

 <b>BOTSWANA</b> Qualifications Authority	<b>BQA NCQF QUALIFICATION TEMPLATE</b>	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

<b>SECTION A: QUALIFICATION DETAILS</b>												
<b>QUALIFICATION DEVELOPER (S)</b>		Woo International										
<b>TITLE</b>	Certificate IV in Electrical installation and Maintenance								<b>NCQF LEVEL</b>	4		
<b>FIELD</b>	Manufacturing and Engineering Technology			<b>SUB-FIELD</b>	Electrical Installation and Maintenance			<b>CREDIT VALUE</b>	60			
<i>New Qualification</i>					√	<i>Review of Existing Qualification</i>						
<b>SUB-FRAMEWORK</b>		<i>General Education</i>			<i>TVET</i>			√	<i>Higher Education</i>			
<b>QUALIFICATION TYPE</b>	<i>Certificate</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>IV</i>	√	<i>V</i>	<i>Diploma</i>	<i>Bachelor</i>			
	<i>Bachelor Honours</i>			<i>Post Graduate Certificate</i>				<i>Post Graduate Diploma</i>				
	<i>Masters</i>					<i>Doctorate/ PhD</i>						

**RATIONALE AND PURPOSE OF THE QUALIFICATION**

**RATIONALE:**

HRD Sector Skills Plans (2017) indicators identifies demand for people with Electrical Installation and Maintenance at this level, to support productive safe work that contributes to economic growth of different sectors of the economy that are dependent on skilled human resources domain.

Labour statistics analysis list electrical Installation and maintenance as one of the occupational trades which are in high demand; on the other hand, Government NDP 11 has identified various mega development projects that will require electrical Installation and maintenance services. This thus raises demand for human resources with electrical Installation competencies and qualified with a suit of skills required in these jobs.

The qualification could contribute to address the national problem of unemployed youth and increase the employability of graduates in certain vocational areas with acquisition of electrical installation and maintenance skills.

This qualification will further serve the needs of the society and the economy by providing electrical installation and maintenance services.

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It will help in producing competent learners who are able to contribute to improved productivity and efficiency within the engineering support environment. They will be able to work according to legislative, regulatory, quality assurance requirements and industry standards

**PURPOSE:**

The purpose of this qualification is to provide learners with knowledge, skills and competences to be able to;

- Interpret electrical drawings, symbols, and diagrams.
- Demonstrate knowledge of electrical concepts, system control and trade practice.
- Install electrical lighting systems on auxiliary outlets and lighting fixtures.
- Connect, wire, and install electrical system and equipment.
- Care, maintain and repair electrical circuits, components, and equipment.

**ENTRY REQUIREMENTS (including access and inclusion)**

Entry to this qualification is open to the following criteria:

- a) Certificate III in Electrical Installation and Maintenance (NCQF Level 3) or equivalence
- b) There shall be consideration for RPL and CAT according to national RPL and CAT policies


<b>SECTION B QUALIFICATION SPECIFICATION</b>	
<b>GRADUATE PROFILE (LEARNING OUTCOMES)</b>	<b>ASSESSMENT CRITERIA</b>
1. Interpret electrical drawings, diagrams, and Symbols.	1.1 Use electrical symbols, blueprints and schematics according to specifications. 1.2 Draw simple electrical diagrams to specifications. 1.3 Build electrical power and control circuits according to drawings.
2. Apply knowledge of electrical concepts, and trade practice.	2.2 Use Principles of electrical and electronics at the workplace. 2.3 Identify principles of circuit protection system. 2.4 Select Solid-State Devices. 2.5 Select electrical cables and accessories applicable to job.
3. Install and wire electrical systems, signalling devices and remote-control systems.	3.1 Carry out electrical installation for premises. 3.2 Install and bend various conduits and electrical mouldings. 3.3 Install wiring devices for floor and ground fault current interrupting outlets. 3.4 Install electrical lighting systems on auxiliary outlets and lighting fixtures. 3.5 Install electrical protection system for lighting and grounding. 3.6 Install communication, signaling devices and remote-control systems.
4. Maintain, trouble shoot and repair electrical installations and systems.	4.1 Test electrical system and installations. 4.2 Inspected electrical circuits and components for operation. 4.3 Diagnose fault on electrical installations and systems. 4.4. Rectify fault during electrical installations.

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	4.5 Store electrical installation materials, instruments, and equipment according to industry standards.

