digital Subscribers Line

SAQA US ID	UNIT STANDARD TITLE			
246664	Install an Asymmetrical Digital Subscribers Line			
ORIGINATOR	PROVIDER			
SGB Telecommunication	SGB Telecommunications			
FIELD	SUBFIELD			
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	4	

SPECIFIC OUTCOME 1

Demonstrate an understanding of ADSL technology principles and concepts.

SPECIFIC OUTCOME 2

Wire an ADSL service at the customer premises.

SPECIFIC OUTCOME 3

Install the relevant hardware required for the service.

SPECIFIC OUTCOME 4

Install the relevant software.

SPECIFIC OUTCOME 5

Commission the service.

SPECIFIC OUTCOME 6

Troubleshoot the service.



UNIT STANDARD:

Perform operational activities on-Digital Microwave Radio systems

SAQA US ID	UNIT STANDARD TITLE			
246665	Perform operational activities on-Digital Microwave Radio systems			
ORIGINATOR	PROVIDER			
SGB Telecommunications				
FIELD	SUBFIELD			
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	embly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL CREDITS		
Undefined	Regular	Level 4	15	

SPECIFIC OUTCOME 1

Demonstrate an understanding of digital radio principles and concepts.

SPECIFIC OUTCOME 2

Gain access to and use a Digital Radio system's operating software.

SPECIFIC OUTCOME 3

Identify and define components and functions/characteristics of the digital radio systems.

SPECIFIC OUTCOME 4

Use system related documentation.

SPECIFIC OUTCOME 5

Manipulate physical components of the system.

SPECIFIC OUTCOME 6

Perform operations on systems.

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UNIT STANDARD:

Perform operational activities on-Multi-channel Optical Fibre Systems

SAQA US ID	UNIT STANDARD TITLE				
246666	Perform operational activities on-Multi-channel Optical Fibre Systems				
ORIGINATOR	PROVIDER				
SGB Telecommunication	SGB Telecommunications				
FIELD	SUBFIELD				
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL CREDITS			
Undefined	Regular	Level 4	3		

SPECIFIC OUTCOME 1

Demonstrate an understanding of principles and concepts of Optical Fibres and Systems.

SPECIFIC OUTCOME 2

Gain access to and use a Multi-channel Optical Fibre system's Operating Software.

SPECIFIC OUTCOME 3

Identify and define components and functions/characteristics of a Multi-channel Optical Fibre system.

SPECIFIC OUTCOME 4

Use system related documentation.

SPECIFIC OUTCOME 5

Manipulate physical components of the system.

SPECIFIC OUTCOME 6

Perform operations on systems.



Demonstrate an understanding of Occupational Health, Safety and Environmental Legislations

SAQA US ID	UNIT STANDARD TITLE		
246667	Demonstrate an understanding of Occupational Health, Safety and		
	Environmental Legislations		
ORIGINATOR	PROVIDER		
SGB Telecommunication	SGB Telecommunications		
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL CREDITS	
Undefined	Regular	Level 3	4

SPECIFIC OUTCOME 1

Demonstrate knowledge and understanding of the basic principles of the Act and Regulations.

SPECIFIC OUTCOME 2

Explain the requirements for minimum compliance stipulated in the Act.

SPECIFIC OUTCOME 3

Conduct inspections to identify hazards.

SPECIFIC OUTCOME 4

Demonstrate knowledge and understanding of the National Environment Management Act.

SPECIFIC OUTCOME 5

Demonstrate knowledge and understanding that conforms to set criteria of the Environment Conservation Act.



UNIT STANDARD:

Demonstrate an understanding of- and perform operational activities on Digital Loop Carrier systems

SAQA US ID	UNIT STANDARD TITLE		
246668	Demonstrate an understanding of- and perform operational activities on Digital Loop Carrier systems		
ORIGINATOR	PROVIDER		
SGB Telecommunication	SGB Telecommunications		
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQFLEVEL	CREDITS
Undefined	Regular	Level 4	3

SPECIFIC OUTCOME 1

Demonstrate the ability to access the system.

SPECIFIC OUTCOME 2

Indicate components and define functions/characteristics of the system.

SPECIFIC OUTCOME 3

Demonstrate the ability to execute commands on the system.

SPECIFIC OUTCOME 4

Demonstrate the ability to manipulate the hardware components on the system.

