BQA NCQF QUALIFICATION TEMPLATE

SECTION A:	QUALIFICATION DETAILS														
QUALIFICATION DEVELOPER (S)	Madirelo Training and Testing Centre														
TITLE	Certificate V in Electrical Installation and Maintenance											**NCQF LEVEL**	5		
STRANDS (where applicable)	NA														
FIELD	Manufacturing, Engineering and Technology											**CREDIT VALUE**	120		
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 qualification was informed by the following: The Botswana Vision 2036 pillar, in particular Sustainable Economic Development and Human and Social Development. 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.

Furthermore, the Botswana Education and Training Sector Strategic Plan, through a planned and careful development of human capital, it seeks to refocus education and training on fulfilment of social and economic aspirations identified in our Revised National Policy on Education (RNPE) 2004, General Education Curriculum and Assessment Framework. In particular, the ETSSP is intended to strengthen the match between qualifications and labour market requirements, thereby ensuring that education and training outputs are more closely aligned to socio economic development needs of the country.

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 Electricians will still be in demand during that period as it showed on the report. In addition, the need for the development of Electrician qualification is informed by the labour market in the country in whereby a lot of foreigners are employed as specialist in areas like motor rewinding, alarm installations.

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 the qualification is to produce artisan with broad technical knowledge, skills and competence to:

1. Install electrical systems in accordance with specific standards.
2. Perform fault-finding and maintenance in electrical systems within specified parameters.
3. Carry out Inspection and commissioning in electrical systems line with established regulations.
4. Build and program electronic circuits to control electrical systems according to IEEE standards.
5. Assess the viability of a chosen venture and develop its business plan and implementation schedule for submission to potential financiers.

6. Apply effective fundamental and problem-solving skills while performing assigned duties/tasks according to the set industry standards in an actual work environment.
MINIMUM ENTRY REQUIREMENTS (including access and inclusion)
• Certificate IV, NCQF LEVEL 4 (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. Install and maintain electrical systems in accordance with specific standards.	1.1 Examine job specification to determine the tools and equipment to be used. 1.2 Prepare for work in accordance with the job specifications and organizational requirements. 1.3 Select appropriate electrical systems according to specified ratings, type and compatibility to the job. 1.4 Install the electrical system in accordance with standard specifications. 1.5 Carry out all the necessary tests by using measuring instruments, adhering to health, safety and quality standard.

	1.6 Compare and confirm measurements results in line with standard specifications. 1.7 Perform quality checks on work done and make improvements where needed. 1.8 Clean tools and equipment and store them in an appropriate place after use. 1.9 Clean or tidy up the work area in accordance with organizational requirements.
2. Perform fault-finding and maintenance in electrical systems within specified parameters.	2.1 Follow risk control measures and procedures in preparation for the work. 2.2 Obtain nature of the fault 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 Disassemble apparatus in accordance with organizational requirements. 2.6 Carry out fault finding logically using knowledge of electrical apparatus sections and circuit parameters 2.7 Carry out repairs without damage to components and circuits. 2.8 Reassemble apparatus and test it in accordance with established procedures. 2.9 Clean work area and make it safe in accordance with established procedures. 2.10 Document work completion in accordance with established procedures.
3. Carry out Inspection and commissioning in electrical systems in line with established regulations.	3.1 Plan and prepare for work in the workplace in accordance to job specification.

	3.2 Select the correct instrument for the measurement of given physical properties in line with the job specification. 3.3 Carry out all the necessary tests adhering to health, safety and quality standard. 3.4 Measure all dimensions in accordance with standard specifications and tolerances by using various precision measuring instruments. 3.5 Record, compare and confirm measurements results in line with standard specifications
4. Build and program electronic circuits to control electrical systems according to IEEE standards.	4.1 Develop and assemble the control circuit for electrical system accordance with job specification. 4.2 Develop a program for electrical system. 4.3 Enter program according to manufacturer's instructions. 4.4 Simulate program according to job requirements. 4.5 Save program according to manufacturer's instructions
5. Autonomously assess the viability of a chosen venture and develop its business plan and implementation schedule for submission to potential financiers.	5.1 Identify and assess a venture of interest 5.2 Conduct a market survey to assess the viability of the project in its target area. 5.3 Develop a plan for the chosen venture including an overview of the business, operations, marketing, human resources and financial projections adequate for funders. 5.4 Schedule for implementation of the business plan in the form of a gantt chart (or any suitable presentation technique).
6. Apply effective fundamental and problem solving skills while performing assigned duties/tasks according to the set industry standards in an actual work environment.	6.1 Communicate and Negotiate and with stakeholders to initiate a industrious work based learning experience 6.2 Perform assigned vocation related tasks to the required standards 6.3 Apply effective fundamental (core) skills throughout the duration of the work based learning program.

