QUALIFICATION SPECIFICATION							SECTION A
QUALIFICATION DEVELOPER	Botswana International University of Science and Technology						
TITLE	Bachelor of Science (Honours) in Applied Geology			**NCQF LEVEL**	8		
FIELD	12. Natural, Mathematical and Life Sciences		**SUB-FIELD**	Geology			
New qualification	✓	Review of existing qualification					
SUB-FRAMEWORK	General Education		TVET		Higher Education	✓	
QUALIFICATION TYPE	Certificate		Diploma		Bachelor		
	Bachelor Honours	✓	Master		Doctor		
CREDIT VALUE					120		

RATIONALE AND PURPOSE OF THE QUALIFICATION

RATIONALE:

Mineral resources dominate the Botswana economy (diamonds, copper/nickel and coal) as well as most African countries and this will continue into foreseeable future [1, 2]. Indeed, not only will the current activity be sustained in Botswana but it will be increased by diversification in terms of types of rock minerals (e.g. gold, silver, uranium), gas production and geothermal capacity [1, 2]. This needs high level skilled manpower in the geological sciences. But geology, and geoscience, is not only mineral resources but is also the study of water resources resilience and sustainable development. In the last decade, the country has endeavoured for a sustainable development of the economy that can only be achieved with thorough sustainable management of natural resources such as minerals and water [3].

The Industrial Advisory Board at BIUST, which includes delegates from major stakeholders in Botswana such as DEBSWANA, DeBeers Group, Khoemacau Mine, Botswana Geoscience Institute, has identified the existing gaps in the tertiary education training of geologists in Botswana. The Industry Advisory Board has identified that Botswana needs highly skilled manpower to play a major developmental role in the mineral sector, including water resources management and sustainable development [3].
This qualification, therefore, will meet the demands in Botswana, SADC and worldwide for high level skilled manpower in the mining sector, water accounting and natural resources management. The qualification will produce Professional Geoscientists and Researchers that can fill the gaps identified by HRDC and the Industrial Advisory Board.

[1] http://allafrica.com/stories/201603090673.html

[2] Botswana Mining Sector Investment and Business Guide: Volume 1 Strategic Information and regulations (2012). Reprinted International Business Publication USA ISBN 1-4330-2454-3

[3] VISION 2036 – Achieving Prosperity For All. Prepared By The Vision 2036 Presidential Task Team, July 2016. Publishers, By Lentswe La Lesedi (Pty) Ltd. Copyright © Government Of Botswana

PURPOSE:
The purpose of this qualification is to provide learners with knowledge, skills and competencies to:

- Apply full array of techniques and methods to the investigation of geological systems
- Demonstrate a grounded understanding of the processes of exploration of mineral resources
- Demonstrate the ability to apply geological concepts and skills to multidisciplinary projects
- Demonstrate the ability to handle complex processes and functions in the broad field of Applied Geology
- Capacity to carry out basic research in the broad field of applied geology

ENTRY REQUIREMENTS (including access and inclusion)

Bachelor Science, NCQF level 7 (General Education or TVET) in Applied Geology or equivalent.

Access through RPL and CAT will be provided through ETP policies in line with National RPL and CAT Policies

QUALIFICATION SPECIFICATION SECTION B

GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA
LO1. Apply full array of techniques and methods to the investigation of geological systems	1.1. Apply geophysical and geochemical methods to the characterization of geological bodies 1.2. Apply geophysical and geochemical methods to the identification and characterization of water resources 1.3. Perform independent field work aimed at better understanding of regional and local geology in Botswana and abroad
LO2. Demonstrate a grounded understanding of the processes of exploration of mineral resources	2.1. Demonstrate the ability to independently manage projects for exploration and exploitation of mineral resources 2.2. Demonstrate the ability to independently manage projects for exploration and exploitation of water resources
LO3. Demonstrate the ability to apply geological concepts and skills to multidisciplinary projects	3.1. Apply advanced geological concepts to engineering problems 3.2. Apply advanced specialist knowledge and skills with a sense of identification with and responsibility for the integrity of the profession.

LO4. Demonstrate the ability to handle complex processes and functions in the broad field of Applied Geology	4.1. Build protocols and processes for the remediation of polluted sites and lower the impact of productive activities 4.2. Conduct independent laboratory activity to test and assess samples of geological nature for environmental assessment studies
LO5. Capacity to carry out basic research in the broad field of applied geology	5.1. Demonstrate autonomy in conducting research projects in the field of Applied Geology 5.2. Deliver sound scientific and technical reports concerning applied geological problems. 5.3. Abide to ethics and principles of the profession of Geologists both as an individual and as a team member.

