

BQA NCQF QUALIFICATION TEMPLATE

SECTION A: QUALIFICATION DETAILS																
QUALIFICATION DEVELOPER (S)				Botswana University of Agriculture and Natural Resources												
TITLE		Master of Science in Ecology and Conservation Biology							NCQF LEVEL		9					
STRANDS (where applicable)		N/A														
FIELD		Natural, Mathematical and Life Sciences							CREDIT VALUE		240					
SUB FIELD		Biological Sciences														
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																
<p>RATIONALE:</p> <p>Ecology is the study of how organisms interact with each other and their physical environment. Understanding ecological processes at various scales is crucial for the long-term conservation of biodiversity and the well-being of humanity. Conservation biology, on the other hand, focuses on preserving biodiversity by protecting species, habitats, and ecosystems from unsustainable extinction</p>																

rates and the loss of biotic interactions. Together, these fields play a key role in sustainable development and biodiversity conservation.

However, global ecosystems that support biodiversity are increasingly under pressure due to factors like climate change, habitat loss, invasive species, rapid population growth, and overexploitation of natural resources. To address these challenges, numerous national, regional, and international initiatives have been launched. For example, the Government of Botswana developed its National Development Transformation Plan in 2016, guided by Vision 2036, which aims for prosperity for all. The 2030 Agenda for Sustainable Development, adopted by the UN in 2015, is another example of global efforts to tackle environmental issues.

Thus, sustained investment in human capital and education can produce new knowledge, technologies, and innovations through high-quality education and research in ecology and conservation biology and related fields. This newly envisaged graduate qualification will address the nation's need for trained manpower by developing and maintaining knowledge, sharing best practices, transferring technology, promoting biodiversity conservation and environmental protection issues, and identifying, analysing, and offering solutions to societal and environmental challenges. Consequently, a new MSc in Ecology and Conservation Biology qualification is prepared in Botswana. Such qualification will put the graduates in a better position to address stakeholders' needs through research and training.

A 2023 report by Botswana's Human Resource Development Council (HRDC) highlighted the skills necessary for effective nature conservation. These include expertise in environmental conservation, resource management, ecology, botany and environmental assessment. Developing highly skilled professionals for research, extension, and management roles in nature conservation is critical for the ministries of agriculture, wildlife and national parks, environment, natural resources conservation, and tourism, as well as non-governmental organizations in Botswana.

PURPOSE: (itemise exit level outcomes)

The purpose of the qualification is to produce graduates with advanced knowledge, skills, and competence to:

1. Integrate insights from ecology and conservation policy demonstrating an in-depth understanding of ecological principles and conservation strategies to address complex environmental challenges.

BQA NCQF QUALIFICATION TEMPLATE

2. Design and implement strategies that enhance scientific understanding and address ecological and conservation challenges effectively through research competencies, including fieldwork, data analysis, and interpretation.
3. Apply a wide range of conservation strategies and approaches to tackle issues such as habitat degradation, biodiversity loss, and species conservation across diverse ecosystem contexts.
4. Promote and implement sustainable practices that foster social-ecological stewardship and responsible resource management across diverse ecosystems, contributing to long-term environmental sustainability.

MINIMUM ENTRY REQUIREMENTS (including access and inclusion)

1. Bachelor's degree (NCQF level 7) in the same or a cognate field of study.
2. Candidates who do not meet the minimum academic qualifications stated above will be considered through a Recognition of Prior Learning (RPL) process which shall be administered according to the National RPL Policy. Furthermore, there will be a provision for Credit Accumulation Transfer (CAT) to the learner in case they transfer from another comparable institution as per the National Policy on CAT.

(Note: Please use Arial 11 font for completing the template)

SECTION B QUALIFICATION SPECIFICATION	
GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA
1. Advance knowledge in ecology and conservation to enhance sustainable development and conservation strategies.	<p>1.1 Integrate and apply interdisciplinary disciplines, and policy to formulate effective conservation strategies that address real-world ecological challenges.</p> <p>1.2 Critically assess and analyse ecological data and conservation practices, enabling them to identify sustainability issues and propose innovative solutions that promote biodiversity and ecological integrity.</p> <p>1.3 Effectively communicate complex ecological principles and conservation needs to diverse</p>

