SECTION A								
QUALIFICATION DEVELOPER	Gaborone University College of Law and Professional Studies							
TITLE	Certificate V in Electronics					**NCQF LEVEL**	**5**	
FIELD	Information and Communication Technology			**SUB-FIELD**	Electronic Technology			
New qualification	✓	Review of existing qualification						
SUB-FRAMEWORK	General Education		TVET	✓	Higher Education			
QUALIFICATION TYPE	Certificate	✓	Diploma		Bachelor			
	Bachelor Honours		Master		Doctor			
CREDIT VALUE	**130**							

RATIONALE AND PURPOSE OF THE QUALIFICATION

In 2016 the Botswana Human Resource Development Council (HRDC), compiled a comprehensive report indicating occupations that are highly demanded by the employers at a national level. Priority skills in each occupation have been identified and these include both the core skills and soft skills (HRDC, 2016). Information and Communication Technology is identified as one of the occupations that are currently experiencing shortages in Botswana labour market. Information and Communication Technology is one of the occupations that are reported to be on relatively strong employment long term growth rate. (HRDC 2016), further states that Electronic Technology artisans are in acute shortage in several sectors of the Botswana economy.

According to Statistics Botswana's Information & Communications Technology Statistics Report 2015, there is a huge increase in the use of technological devices in the country since the turn of the millennium. This increased consumption of technology in Botswana necessitates the need for qualified artisans. The Internet subscriptions (GSM) rose by 39.2 percent from 2,524,013 subscriptions in 2014 to 3,512,172 in 2015 for both mobile and fixed internet subscriptions. There was also a huge growth in the use of Television and Radio usage. More so, Mobile internet subscriptions alone account for more than 98% of the increase from 2,496,146 subscriptions in 2014 to 3,475,327 in 2015. The growing usage of electronic technology creates more employment needs and opportunities for professionals and artisans in the electronic technology field. The Certificate in Electronic Technology is meant to bridge the needs of such users by addressing fundamentals of electronic technologies, GSM, TV, and Radiography functionality.

The major findings of e-Readiness Study in the Maitlamo report indicates that while technical infrastructure and Internet access are important parts of the ICT puzzle, the most important piece is human capital and a

workforce that can maximize the benefits of the ICT infrastructure for social, economic and cultural benefits. Botswana will need to focus many of its ICT efforts, and budget, on learning and the development of technologically literate students if it is to create a vibrant future in the networked world. The Certificate in Electronic Technology qualification structure and modules addresses these human capital needs through its diversified contemporary modules that address both theoretical and practical knowledge required by personnel to work in such ICT infrastructure.

The Needs Assessment Survey further confirms that there is a shortage of professional and trained personnel in the field of ICT and specifically in the subfield of electronic technology. This indicates a huge human capital gap in the country especially noting that the HRDC confirms that at national level there is an acute shortage of such ICT professionals and artisans. A substantive 94 per cent of the ICT alumni indicated that they were satisfied with the content of the Certificate in Electronic Technology and its ability to address the skills (both theoretical and practical) requirements for the professional and artisans in the ICT field. The National Development Plan (NDP 11) echoed the need for skills development. The central thrust of Botswana's overall strategy for eradication of extreme poverty during NDP 11 will be to provide opportunities for the poor to have sustainable livelihoods (NDP 11: 2017 - 2023). It became clear also that a qualification, which develops knowledge and skills in this area of national development, would go a long way in assisting realization of some of the goals of the Vision 2016 in view of job creation and skills development.

Conclusively, the development of Certificate in Electronic Technology qualification is influenced by reports and policy documents such as Human Resource Development Council (HRDC), Statistics Botswana's Information & Communications Technology Statistics Report 2015, NDP 11 Maitlamo, Vision 2036, Vision 2016, and Mobile Computing Market Analysis. A Needs Assessment Survey also reinforced the need for this qualification in Botswana and the region. The responses from the survey were positive with aspiration and conviction that the qualification was contemporary, needed, and sustainable.

Purpose

The purpose of this qualification, is to enable graduates to:

- Apply mathematical concepts and processes to solve personal and electronics related problems.
- Assemble cables, harness and printed circuit or wiring boards.
- Practice safe work habits according to industry standards in the electronics environment.

ENTRY REQUIREMENTS (including access and inclusion)

Minimum entry requirement for this qualification is a:

NCQF level 4, Certificate IV (General Education or TVET) or equivalent.

Recognition of Prior Learning (RPL):

There will be access through Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer (CAT) in accordance with the RPL and CAT National Policies.

