QUALIFICATION SPECIFICATION							SECTION A
QUALIFICATION DEVELOPER	Botswana University of Agriculture and Natural Resources (BUAN)						
TITLE	Bachelor of Science in Biodiversity and Conservation			**NCQF LEVEL**	7		
FIELD	Agriculture and Nature Conservation		**SUB-FIELD**	Biodiversity and Conservation			
New qualification	✓	Review of existing qualification					
SUB-FRAMEWORK	General Education		TVET		Higher Education	✓	
QUALIFICATION TYPE	Certificate		Diploma		Bachelor	✓	
	Bachelor Honours		Master		Doctor		
CREDIT VALUE					524		

RATIONALE AND PURPOSE OF THE QUALIFICATION

Rationale for the qualification

A need assessment survey conducted highlighted the dire need to introduce an undergraduate degree in Biodiversity and Conservation. The need was rated 4.2 out of 5 by the appropriate stakeholders from professional, industrial and academic bodies. Conservation was highlighted as the most highly sought-after area of specialisation rated at 60%**.** Withal, the Human Resource Development Council Top Occupations in High Demand listing pinpointed the necessity for entomologists, agriculture climatologists, research technicians, science and technology researchers and environmental conservationist officers at national level. These occupations are either currently experiencing short term supply in the labour market or prospected to show relatively strong employment growth in the long term (Human Resource Development Council, 2016). The proposed BSc Biodiversity and Conservation qualification addresses the need to produce such professionals. Human capital development in the qualification is important to the attainment of sustainable economic development and sustainable environment (Botswana National Vision 2036). The qualification seeks to contribute to the robust drives from a resource to a knowledge-based economy; aligning training with industry needs as stipulated in Botswana Education & Training Sector Strategic Plan (ETSSP) 2015-2020, thus adding to the reduction value for an ultimate decline in the importation of biodiversity conservational expertise. The learners of this qualification will be highly inclined to understanding the dynamic nature of the sector or enterprise for which it is developed and will be equipped in response to innovation and technological advancements.

Besides, The National Development Plan 11 prioritizes sustainable use of natural resources reflected in Millennium Development Goal 7: to ensure environmental sustainability (BOTSWANA: Millennium Development Goals Status Report 2015). This qualification will produce specific economic sectoral workforce to address some of Botswana's bio conservational societal areas of concern ranging from human-wildlife conflict, wildlife poaching, widespread wildfires to changes in land use. The qualification will capacitate the graduates with 'competencies' such as critical thinking skills, and techniques to solve biodiversity loss. Since this degree is not currently available in any of the local institutions, it is prospected to attract learners both locally and across the SADC region in a way minimizing the cost government incurs training learners abroad.

Purpose of the Qualification

The purpose of this qualification is to:

- Develop graduates with experiential learning skills for identification of threats to biological diversity and to implement conservation actions to mitigate these threats.
- Equip graduates with skills to plan and execute research on biodiversity and critically evaluate the results and formulate relevant evidence-based biodiversity management principles.
- Train graduates in the application of advanced technical processes and practices for Biodiversity management and/or restoration (maintenance of ecological balance, utilise natural resources in a sustainable manner, protect natural habitats).
- Impart analytical skills needed for the solution of problems relating to the coexistence of humans and wild animals at fine spatial scales and justify the need to embrace such through making inferences to the behaviour and activity patterns of the animals.
- Develop graduates with critical skills for evaluation of current and future developments relevant to the conservation of biological diversity.
- Impart the knowledge, skills and attributes needed by graduates for communication of evolutionary and ecological concepts, data, and interpretation using multiple formats appropriate for target audiences, including non-scientists.
- Equip graduates to operate at a substantial level of responsibility and accountability in directing environmental conservation.

ENTRY REQUIREMENTS (including access and inclusion)

- Certificate IV (NCQF level 4) with a pass in Biology, Chemistry, Physics, Mathematics and English Language.
- RPL shall apply where candidates do not meet the minimum entry qualifications prescribed. RPL and CAT will be assessed in accordance with institutional and national policies.