	6.4 Adhere to health and safety requirements at all times. 6.5 Demonstrate problem solving skills as and when problems are encountered during the work process. 6.6 Contribute effectively to teamwork initiatives within the work environment. 6.7 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 [ ]	**Level [ ]**	**Level [ ]**	
FUNDAMENTAL COMPONENT Subjects/ Courses/ Modules/Units	Entrepreneurship			5	11
CORE COMPONENT Subjects/Courses/ Modules/Units	Electrical systems installation			5	21
	Engineering Mathematics			5	6
	Electrical system Maintenance			5	8
	Inspection and Testing			5	10
	Industrial Electronics			5	10
	Work based Learning			5	48
	Subjects/ Courses/ Modules/Units	**Credits Per Relevant NCQF Level**			**Total Credits**

STRANDS/ SPECIALIZATION		Level [ ]	Level [ ]	Level [ ]	
1.	Photovoltaic systems			5	6
2.	Motor rewinding			5	6
Electives					

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	**Credit Value**
5	**120**
TOTAL CREDITS	**120**

Rules of Combination:

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

Candidates are required to achieve a minimum of 120 credits inclusive of 11 credits for fundamentals 103 credits for core and 6 Credits of elective.

Candidates are also required to complete the required period of industrial attachment or work experience and submit associated portfolio of evidence as per stipulated exit outcomes and associated assessment criteria to be eligible for the award of the qualification.

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ASSESSMENT ARRANGEMENTS

The weightings for the assessment will be as follows:

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

2. Summative Assessment
The weighting of summative assessment is 40% of the final assessment mark.

MODERATION ARRANGEMENTS

Internal and external moderation are performed in assessments for the qualification. Assessors and moderators are BQA registered and accredited. Both internal and external moderation are done in-line with the national moderation policy expectations.

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.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

LEARNING PATHWAYS

Horizontal Articulation

Graduates of this qualification may consider pursuing related qualifications in the following:

Horizontal Articulation (related qualifications of similar level that graduates may consider)

- Certificate V in Solar Photovoltaic
- Certificate V in Instrumentation
- Certificate V in Electronics

Vertical Articulation (qualifications to which the holder may progress to)

- Diploma in Control and Instrumentation
- Diploma in Solar Photovoltaic
- Diploma in Electrical Engineering

EMPLOYMENT PATHWAYS

- Assistant Instrumentation Technician
- Assistant Photovoltaic Technician
- Electrical Artisan

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification
A candidate is required to achieve the stipulated total credits inclusive of the fundamental, core and elective components, to be awarded the Certificate V in Electrical Installation and Maintenance.

Certification
Candidates meeting prescribed requirements will be awarded a certificate

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

Tittle:

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

Level

The developed qualification is at level 5, whereas the benchmarked ones are both at level 4, it indicates that the two benchmarked are similar but different compared to the developed qualification.

Credits:

The credits for all the qualifications are within the same range developed qualification has 120 credits, benchmarked ones are Occupational Certificate: Electrician NQF Level 4 120 credits and Certificate in Electrical Trade NZQF Level 4 250 credits. The Certificate in Electrical Trade (NZQF) 250 credits has modules which are covered at lower levels of the developed qualification namely: Work safely; identify and control hazards; and manage risks in an electrical environment= 25 credits; Comply with

electrical and relevant non-electrical legislation governing the work of electricians = 20 credits; Develop knowledge of areas where specialist knowledge is required to carry out installation and maintenance of electrical equipment =15 credits

Main Exit Outcomes:

All the qualifications are similar as they all impart knowledge, skills and competence in installation, maintenance, repairs, testing and commissioning of electrical equipment associated services such as generation, transmission and distribution.

Domains/Modules/Courses/Subjects

Comparison was done as shown on the attached document, summarily all qualifications cover similar modules

Assessment strategies and Weightings

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

Qualification rules

All qualifications have fundamentals, core and electives

Education and Employment Pathways

The qualifications all cater for vertical and horizontal pathways and the employment pathway is for a graduate Electrician.

Comparability and articulation of the proposed qualification with the ones examined

Horizontal Articulation (related qualifications of similar level that graduates may consider)

Certificate V in Refrigeration
Certificate V in Instrumentation
Certificate V in Solar Photovoltaic4

Vertical Articulation (qualifications to which the holder may progress to)

Certificate in Control and Instrumentation level 6
Certificate in Solar Photovoltaic level 6
Certificate in Electrical level 6

EMPLOYMENT PATHWAYS

Assistant Instrumentation Technician
Electrical Artisan (Installation and Maintenance)
Assistant Technician Electrical
Assistant Technician Solar Photovoltaic

REVIEW PERIOD
This qualification shall be reviewed after every 5 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**	