SECTION A:	QUALIFICATION DETAILS				
QUALIFICATION DEVELOPER	University of Botswana				
TITLE	Diploma in Statistics			NCQF LEVEL	6
FIELD	Natural, Mathematical and Life Sciences	SUB-FIELD	Statistics	CREDIT VALUE	248
New Qualification				Review of Existing Qualification	✓
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 current report (2019) on the Human Resource Development Council (HRDC) of Botswana's Priority Skills and Employment Trends' job rankings put data analysts and/or scientists, machine learning and big data specialists high on the list of the future jobs as suggested by the World Economic Forum. All these are specialised, 'new millennial' jobs that are directly related to the study of statistics as a science of decision-making. Furthermore, statistical, mathematical, and related associate professionals have been listed amongst the top occupations in demand in the research, innovation, science, and technology (RIST) sector. These top occupations are informed by national priorities as outlined in the VISION2036, National Development Plan (NDP 11) and long-term strategies of the different sectors of the economy.

The Diploma in Statistics qualification offers an opportunity to provide Botswana with a cadre of sub-professional staff in the national statistical systems, especially at the national statistical offices in SADC member states, market-ready to provide technical support required by the different sectors of the economy. The knowledge gained in this programme provides the students with the necessary analytical tools and quantitative reasoning to extract useful information from both the small and big data sets. Furthermore, the qualification is expected to help the graduates to undertake higher level studies such as Bachelor's degree programs in statistics and its allied subjects such as Actuarial Sciences, Data Science/Analytics, Bioinformatics, Risk Management, and others.

PURPOSE: The purpose of this qualification is to produce a graduate with the knowledge, skills, and competences to:

i. Perform data collection, design surveys, and analyze various types of data found in the work environment.
ii. Solve statistics-related problems, engage in critical thinking, and have other generic skills such as written and oral communication, computer-literacy and great interpersonal skills infused through assessments and multicultural environment.
iii. Demonstrate initiative and responsibility to perform their duties in a professional and ethical manner.
iv. The overall aim is to increase the professional base of statistical staff within the national statistical systems of SADC member states.

ENTRY REQUIREMENTS (including access and inclusion)

Minimum entry into a Bachelor of Science in Statistics program requires an applicant to have:

I. Certificate IV, NCQF level 4 (TVET/HE) or equivalent
II. RPL and CAT are applicable for admission

SECTION B	***QUALIFICATION SPECIFICATION***
GRADUATE PROFILE (LEARNING OUTCOMES)	***ASSESSMENT CRITERIA***
LO1 - Understand the functions of the National Statistics System and its relevance in collecting official statistics used in decision making.	1.1. Infer and explain the fundamental principles of official statistics as produced within the National Statistical System. 1.2. Explain and apply the importance of statistical information for policy and decision making at local, national, and international level. 1.3. Identify the likely errors and their sources in data collection and understand how they can distort the quality of the data. 1.4. Describe and apply the process of compilation of National Accounts and their importance to the country. 1.5. Compute common index numbers such as consumer price index and GDP for Botswana and explain how they inform policy.
LO2 - Apply statistical techniques of data collection and appropriate methods used to analyze and present it.	2.1. Plan a survey design(s) for data collection in any discipline. 2.2. Build a data entry form and be aware of the importance of careful design of data entry processes to reduce the incidences of error. 2.3. Apply basic statistical techniques for analysis of data in any discipline. 2.4. Present statistical results and make generalizations or recommendations to solve social or policy issues.

	2.5. Plan and prepare a simple statistical report for clients.
LO3 – Define and apply basic probability principles and methods to real life problems	3.1. Identify and distinguish between different probability distributions, both discrete and continuous and identify work related problems which might be modelled with such. 3.2. Formulate real life problems as those which can be addressed by probability principles. 3.3. Solve real life problems and evaluate them using probability methods and ideas.
LO4 - Identify, analyse, and interpret time series data.	4.1. Identify and distinguish between different time series concepts for proper communication of time series data. 4.2. Organise different types of time series data on tables and graphs to bring out salient features of events which occurred over time. 4.3. Apply and interpret basic time series models and results to real life problems
LO5 - Apply Statistical methods and Techniques used in statistical and real-life applications.	5.1. Apply the basic statistical concepts to estimate population characteristics from sample values and to infer on the finding of the population being studied to inform policy. 5.2. Describe the process underlying the testing of a proposed hypothesis and apply it to make decisions utilizing the data. 5.3. Recognize the different types of errors that arise when statistical tests are conducted and know their impact on the decision making. 5.4. Apply most important statistical techniques such as Regression analysis and Analysis of variance to measure how well a theory fits the real-world data. *5.5.* Explain the general principles underlying statistical modeling and apply it to investigate a real-life problem for purposes of policy and decision making.
LO6 – Identify and distinguish between the different sampling designs and apply them to solve real life problems.	6.1. Design a sampling scheme for a given problem and apply it to select sample in a research problem. 6.2. Produce sample estimates for population means and proportions together with associated estimates of precision and apply it in a research problem. 6.3. calculate sample sizes and apply it to real-life research problems to inform policy makers.