QUALIFICATION SPECIFICATION SECTION B	
GRADUATE PROFILE (LEARNING OUTCOMES)	**ASSESSMENT CRITERIA**
• Communicate in a variety of ways to achieve personal and workplace objectives within the electronics environment.	• Apply written, verbal and non-verbal aspects of communication. • Implement the language and texts used in communication in all contexts. • Prepare formal and informal business communiqués. • Plan and conduct appointments with clients • Plan and deliver business presentations.
• Apply mathematical concepts and processes to solve personal and electronics related problems.	• Apply principles of electrical engineering in solving integrated circuit in electronic drawing. • Demonstrate the principles and operation of electronic circuits in accordance with circuit and equipment specifications. • Interpret and construct electronic circuits according to circuit diagrams and components provided.
• Apply elementary principles of electricity and electronics.	• Inspect for non-conformance in electrical and electronic circuits. • Test and verify the correct operation of equipment in in electrical and electronic circuits. • Identify, repair or replace faulty equipment in electrical circuits accordingly in the correct procedure. • Monitor, record and maintain electrical and electronic equipment according to correct workshop standards.
• Assemble cables, harness and printed circuit or wiring boards.	• Perform accurate coding of harnesses. • Interpret diagrams and parts lists. • Test cables to comply with wiring diagrams.
• Practice safety measures in an electronics environment.	• Illustrate the consequences of exposure and poor adherence to health and safety requirements as described in terms of the impact on people and the organization. • Address workplace hazards and risks in accordance with workplace specific health and safety requirements. • Apply measures to deal with workplace hazards and risks in accordance with workplace specific health and safety requirements.

QUALIFICATION STRUCTURE: SECTION C			
FUNDAMENTAL COMPONENT Subjects / Units / Modules /Courses	**Title**	**Level**	**Credits**
	Introduction to Information Technology	5	10
	Entrepreneurial Skills	5	10
	Basic Electrons	5	10
CORE COMPONENT Subjects / Units / Modules /Courses	Television System	5	12
	Satellite Transmission and Reception	5	12
	Electronic Amplifiers	5	12
	Electronics Circuits and Symbols	5	12
	Radio Communication	5	12
	Mobile Communication and GSM	5	15
	Workshop Practice	5	25
ELECTIVE COMPONENT Subjects / Units / Modules /Courses	**NONE**		

Rules of combinations, Credit distribution

- The qualification is comprised of Level 5 modules/components only.
- There are 3 Fundamental Components of 10 credits each – 30 credits
- There are 7 Core Components all adding up to 100 credits
- No elective components
- Total Credits = 130 Credits

ASSESSMENT AND MODERATION ARRANGEMENTS

All assessments leading to the awarding of this qualification will be based on learning outcomes associated with the following assessment criteria:

1. ***Formative assessment***

   The weighting of formative assessment is 50% of the final assessment mark.

2. ***Summative Assessment***

The weighting of summative assessment is 50% of the final mark. Assessment arrangements will be done by assessors who are registered and accredited by BQA or any other recognized authority.

Moderation

There shall be provision for internal and external moderation done by BQA registered and accredited moderators.

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.

Candidates may submit evidence of credits accumulated in related qualification in order to be credited for the qualification they are applying for.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Learning Pathway

The graduates of this qualification can academically progress into the following qualifications:

Vertical Progression

- Diploma in Information Communication Technology
- Diploma in Electronic Technology
- Diploma in Electrical Engineering
- Bachelor of Science in Information Communication Technology or any other related qualification

Horizontal Progression

- Certificate in Information Communication Technology
- Certificate in Electronics
- Certificate in Electrical Engineering

Diagonal Progression

- Diploma in Mechanics
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Computer Networking

Employment Pathways

Graduates of this qualification will find employment in sectors such as mobile technology companies, security, automobile industry, computer hardware and software set-ups as well as process industries for positions of:

- Broadcast assistant

- Assistant technician
- Electronics attendant

QUALIFICATION AWARD AND CERTIFICATION

Learners who successfully earn a stipulated minimum of **130** credits as stipulated for this qualification will be awarded a **Certificate V in Electronics.** No part certification will be conferred to learners who do not meet the minimum credit requirements for this qualification. This qualification does not have exit awards.

REGIONAL AND INTERNATIONAL COMPARABILITY

Conclusively, the components of this qualification compare relatively similar to the below benchmarks. However, the below benchmarks have low credit allocations. The modules and their content are strongly related.

International Institution	Level	Duration	Modules	Credits
NHTI Concord's Community College (UK) **Electronic Technology Certificate**	RQF Level 3	1 year	Electric Circuits, Circuit Analysis, Electronics 1, Electronics 2 Advanced Digital Electronics	Not indicated
Mesa Community College (USA) **Certificate in Electronic Technology**	No NQF	1 year	Algebra-Trigonometry Circuit Analysis I Circuit Analysis II Solid-State Devices & Circuits Digital Logic and Circuits Computer Programming Microprocessor Concepts Industrial Safety Electro-Mechanical Devices	24

REVIEW PERIOD

This qualification will be reviewed 5 years **upon its registration.**