SPECIFIC OUTCOME 5

Demonstrate the ability to use system's documentation.

20/08/2007



UNIT STANDARD:

Apply systems thinking skills in the ICT environment

SAQA US ID	UNIT STANDARD TITLE				
246669	Apply systems thinking skills in the ICT environment				
ORIGINATOR	PROVIDER				
SGB Telecommunication	SGB Telecommunications				
FIELD	SUBFIELD				
6 - Manufacturing, Engir	3 - Manufacturing, Engineering and Technology Manufacturing and Assem		Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL CREDITS			
Undefined	Regular	Level 4	5		

SPECIFIC OUTCOME 1

Demonstrate an understanding of systems thinking.

SPECIFIC OUTCOME 2

Apply the 3 step systems thinking process.

SPECIFIC OUTCOME 3

Apply the principles of systems thinking.

Unit Standard 246669

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UNIT STANDARD:

Demonstrate an understanding of the value added services platforms used in a telecommunications environment

SAQA US ID	UNIT STANDARD TITLE			
246670	Demonstrate an understanding of the value added services platforms used in a			
	telecommunications environme	nt		
ORIGINATOR	PROVIDER			
SGB Telecommunication	SGB Telecommunications			
FIELD SUBFIELD		SUBFIELD	D	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	2	

SPECIFIC OUTCOME 1

Name and define components and functions/characteristics of the public switched telephone network relating to Public Switched Telecommunications Network.

SPECIFIC OUTCOME 2

Explain the principles of the platforms used in the telecommunications environment.



UNIT STANDARD:

Demonstrate and apply fundamental people skills in the ICT environment

SAQA US ID	UNIT STANDARD TITLE			
246671	Demonstrate and apply fundamental people skills in the ICT environment			
ORIGINATOR	PROVIDER			
SGB Telecommunication	SGB Telecommunications			
FIELD	SUBFIELD			
6 - Manufacturing, Engineering and Technology		Manufacturing and Asse	mbly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL CREDITS		
Undefined	Regular	Level 4	6	

SPECIFIC OUTCOME 1

List Situational Leadership Skills.

SPECIFIC OUTCOME 2

Demonstrate effectiveness of team dynamics.

SPECIFIC OUTCOME 3

Manage conflict.

SPECIFIC OUTCOME 4

Manage diversity in a multicultural organisation.

SPECIFIC OUTCOME 5

Determine own coaching style by self-assessment.

SPECIFIC OUTCOME 6

Explain the relevant legislation regarding labour relations, employment equity and the basic conditions of employment.

SPECIFIC OUTCOME 7

Explain how to establish employee wellness in a conducive environment.



UNIT STANDARD:

Perform operations on Internet Protocol networks

SAQA US ID	UNIT STANDARD TITLE		
246672	Perform operations on Internet Protocol networks		
ORIGINATOR	PROVIDER		
SGB Telecommunications			
FIELD	SUBFIELD		
6 - Manufacturing, Engineering and Technology		Manufacturing and	Assembly
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	11

SPECIFIC OUTCOME 1

Demonstrate an understanding of ICT IP networks.

SPECIFIC OUTCOME 2

Connect IP networks.

SPECIFIC OUTCOME 3

Network element performance/faults/alarms/anomalies are reported and recorded.

SPECIFIC OUTCOME 4

Track network related performance/faults/alarms/anomalies.

SPECIFIC OUTCOME 5

Liaise, co-ordinate and communicate with internal clients, customer and/or vendors.

SPECIFIC OUTCOME 6

Manage daily activities.



UNIT STANDARD:

Demonstrate an understanding of the principles of satellite and VSAT satellite

SAQA US ID	UNIT STANDARD TITLE		
246673	Demonstrate an understanding of the principles of satellite and VSAT satellite		
ORIGINATOR		PROVIDER	
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	6

SPECIFIC OUTCOME 1

Demonstrate an understanding of the underlying fundamentals of satellites.

SPECIFIC OUTCOME 2

Demonstrate an understanding of the space environment and its effect on satellites.

SPECIFIC OUTCOME 3

Demonstrate an understanding of space systems segments and the basic operation of these segments.

SPECIFIC OUTCOME 4

The underlying fundamentals of satellite communications are demonstrated in accordance with manufacturer specifications.

SPECIFIC OUTCOME 5

Satellite communications networks and services are demonstrated in accordance with manufacturer specifications.