	6.4. understand general issues and difficulties associated with determining sample sizes for large scale multi-stage sampling procedures and apply it to real-life problems to inform policy makers.
LO7 – Understand the survey process, in terms of the practical aspects of organizing a survey design, analyze and present the results of a small survey.	7.1. Identify possible research problem that can be studied from a given scenario. 7.2. Formulate measurable research hypothesis for the identified research problem. 7.3. Critically review current literature in the subject area of the identified research problem. 7.4. Chose a suitable study design and apply it to the given research problem. 7.5. Design a suitable collection instrument and use it for data collection for the given research problem. 7.6. Understand data management process and choice of suitable method of analysis and apply it to the identified research problem. 7.7. Perform appropriate statistical analysis on survey data using any statistical software.to address the survey objectives for a given problem. 7.8. Prepare a statistical report, structure a good presentation, and communicate the results effectively to both statisticians and non-statisticians.

SECTION C	***QUALIFICATION STRUCTURE***				
COMPONENT	***TITLE***	***Credits Per Relevant NCQF Level***			***Total (Per** Subject/ Course/ Module/ Units)*
		Level 6	***Level 7***	***Level 8***	
FUNDAMENTAL COMPONENT *Subjects/ Courses/ Modules/Units*	Communication and Study Skills		20		*20*
CORE COMPONENTS *Subjects/ Courses/ Modules/Units*	Statistical Systems	*24*			*24*
	Collecting, Analyzing and Presenting Statistical Data	*36*			*36*
	Statistical Techniques and Models	*24*			*24*
	Introduction to Time Series Concepts	*12*			*12*

	Sampling Concepts in Survey Work	*12*			*12*
	Introductory Probability	*12*			*12*
	Field Work	*12*			*12*
ELECTIVE/ OPTIONAL COMPONENT *Subjects/Courses/ Modules/Units* ***(Students should score a minimum of 96 credits)***					
	Introductory Mathematics		24		*24*
	Elementary Calculus		*12*		*12*
	Linear Algebra		*12*		*12*
	Economics		*48*		*48*
	Population studies		*48*		*48*
	Environmental Science		*48*		*48*

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	**Credit Value**
6	132
7	116
TOTAL CREDITS	**248**

Rules of Combination:

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

For a student to graduate with a Diploma in Statistics, they must have acquired the following credits:

- Fundamentals: 20
- Core courses: 132
- Optional / Electives Courses: 96 credits minimum

A total of 248 credits

ASSESSMENT ARRANGEMENTS

All the assessments, formative and summative, leading/contributing to the award of credits or a qualification should be based on learning outcomes and/or sub-outcomes. Some core courses are theory based while some are more practical and interactive, while others require some degree of field work and report writing.

5.1 *Formative assessment*

Formative assessment or continuous assessment contributing towards the award of credits should be based on course outcomes. Unless otherwise specified in the departmental regulations, the continuous assessment will consist of at least two pieces of work which comprises of presentations, tests, assignments, term paper, understudy some National Statistical Office functions (SB) and involvement in surveys. The contribution of continuous assessment to the final grade is **50 %.**

5.2 *Summative assessment*

For taught courses, candidates may undergo assessment including written and practical examination, simulated and practical projects. Summative assessment contributes **50 %** to the qualification.
Assessing non-examinable courses is based on submitted report subjected to quality assurance criteria approved by the Department of Statistics examination board.

MODERATION ARRANGEMENTS

All necessary documents including qualification document, alignment matrices, assessment instruments and Assessment criteria/rubrics should be available.

