SECTION A:	QUALIFICATION DETAILS		
QUALIFICATION DEVELOPER (S)	Madirelo Training and Testing Centre		
TITLE	Certificate IV in Electronics	**NCQF LEVEL**	4
STRANDS (where applicable)	1. NA		
FIELD	Manufacturing, Engineering and Technology	**CREDIT VALUE**	60
SUB FIELD	Engineering and Engineering Trades		

New Qualification	√	Legacy Qualification		Renewal Qualification	
				Registration Code	

SUB-FRAMEWORK	General Education		TVET	√	Higher Education	

QUALIFICATION TYPE	Certificate	I		II		III		IV	√	V		Diploma		Bachelor	

Bachelor Honours		Post Graduate Certificate		Post Graduate Diploma	
Masters			Doctorate/ PhD		

RATIONALE AND PURPOSE OF THE QUALIFICATION

RATIONALE:

The need for development of this qualifications was informed by the following: The Botswana Vision 2036 states that development of the human capital and the informal sector and the micro and small enterprises (MSES) are essential in achieving the VISION 2036 pillars, in particular Sustainable Economic Development and Human and Social Development. Although Botswana has been fortunate to experience unprecedented economic growth since independence, this has not generated enough jobs to reduce unemployment. The most severely hit group amongst the unemployed is the youth, who account for about 51.7 % of the total unemployed, with the 15-19 age group most affected.

In line with this strategic goal of the Human Resource Development Committee (HRDC) priority skills and employment trends; which forecasted Botswana's demand for year 2019 to 2028, skills for

Electronics installers and servicers will still be in demand during that period as it showed on the report. Furthermore, the HRDC report 2023/24 indicates Electronics as a technical skills required in almost six occupations.

In addition, the need for the development of Electronics qualification at this level is informed by the labour market in the country in whereby a lot of foreigners occupy most of the posts in the repair and servicing of Electronics systems that is in Radio and Television equipment repairs, Mobile cell phone repairs and Audio visual equipment installation and repairs.

MULTI-TOPIC SURVEY QUARTER 3, 2023 LABOUR FORCE MODULE REPORT as indicated by Statistics Botswana:

Percentage of Currently Employed by Occupation, Citizenship & Sex Quarterly Multi Topic Survey (QMTS) Q3, 2023.

Occupation: Craft and Related Workers

Citizens: 9.7%

Non-Citizens: 16.1%

PURPOSE: (itemise exit level outcomes)

The purpose of this qualification is to produce graduates with broad knowledge, skills and competences to:

1. Apply knowledge of mathematical principles in construction and testing of digital circuits in accordance with job specifications.
2. Install and test electronics and telecommunication systems circuits in accordance with job specification.
3. Apply practical entrepreneurial concepts, essential entrepreneurial qualities and current support structures for successful entrepreneurial undertakings.
4. Use ICT for information retrieval and processing as well as communication and collaboration with others.

MINIMUM ENTRY REQUIREMENTS (including access and inclusion)

- Certificate III, NCQF LEVEL 3 (TVET/GE) or equivalent
- There will be provision for RPL and CAT for entry according to the national RPL and CAT policy.

SECTION B	QUALIFICATION SPECIFICATION
GRADUATE PROFILE (LEARNING OUTCOMES)	**ASSESSMENT CRITERIA**
1. Perform calculations to solve engineering problems	1.1 Solve quadratic equations analytically and graphically. 1.2 Apply trigonometric functions to solve applied problems. 1.3 Define concepts of digital representation of information. 1.4 Represent signed and unsigned binary numbers. 1.5 Use Boolean Algebra to formulate, analyse and simplify Boolean functions.
2. Install and test electronics and telecommunication systems circuits in accordance with job specification.	2.1 Follow risk control measures and procedures in preparation for the work. 2.2 Obtain nature of the work from documentation 2.3 Establish materials required for the work in accordance with organization procedures. 2.4 Select tools, equipment and testing devices needed to carry out the work in accordance with established procedures. 2.5 Carry out work logically using knowledge of electronics apparatus sections and circuit parameters. 2.6 Assemble apparatus and test it in accordance with established procedures. 2.7 Document work completion in accordance with established procedures.
3. Construct and test digital circuits in accordance with job specifications.	3.1 Examine job specification to determine the tools and materials to construct the circuits.

	3.2 Select tools, instruments and materials for carrying out the job.
	3.3 Build specified circuits as per the job specification.
	3.4 Test circuits for functionality in accordance with industry practice.
	3.5 Record and verify results in terms of measured versus expected values.
	3.6 Clean tools and instruments and store them in appropriate places after use in accordance with organisational requirements.
4. Develop and test industrial electronics circuits in line with IEEE standards	4.1 Plan the electronics assembly and testing activities complying with health and safety regulations.
	4.2 Select correct tools and equipment for the assembly and test operations.
	4.3 Use appropriate methods and techniques to assemble the components in their correct positions.
	4.4 Secure components using specified securing devices and soldering techniques.
	4.5 Use appropriate test method and equipment to check that the completed assembly is safe and meets all aspects of the specification.
	4.6 Clean the work area on completion of electronic assembly in accordance with safety standards.
	4.7 Document work completion in accordance with established procedures.
5. Apply broad practical entrepreneurial concepts, essential entrepreneurial qualities and current policies/support structures for entrepreneurial success in Botswana.	5.1 Examine broad entrepreneurial concepts and contemporary issues that have an impact on present day entrepreneurial success.
	5.2 Conduct a self-assessment in line with identifying necessary qualities for successful entrepreneurship.
	5.3 Identify business opportunities in a field of interest and select appropriate investment strategies to adopt, considering the associated risks.