BQA NCQF QUALIFICATION TEMPLATE

	audiences, advocating for informed policy decisions and community engagement in conservation efforts.
2. Demonstrates a high level of fieldwork study and data analysis skills to carry out independent research projects; and evaluate critically and use interdisciplinary knowledge to effectively tackle and convey solutions for intricate ecological conservation challenges.	<p>2.1 Develop and carry out field research projects by employing suitable methods, systematically collecting data, and modifying techniques to fit different ecological settings, while ensuring the reliability and validity of the information obtained.</p> <p>2.2 Utilise statistical software and analytical tools to process, analyse ecological data and interpret results critically to draw meaningful conclusions that advance scientific understanding and guide ecological decision-making and policy development.</p> <p>2.3 Communicate ecological research findings to both specialist and non-specialist audiences, while recommending practical solutions for complex ecological issues.</p>
3. Apply advanced knowledge to evaluate ecosystem health, identify threats, and employ interventions to restore ecosystems.	<p>3.1 Execute conservation projects in varied ecological contexts, evaluate ecosystem health, identify threats, and employ appropriate interventions to restore and maintain biodiversity.</p> <p>3.2 Develop techniques to aid in the analysis of intricate ecological issues pertaining to conservation and effectively communicate and advocate for creative solutions to confront urgent challenges in biodiversity and ecosystem management.</p>
4. Engage in research that promotes informed decision-making to address current biodiversity challenges leading policy development.	<p>4.1 Apply comprehensive knowledge of ecological principles necessary to navigate and address current biodiversity challenges in various ecosystem settings.</p> <p>4.2 Manage and advocate for promotion of conservation initiatives while effectively engaging with stakeholders and communicating the importance of sustainable</p>

BQA NCQF QUALIFICATION TEMPLATE

	<p>practices.</p> <p>4.3 Engage in research that will contribute to informed decision-making processes and will enhance competitiveness in the job market, prepare for roles in research and policy development.</p>
<p>5. Apply ecological and conservation knowledge to implement sustainable solutions across a range of fields, promoting responsible resource use and management and reducing environmental impact.</p>	<p>5.1 Promote sustainable practices and raise awareness about the importance of biodiversity stewardship among diverse audiences, including policymakers, communities, and businesses.</p> <p>5.2 Work collaboratively across different sectors, fostering partnerships that enhance biodiversity stewardship by applying interdisciplinary approaches to tackle ecological challenges and support the integration of sustainability into organizational policies and practices.</p>

Note: Please use Arial 11 font for completing the template)

BOTSWANA
Qualifications Authority

SECTION C	QUALIFICATION STRUCTURE				
COMPONENT	TITLE	Credits Per Relevant NCQF Level			Total Credits
		Level []	Level []	Level [9]	
FUNDAMENTAL COMPONENT Subjects/ Courses/ Modules/Units	None				

BQA NCQF QUALIFICATION TEMPLATE

CORE COMPONENT Subjects/Courses/ Modules/Units	Ecology and Conservation			80	80
	Statistics and Research Design			16	16
	Research and Dissertation			112	112
	Total				208
STRANDS/ SPECIALIZATION	Subjects/ Courses/ Modules/Units	Credits Per Relevant NCQF Level			Total Credits
		Level []	Level []	Level []	
1.					
2.					
Electives	Natural Resource Management			16	16
	Biogeography			16	16
	Total				32

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL

BQA NCQF QUALIFICATION TEMPLATE

TOTAL CREDITS PER NCQF LEVEL

NCQF Level [9]	Credit Value
Core Component [9]	208
Elective Component [9]	32
TOTAL CREDITS	240

Rules of Combination:

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

The credit distribution is made up of 208 credits from the Core component and 32 credits from the elective component.

Rule of combination

Core (96 credits) + Elective (32 credits) + Research Work (112 credits) = 240 Credits

(Note: Please use Arial 11 font for completing the template)

BOTSWANA
Qualifications Authority

ASSESSMENT ARRANGEMENTS

Assessment will be conducted by Assessors who have been registered by Botswana Qualifications Authority (BQA) or any other recognized Authority/Body. The assessments will be as follows:

Formative Assessment

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

Summative Assessment

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

MODERATION ARRANGEMENTS

There shall be provision for both internal and external moderation in accordance with institutional policies aligned with national policies. Moderation will be carried out by experts who are registered and accredited as moderators by a recognised authority.

RECOGNITION OF PRIOR LEARNING

Recognition of Prior Learning (RPL) will be applicable for consideration for award in this qualification.