Pre-assessment Moderation

All examinations must comply with the rules of the University, and the examination procedures of the Department are made available to all interested parties. The departmental exam coordinator collects all the exam papers set along with the course outlines from the lecturers and passes them to the coordinators of the moderation groups. The moderation group coordinators distribute the exam papers to the members in the group. All exam papers go through the process of moderation wherein at least two moderators must check question papers for (i) coverage of syllabus (ii) quality of the questions (iii) allocation of marks (iv) level of difficulty and length and must ensure that the questions are directed at evaluating the desired learning outcomes. The examination paper may only be finalized once the moderators are entirely satisfied and have indicated this by approving it – in a revised form, if necessary. To assist with quality control in this process, a moderation report must be completed by the moderator for all the papers moderated. This report confirms the quality of the examination paper and of the assessment process.

Post-assessment Moderation

The marked exam scripts go through the process of moderation. The moderator checks a statistically significant sample of the marked scripts for fairness, consistency, and accuracy in the addition and transfer of marks.

Sampling Procedure for Moderation

The total number of scripts to be sampled depends on the total number of candidates. If the number of candidates is 20 or less, the moderator should go through all the papers. For more than 20 candidates, the sample shall be 20 candidates plus 10% of the remaining total number of Scripts. The sample should be representative of the population of candidates in relation to performance etc.

Moderation reports

- A consolidated end of semester examination moderation report is prepared by the Exam coordinator and is submitted to the Exam Board for consideration and discussion. The exam script moderators provide their observations about the performance of candidates and consistency of assessment, judgments and decisions and recommendations for improvement if any.

RECOGNITION OF PRIOR LEARNING (if applicable)

Candidates may submit evidence of prior learning and current competencies and undergo appropriate forms of assessment to enable them to join the programme. The assessment shall be consistent with the requirements as prescribed for the field of study by the Department of Statistics at the University of Botswana

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

The Diploma in Statistics qualification provides career-path articulation options leading to a variety of horizontal articulation and vertical articulation as follows:

Horizontal Articulation

Professional certificates:

a. Diploma in Certificate in Banking

b. Diploma in Certificate of Proficiency

c. Diploma in Certificate in Enterprise Risk Management

Vertical Articulation

a. Bachelor's degree in Statistics

b. Bachelor's degree in Applied Mathematics

c. Bachelor's degree in Actuarial Science

d. Bachelor's degree in Data Science/ Analytics

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification

A candidate is required to achieve a minimum of 248 credits inclusive of the core, optional, elective and GEC components with an overall minimum GPA score of 2.0 to be awarded Diploma in Statistics qualification.

Certification

Candidates meeting prescribed credits requirements for graduation will be awarded a certificate.

REGIONAL AND INTERNATIONAL COMPARABILITY

The Diploma in Statistics is bench marked with similar programmes offered by other Universities, regionally and internationally.

Regional Comparability:
SADC Statistics Training Pack/Modular Syllabus
The SADC Statistics Training Pack was developed by the Statistical Services Unit of the University of Reading under the auspices of the European Union and the SADC Secretariat in Gaborone, Botswana. The Pack contains up-to-date training materials in Official Statistics suitable for work-skills training programmes in the SADC region. SADC conducted several workshops in 2007 to review and test the module syllabus, and to determine the appropriate methods of delivering the syllabus in different SADC countries and regions. During these workshops, Statistics Departments in National Universities were charged with implementing the module syllabus with the Support of Training Officers from the National Statistics offices. Topics included are based on extensive consultations with stakeholders from National Statistics Systems and training institutions in all 14 SADC member countries, which have been developed into a SADC modular syllabus and is equivalent to a Higher Diploma of the British Royal Statistics Society. **The Diploma in Statistics offered by the University of Botswana follows the SADC modular syllabus**.

Eastern African Statistical Training Centre (EASTC) in Tanzania:
The Eastern African Statistical Centre (EASTC) was established in 1965 by the United Nations as a training institution for offering courses in the Certificate and Diploma programmes for employees working in National Statistical Offices in Eastern and Southern Africa. The emphasis was placed on the acquisition of skills that were needed in data collection, data entry, data management and supervision of fieldwork activities at middle-level management of National Statistical Offices (NSOs). Eastern Africa Statistical Training Centre serves eighteen Countries which are on the Eastern and Southern side of Africa, namely **Botswana, Ethiopia, Kenya, Lesotho, Malawi, Seychelles, Somalia, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe, South Africa, Mauritius, Namibia, Eritrea, Sudan, and South Sudan.**

International Comparison:
The Diploma in Statistics offered by the University of Botswana is equivalent to the Higher Certificate of the British Royal Statistics Society in terms of Statistics modules offered.

REVIEW PERIOD

The program will undergo a review every 5 years.