	5.4 Compile documents required for an entrepreneur to establish a company and take advantage of available support structures.
6. Apply Information and Communication Technology for efficient information retrieval, processing as well as communication and collaboration in the context of the electronics industry.	6.1 Read and analyse data from a prepared database. 6.2 Enter and manipulate data using ICT tools. 6.3 Display data electronically through charts. 6.4 Manipulate and present information through the selection of appropriate spreadsheet tools
7. Apply effective fundamental and problem-solving skills while performing assigned duties/tasks according to the set industry standards in an actual work environment.	7.1 Communicate and negotiate with stakeholders to initiate an industrious work-based learning experience. 7.2 Perform assigned vocation related tasks to the required standards. 7.3 Apply effective fundamental (core) skills throughout the duration of the work-based learning program. 7.4 Adhere to health and safety requirements at all times. 7.5 Demonstrate problem solving skills as and when problems are encountered during the work process. 7.6 Contribute effectively to teamwork initiatives within the work environment. 7.7 Evaluate the work-based learning experience, to determine its benefits and or limitations

SECTION C	QUALIFICATION STRUCTURE			
COMPONENT	**TITLE**	**Credits Per Relevant NCQF Level**		**Total Credits**
		Level [III]	Level [IV]	Level [V]	
FUNDAMENTAL COMPONENT Subjects/ Courses/ Modules/Units	ICT		2		2
	Entrepreneurship		2		2
CORE COMPONENT Subjects/Courses/ Modules/Units	Mathematics		4		4
	Digital Electronics		4		4
	Power and Industrial Electronics		6		6
	Telecommunications Systems		6		6
	Work Based Learning		32		32

STRANDS/ SPECIALIZATION	Subjects/ Courses/ Modules/Units	Credits Per Relevant NCQF Level			Total Credits
		Level [ ]	Level [IV]	Level [ ]	
1.					
2.					
Electives	Mobile phone Repair		4		4
	Electrical Appliances repair		4		4

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	**Credit Value**
4	**60**
TOTAL CREDITS	*60*

Rules of Combination:

(Please Indicate combinations for the different constituent components of the qualification)

Fundamentals	Level 4	4 Credits
Core	Level 4	52 Credits
Electives	Level 4	4 Credits
	Total	60 credits

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ASSESSMENT ARRANGEMENTS

The weightings for the assessment will be as follows:

a)   Formative assessment

The weighting of formative assessment is 60% of the final assessment mark.

b)   Summative Assessment

The weighting of summative assessment is 40% of the final assessment mark

MODERATION ARRANGEMENTS

Internal and external moderators perform assessments of the qualification. Both internal and external moderators are done in-line with the national assessment policy. Anyone moderating a learner against this qualification must be registered with BQA as a moderator.

RECOGNITION OF PRIOR LEARNING

There shall be provision for award of the qualification through Recognition of Prior Learning (RPL) in accordance with institutional policies in line with the national RPL policy.

CREDIT ACCUMULATION AND TRANSFER

Credits Accumulated and Transfer will be administered in line with the national and institutional policy and will be administered towards the award of qualification

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Horizontal Articulation

Graduates may progress to qualifications such as:

•   Certificate IV in Telecommunications

•   Certificate IV in Instrumentation

Vertical Articulation

•   Certificate V in Electronics engineering

•   Certificate V in Telecommunications

•   Certificate V in Instrumentation

Employment Pathways

Holders of this qualification can work as; but not limited to:

•   Electronics Equipment Assistant Technician

•   Electrical Appliance Serviceperson

•   Assistant Security System Installer

•   Assistant Gaming Machine Repairer

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification

A candidate is required to achieve the stipulated total of 60 credits, 56 credits for core units and 4 credits for fundamental to be awarded Certificate IV in Electronics.

Certification

Candidates meeting prescribed requirements will be awarded Certificate in addition to transcript.

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

1. Tittle:

   The title for the developed qualification and those benchmarked against are all certificate qualification hence they have similarities.

2. Level

   The qualification level for all three qualifications is the same /or equal as it is level 3.

3. Credits:

   The credits for all the qualifications are within the same range developed qualification has 60 credits, benchmarked ones are Certificate IV in Electronics and Communication (NCQF) 128 credits and National Certificate: Electronics (SAQA 122 credits. The developed qualification credits are low compared to the benchmarked ones, hence there is need to increased credits in order to meet the regionally and internationally standards.

4. Main Exit Outcomes:

   All the qualifications are similar as they all impart knowledge, skills and competence in electrical and electronics of basic concepts, use of basic measuring and testing instruments.

5. Domains/Modules/Courses/Subjects

   Comparison was done and it indicates that all qualifications cover similar modules

6. Assessment strategies and Weightings

   Assessment strategies are the same for the qualifications as they cover formative, summative and practical assessments.

7. Qualification rules

The developed qualification has only fundamentals and core modules whereas the benchmarked ones have fundamental, core and electives

REVIEW PERIOD

This qualification shall be reviewed every five years.

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For Official Use Only:

CODE (ID)			
REGISTRATION STATUS	**BQA DECISION NO.**	**REGISTRATION START DATE**	**REGISTRATION END DATE**
LAST DATE FOR ENROLMENT		**LAST DATE FOR ACHIEVEMENT**	