CREDIT ACCUMULATION AND TRANSFER

Credit Accumulation Transfer (CAT) will be applicable for consideration for award in this qualification. Assessment for CAT shall be done as per the ETP policy in line with the national policy on CAT.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Vertical Articulation

- Doctor of Philosophy in Biological Sciences
- Doctor of Philosophy in Ecology
- Doctor of Philosophy in Biodiversity Conservation
- Doctor of Philosophy in Ecosystem Management
- Doctoral Degrees in relevant varying fields, ranging from Forestry to Sustainability.

Horizontal Articulation

- Master of Science in Ecology
- Master of Science in Conservation

- Master of Science in Ecosystem Management
- Master of Science in Sustainability
- Master of Science in wildlife Ecology and Management

Employment Progression Pathways

- Policy advisor in the environmental regulatory bodies and NGOs
- Consultant in conservation and ecology
- Researcher
- Conservation Analyst
- Protected Areas Manager

QUALIFICATION AWARD AND CERTIFICATION

Candidates who meet the requirements in accordance with the prescribed rules of combination for the different constituent components of the qualification and have obtained a minimum of 240 credits will be awarded a Master of Science in Ecology and Conservation Biology and be issued with certificate.

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

International bench marking exercises was made with four Universities: (1) MSc in Ecology and Conservation offered by the University of Aberdeen, UK, (2) MSc in Ecology and Conservation Biology offered Texas A&M University, USA, (3) MSc in Biology, specialization in Ecology and Conservation offered by Uppsala University, Sweden, and (4) MSc in Conservation Ecology offered by Stellenbosch University, South Africa.

Similarities:

Title of Qualification and Duration (where applicable)

The developed qualification title is similar to the regional and international qualifications it was benchmarked against. The duration of the developed qualification is also similar to the qualifications it was benchmarked against with 2 years duration.

Main Exit Outcome(s)

The main exit outcome of the developed qualification is also at the same level as the qualifications against which it was benchmarked, with an emphasis on producing graduates with specialized knowledge, skill and competency in applying subject matter knowledge—ecology and conservation principles—in a variety of contexts to solve problems and make decisions in the fields.

Modules/ courses/subjects covered

The developed qualification's modules/courses, including core and electives, align with those of the qualifications it was benchmarked against. The courses are developed to produce learners with theoretical insights and sufficient skills to independently apply the achieved knowledge to define and formulate biological research problems and use information to solve such problems.

Education and Employment Pathways

The developed qualification aligns well with the benchmarked qualifications in directing to produce graduates which are sought after nationally, regionally and internationally offering a range of knowledge, skills and experience, developed by excellent teaching and infusion of internationally rated research competencies for careers across government, consultancy, and private sector among others. The developed qualification is in strong alignment with the benchmarked standards in terms of education and employment pathways. In all instances, it is designed to produce graduates who are in high demand at national, regional, and international levels. This program provides a comprehensive array of knowledge, skills, and experiences, preparing learners for careers in government, consultancy, the private sector, and beyond.

Assessment strategies and Weightings

Assessment strategies that comprise course components (i.e., cores and electives), and weightings of the developed qualification are to some extent similar to those of the qualifications it was benchmarked against. Although the benchmarked universities' assessment strategies and weightings differ, including exams, seminars, presentations, and dissertations some extent.

Differences:

The NQF and credit values.

Regarding the NQF and credit values, there are various distinctions. The benchmarked universities' NQF levels range from 7 to 9, with Stellenbosch University in South Africa having a score of 9 that corresponds to the developed qualification and the Universities of Aberdeen and Uppsala having NQF level of 7. Similarly, the benchmarked qualification's credit values range from 128 to 180 credits, with Uppsala University's qualification having the lowest credit values compared to the developed qualification's 240 credit values.

Concluding Statement

The developed qualification is similar to the benchmarking qualifications in terms of key exit outcomes, modules/courses offered, education and employment pathways, and assessment strategies and weighting. The primary distinction between the developed qualification and the

BQA NCQF QUALIFICATION TEMPLATE

benchmarked qualifications is the credit values and NQF levels, notwithstanding the similarity in modules/courses, i.e., cores and electives.

REVIEW PERIOD

This qualification will be reviewed after 5 years upon registration.

(Note: Please use Arial 11 font for completing the template)

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	

BOTSWANA
Qualifications Authority