SPECIFIC OUTCOME 6

The underlying fundamentals of VSAT satellite is explained in accordance with satellite theory specifications.

SPECIFIC OUTCOME 7

VSAT satellite system components and their basic operation are demonstrated in accordance with manufacturer specifications.

SPECIFIC OUTCOME 8

Satellite Multiple Access Protocols are demonstrated in accordance with manufacturer specifications.



UNIT STANDARD:

Demonstrate an understanding of Telecommunication switching systems

SAQA US ID	UNIT STANDARD TITLE		
246674	Demonstrate an understanding of Telecommunication switching systems		
ORIGINATOR		PROVIDER	
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	3

SPECIFIC OUTCOME 1

Describe the need for switching systems and their evolution from analogue to digital.

SPECIFIC OUTCOME 2

Demonstrate the ability to explain how the switching systems are deployed in the Public Switched Telephone Network and list the transmission mediums connected to it.

SPECIFIC OUTCOME 3

Demonstrate the ability to list and describe Private Networks as deployed in the telecommunications environment.

SPECIFIC OUTCOME 4

Demonstrate the ability to list and explain Integrated Networks in the telecommunications environment.



UNIT STANDARD:

Install large network elements

SAQA US ID	UNIT STANDARD TITLE			
246675	Install large network elements			
ORIGINATOR	PRO		ROVIDER	
SGB Telecommunication	าร			
FIELD		SUBFIELD		
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly		
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS	
Undefined	Regular	Level 4	12	

SPECIFIC OUTCOME 1

Demonstrate an understanding of the installation procedures for large network elements.

SPECIFIC OUTCOME 2

Prepare for the installation of large network element.

SPECIFIC OUTCOME 3

Install large network element.

SPECIFIC OUTCOME 4

Conclude installation of large network element.

Unit Standard 246675



UNIT STANDARD:

Perform operational activities on Telecommunication lines in the vicinity of overhead power lines

SAQA US ID	UNIT STANDARD TITLE		
246676	Perform operational activities on Telecommunication lines in the vicinity of overhead power lines		
ORIGINATOR PROVIDER			
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 3	5

SPECIFIC OUTCOME 1

Demonstrate an understanding of applicable regulations and the dangers of electricity.

SPECIFIC OUTCOME 2

Demonstrate an understanding of and determine the safety of structures and work area.

SPECIFIC OUTCOME 3

Demonstrate the ability to work safely in the vicinity of, or near, high-voltage overhead lines.

20/08/2007



UNIT STANDARD:

Perform Wiring and Maintenance on a Main Distribution Frame in the Telecommunications Environment

SAQA US ID	UNIT STANDARD TITLE		
246677	Perform Wiring and Maintenance on a Main Distribution Frame in the		
	Telecommunications Environment		
ORIGINATOR		PROVIDER	
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 4	8

SPECIFIC OUTCOME 1

Demonstrate knowledge of the types of connection blocks used.

SPECIFIC OUTCOME 2

Demonstrate the ability to count the different types of connecting blocks.

SPECIFIC OUTCOME 3

Demonstrate the ability to cross-connect circuits on the various types of connecting blocks in use.

SPECIFIC OUTCOME 4

Demonstrate the ability to test circuits.

SPECIFIC OUTCOME 5

Demonstrate the ability to localise and repair faults.

SPECIFIC OUTCOME 6

Provide protection on Main distribution frame.

SPECIFIC OUTCOME 7

Perform maintenance tasks on a Main distribution Frame.



UNIT STANDARD:

Perform acceptance and commissioning on network elements

SAQA US ID	UNIT STANDARD TITLE		
246678	Perform acceptance and commissioning on network elements		
ORIGINATOR	PROVIDER		
SGB Telecommunications			
FIELD		SUBFIELD	
6 - Manufacturing, Engineering and Technology		Manufacturing and Assembly	
ABET BAND	UNIT STANDARD TYPE	NQF LEVEL	CREDITS
Undefined	Regular	Level 5	12

SPECIFIC OUTCOME 1

Demonstrate an understanding of Network Element Commissioning procedures.

SPECIFIC OUTCOME 2

Accept hand over from installation of network element.

SPECIFIC OUTCOME 3

Perform physical acceptance of network element.

SPECIFIC OUTCOME 4

Commission network element.