QUALIFICATION SPECIFICATION	SECTION B
GRADUATE PROFILE (LEARNING OUTCOMES)	**ASSESSMENT CRITERIA**

Graduates of this qualification should be able to: 1. Demonstrate proficiency in scientific methodologies of Biodiversity conservation data in the field.	1.1 Design experimental research projects of Biodiversity conservation data in the field. 1.2 Collect Biodiversity conservation data in the field. 1.3 Analyze Biodiversity conservation data.
2. Present ideas effectively in order to offer professional insight, interpretations and solutions to Biodiversity conservation problems and issues appropriate to the field of study.	2.1 Identify Biodiversity conservation problems. 2.2 Develop science-based solutions. 2.3 Apply problem-solving strategies. 2.4 Conduct oral presentations of research projects from the field.
3. Interact effectively as part of a team in order to work towards conserving diversity of species and habitats threatened by human activities.	3.1 Contribute effectively to teamwork towards conserving biodiversity. 3.2 Set up measures to conserve diversity of species 3.3 Analyze case studies as part of a group
4. Identify and use appropriate quantitative methods to analyze Biodiversity conservation data.	4.1 Analyze distributions using probability and data analysis techniques with appropriate ICT tools. 4.2 Apply essential mathematical and statistical approaches used to analyze Biodiversity conservation data.
5. Demonstrate in-depth knowledge of international policies, treaties and protocols about Biodiversity and conservation	5.1 Interpret conservation/biodiversity policies. 5.2 Identify their strengths and weaknesses when applied in conservation issues. 5.3 Practice a variety of laws and regulations that influence the use and protection of biodiversity.
6. Demonstrate specialized knowledge of how climate change issues impact Biodiversity conservation	6.1 Identify key climate change threats to biodiversity. 6.2 Develop strategies of coping with climate change effects. 6.3 Implement strategies of coping with climate change effects. 6.4 Review strategies of coping with climate change effects.
7. Apply advanced skills and knowledge essential to the formation and operation of business in the Biodiversity area	7.1 Develop proposals for biodiversity businesses. 7.2 Implement strategies of conducting the business. 7.3 Monitor the businesses in Biodiversity conservation.

QUALIFICATION STRUCTURE Conservation			SECTION C
FUNDAMENTAL COMPONENT Subjects / Units / Modules /Courses	**Title**	**Level**	**Credits**
	Mathematics	5	24
	General and Inorganic Chemistry	5	12
	Physics	5	12
	Biology of Cells	5	12
	Computer Skills Fundamentals	6	16
	Introduction to Communication and Academic Literacy Skills	6	12
	Physical and Organic Chemistry	5	12
	Biodiversity	5	12
	Advanced and Professional Communication	6	12
	Calculus and Analytical Geometry	6	12
	Biosystematics	6	12
CORE COMPONENT Subjects / Units / Modules /Courses	Introduction to Genetics	6	8
	Biometry I	6	8
	Population and Community Ecology	6	12
	Evolutionary Biology	6	12
	Introduction of Ecology and Conservation	6	12
	Plant and Animal Diversity	6	12
	Financial Management in Agriculture	6	12
	Introduction to Zoology	6	12
	Field Practical Training I	7	12
	Population Genetics	7	12
	Human- Wildlife Conflict	7	12
	Ornithology	7	12
	Biometry II	7	8
	Biochemistry	7	8
	Soil and Water Conservation	6	12
	Scientific Writing and Presentation	7	12
	Wildlife Ecology and Management	7	12
	Introduction to Mathematical Biology	7	12
	General Microbiology	7	8

	Endangered species	7	12
	Plant and Animal Conservation	6	12
	Field Practical Training II	8	12
	Policies in Wildlife Management	8	12
	Game Farming and Ranching	8	12
	Herpetology	8	12
	Climate Change and Natural Resources management	8	12
	Project I	7	8
	Bioethics	7	12
	Geographical Information Systems and Spatial Modelling	8	12
	Development of Entrepreneurial Skills in Agri-business	7	12
	Environmental Management	8	12
	Co-Management of Natural Resources	8	12
	Project II	8	8
ELECTIVE COMPONENT Subjects / Units / Modules /Courses	**One course taken (8 credits each)** Problem-Solving with Spread sheet Human Nutrition Food Hygiene and safety Introduction to Animal Science Introduction to Range Management Economic Botany Basic Concepts in Marketing	6 6 6 6 6 6 6 6	8 8 8 8 8 8 8 8

Rules of combinations, Credit distribution (where applicable)

This qualification has 524 credits.
Elective courses carry 8 credits.