QUALIFICATION STRUCTURE **SECTION C**

CORE COMPONENT Subjects / Units / Modules /Courses	Geochemical Exploration	**8**	**12**
	Applied Geophysics	**8**	**12**
	Environmental Geology and Waste Management	**8**	**12**
	Research Project I	**8**	**12**
	Exploration and Evaluation of Mineral Deposits	**8**	**12**
	Engineering Geology	**8**	**12**
	Cratons, Kimberlites and Diamonds	**8**	**12**
	Petroleum Geology	**8**	**12**
	Research Project II	**8**	**24**

Rules of combinations, Credit distribution (where applicable):

The distribution of the credits at different levels is as follows:

NQCF Level 8 = 120 credits

Due to the expected knowledge and skill levels of the graduates of the qualification to undertake exploration and evaluation of mineral resources, all the courses are core modules with no fundamentals and elective modules. 36 credits allocated to research activities.

ASSESSMENT AND MODERATION ARRANGEMENTS

ASSESSMENT

All assessments, formative and summative, leading/contributing to the award of credits or a qualification shall be based on learning outcomes and/or sub-outcomes.

Assessment Strategy

The assessment strategies for this qualification (consistent with the exit level outcomes) will consist of Formative assessment and Summative assessment.

The individual programmes will be assessed by both course work and final exam as follows:

I. The contribution of formative assessment to the final grade shall be 30-50**%.**

II. The contribution of summative assessment final grade shall be 50-70**%.**
III. To pass a course, a candidate must achieve a minimum of 50% computed as the sum of the formative and summative assessments.

Formative assessment
Formative assessment or continuous assessment (C.A.) contributing towards the award of credits should be based on course outcomes. This can include tests, assignments and projects as well as simulated and real work settings. The contribution of formative assessment to the final grade shall be comprised between **30% and 50%**. A candidate that will not score at least **50%** in the C.A. (formative assessment) will not be admitted for final examination and will be recorded as fail.

Summative assessment
Candidates may undergo assessment including written and practical and simulated projects. The final examination for each course contributes between **50% and 70%** of the final mark for that course. To pass a course, a candidate must achieve a minimum of **50%**. A candidate who scores between **40 and 49%** shall be eligible for one retake (i.e. supplementary examination) to be administered within 12 months from the first assessment.

MODERATION
The following shall apply for both internal and external moderation in accordance with applicable policies and regulations:

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

Both assessment and moderation arrangements will be done by BQA registered and accredited moderators and assessors.

RECOGNITION OF PRIOR LEARNING (RPL)

Candidates may submit evidence of prior learning and current competence and/or undergo appropriate forms of RPL assessment for the award of credits towards the qualification in accordance with applicable RPL policies and relevant national-level policy and legislative framework. Implementation of RPL shall also be consistent with requirements, if any, prescribed for the field or sub-field of study by relevant national, regional or international professional bodies.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Horizontal Progression

1. Bachelor of Science Honours in Mining Geology
2. Bachelor of Science Honours in Earth and Planetary sciences
3. Post-Graduate Diploma Applied Geology
4. Post-Graduate Certificate Applied Geology.

Vertical Progression

1. Master's Degree in Applied Geology
2. Master's Degree in Earth and Planetary sciences,
3. Master's Degree Mining and Engineering geology.

Employment pathway

After the award of this qualification the students will be able to be:

- Geologist.
- Junior Geologist.
- Engineering Geologist.
- Sr. Geologist.
- Environmental Consultant.
- Information Technology (IT) Support Specialist.
- Mine Geologist

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification

The students enrolled in the qualification will be able to obtain a Bachelor of Science Honours in Applied Geology (level 8). To obtain the Bachelor of Science Honours in Applied Geology the student must accumulate 120 credits at NCQF Level 8.

Certification

Candidates meeting prescribed requirements will be issued a certificate of "Bachelor of Science Honour" in Applied Geology in accordance with standards prescribed for the award of the qualification and applicable policies.

REGIONAL AND INTERNATIONAL COMPARABILITY

The qualification Bachelor of Science Honours in Applied Geology has been developed taking into account the Framework for Higher Education Qualifications (FHEQ) of UK, Geology Society of London regulations accreditation of degrees, UK Quality code for Higher Education in Earth Sciences.

This qualification compares favourably, both in terms of credits and contents, with the Bachelor of Science Honours in Applied Science offered by The University of Pretoria (South Africa) and with the Bachelor of Science Honours in Geology offered by the University of Portsmouth (UK) and by the University of Hull (UK).

REVIEW PERIOD

5 years and or when training needs or technology changes.

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

Criteria for Selection of Assessors and Moderators

Requirements: A minimum of PhD in a relevant field plus evidence of competence in assessment and moderation, mentorship and teaching at undergraduate and postgraduate level (at least 5 years). An international scientific profile will be also required. *Assessors must have valid registration and accreditation* with Botswana Qualifications Authority (BQA).

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**	