<b>SECTION C</b>	<b>QUALIFICATION STRUCTURE</b>				
<b>COMPONENT</b>	<b>TITLE</b>	<b>Credits Per Relevant NCQF Level</b>			<b>Total (Per Subject/ Course/ Module/ Units)</b>
		<b>Level [ 3 ]</b>	<b>Level [ 4 ]</b>	<b>Level [ ]</b>	
<b>FUNDAMENTAL COMPONENT</b> <i>Subjects/ Courses/ Modules/Units</i>	Occupational Safety in the workplace	3			3
	Interpreting technical drawings	3			3
	Scaffolding, working at heights	3			3
	Team and Interpersonal Skills	3			3
<b>CORE COMPONENT</b> <i>Subjects/Courses/ Modules/Units</i>	Introduction to electricity	4			4
	Basic electronics	4			4
	Electrical circuits	4			4
	Electrical power and energy		4		4

	Cables		4		4
	Generators and transformers		4		4
	Electric motors		4		4
	Electrical protection		4		4
	Solid-state devices	3			3
	Electrical installations		4		4
	Electrical wiring		4		4
	Trouble shooting, maintenance and repair		4		4
	Test electrical installations		4		4
	Electrical equipment and machines		4		4
	Electrical tools and equipment	3			3
<b>ELECTIVE/ OPTIONAL COMPONENT</b>  <i>Subjects/Courses/ Modules/Units</i>					
	<b>TOTAL CREDITS</b>				<b>67</b>

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**SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL**

<b>TOTAL CREDITS PER NCQF LEVEL</b>	
<b>NCQF Level</b>	<b>Credit Value</b>
<b>3</b>	<b>18</b>
<b>4</b>	<b>49</b>
<b>TOTAL CREDITS</b>	<b>67</b>

**Rules of Combination:**  
*(Please Indicate combinations for the different constituent components of the qualification)*

This Certificate IV in Electrical Installation comprises 67 credits, comprising of fundamental and core components (*electives not applicable*)

**Fundamental Components:**


The Fundamental components consist of foundational knowledge to the value of 12 credits all of which are compulsory.

**Core Components:**

The core components consist of core modules to the value of 55 credits which are compulsory.

**Elective Components:**

There are no elective credits required to attain this qualification.

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**ASSESSMENT ARRANGEMENTS**

- Assessment will include both formative and summative modes.
- Formative assessment will contribute 50% to the overall course grade. Summative assessment will constitute the other 50% of the overall course grade.
- Assessment shall be carried out by BQA accredited Assessors and Moderators.
- Assessment will be carried out in accordance with the institutional policies and in line with the national policy.

**MODERATION ARRANGEMENTS**

The sole purpose of moderation is to make sure that assessment and marking across all courses is fair, valid and reliable. It also aligns the assessment tool to the outlined learning outcomes, that it is set at an appropriate level of study and that the process of marking is consistently done.

- There will be both Internal Moderation and External moderation
- Moderation for assessment shall be carried out by BQA accredited moderators.
- Moderation will be done in accordance with the institutional policies and in line with the national policy.

**RECOGNITION OF PRIOR LEARNING**


There is also provision for award of the qualification through RPL.

**CREDIT ACCUMULATION AND TRANSFER**

Credit and accumulation and transfer will be considered for purposes of exemption of learners on certain modules

**PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)**

Holders of this qualification may progress in employment and grow by work experience and continuous professional / personal development. They may progress in learning to access learning at this level in one of

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the domains in a horizontal learning pathway. They may also progression vertically to access qualifications at higher levels in this vocation.

**Horizontal Pathways**

- Certificate IV in Overhead Powerline
- Certificate IV in Electronics

**Vertical Pathways**

- Certificate V in Electrical Installation and Maintenance

**Employment Pathways**

- Electrician

**QUALIFICATION AWARD AND CERTIFICATION**

A candidate is required to achieve a minimum of 60 credits, inclusive of the fundamental and core to be awarded Certificate IV in Electrical Installation and Maintenance qualification.

**Certification**

There will be issuance of a certificate and official transcript at award.


**REGIONAL AND INTERNATIONAL COMPARABILITY**

The development of this qualification was informed and guided by a comparison with other similar qualifications nationally, regionally and internationally, against common criteria feature of qualifications and their uses. The criteria used included but was not limited to:

The comparability was done as a desk research task of comparing similar level qualifications from Botswana, South Africa, New Zealand and UK. The aim of the comparison was to inform this design and attain parity of esteem of this with similar benchmarks.

**Similarities:** all qualifications reviewed are at specified NQF level, use similar credits system, subfield classification and are expressed in outcomes-based format

**Differences:** the differences lie in the contributing modules and specific legislation as they are relevant in the country of origin.

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<b>REVIEW PERIOD</b>
The qualification shall be reviewed every five (5) years.