Credit distribution

Level	Credit Value		
	Compulsory	**Elective**	**Total**
5	84	0	84
6	176	8	184
7	152	0	152
8	104	0	104
Total	516	8	**524**

ASSESSMENT AND MODERATION ARRANGEMENTS

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.

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.

Internal Moderation and External moderation

Moderation for assessment shall be carried out by BQA accredited moderators.

Assessment and moderation will be done in accordance with the institutional policies and in line with the national policy.

RECOGNITION OF PRIOR LEARNING (if applicable)

RPL and CAT will be applicable for award of credits to contribute to the award of the qualification.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Learning progression Pathways

Horizontal: (NCQF level 7)

i. Bachelor of Science in Biodiversity and Ecology
ii. Bachelor of Science in Biosystematics and Taxonomy
iii. Bachelor of Science in Wildlife Management
iv. Bachelor of Science in Range Sciences
v. Bachelor of Science in Biological Sciences

Holders of this qualification can progress as follows:
Vertical: (NCQF level 8 and 9)

i. Bachelor of Science Honours in Biodiversity
ii. Post Graduate Diploma in Biodiversity
iii. Master of Science in Biodiversity

Employment Pathways

i. Conservation manager
ii. Environmental conservationist
iii. Research scientist
iv. Environmental health officer
v. Biology field technician
vi. Wildlife biologist
vii. Biosecurity officer
viii. Set up their own environmental consultancy firms

QUALIFICATION AWARD AND CERTIFICATION

- Graduates shall be awarded a Bachelor of Science in Biodiversity and Conservation upon obtaining a minimum of 524 credits and satisfying all rules of combination as stated above.
- There will be issuance of certificate and transcript at award.

REGIONAL AND INTERNATIONAL COMPARABILITY

SUMMARY OF THE COMPARISONS

The proposed qualification was compared with similar or equivalent qualifications from several institutions both regionally and internationally. Their qualifications have been registered according to their respective framework.

Summary:
Information gathered shows that there is no university locally which offers an undergraduate qualification in Biodiversity and Conservation. Regionally, University of Western Cape, South Africa offers an undergraduate qualification in Biodiversity and Conservation Biology. At International level, there is a good number of universities offering undergraduate qualifications in Biodiversity and Conservation including Flinders University in Australia.

Similarities:
This qualification has many common courses/modules e.g. Genetics, Ecology, Evolutionary Ecology, Molecular Biology, Microbiology, Biodiversity and Conservation, Introduction of Ecology and Conservation, Climate Change and Natural Resources management, Introduction to Zoology and Population and Community Ecology. Field Practical Training and Industry Project.

Differences:
This qualification differs with other qualifications in: Ecophysiology, Diversity of photosynthetic organisms, Environmental water science, Biotechnology, Biogeography, Marine ecology, Evolution, Classification and conservation of biodiversity.

The credit value of this qualification structurally varies from institution to institution.

See Comparability Matrix attached.

REVIEW PERIOD

After every five years

Other information – please add any supplementary information to help the application for this qualification for NCQF Registration.

Attachments:

i. Needs Assessment Report Biological Sciences Programmes
ii. Departmental Advisory Board for New Academic Programmes Report
iii. National Development Plan 11 (page 62) (http://www.pinnacleplacemaking.co.bw/downloads/NDP%2011_FINAL.pdf
iv. Botswana National Vision 2036 (page 20-24) (http://www.statsbots.org.bw/sites/default/files/documents/Vision%202036.pdf
v. Human Resources Development Council Top Occupations in Demand, 2016 (page 6;12) (https://www.hrdc.org.bw/sites/default/files/Top%20Occupations%20Jan%202017.pd)
vi. Botswana Education & Training Sector Strategic Plan (ETSSP) 2015-2020 (page 31-32;41) (https://planipolis.iiep.unesco.org/sites/planipolis/files/ressources/botswana_etssp_2015-2020.pdf)
vii. BSc Biodiversity and Conservation Comparability Matrix

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**	