SECTION A:	***QUALIFICATION DETAILS***																	
qualification developer (s)	University of Botswana																	
TITLE	Doctor of Philosophy (Science Education)															***NCQF LEVEL***	*10*	
FIELD	Education and Training			***SUB-FIELD***	Science Education											***CREDIT VALUE***	*360*	
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 professional pool landscape in the Country is changing. The preparation of professionals at all levels of tertiary education to address the economic, education, scientific, and social needs of the country is therefore a major goal for Botswana's advancement to address the changing face of its economy from mineral to knowledge based. National Development Plan eleven (NDP 11) identifies among others, low quality in tertiary education as a challenge in Botswana's developmental advancements or progress. The Education and Training Sector Strategic Plan (ETSSP 2015-2020) vision decried the miss-match between qualifications and industry demands as one of the hindrances to innovation, technological and entrepreneurial advancement of any country, Botswana included. Training at higher degree level to address these and many other needs is of paramount importance. The Science Education doctoral qualification is a research-intensive qualification that prepares students for research and teaching as applied to various educational contexts. Completion of a PhD degree is all about creating fresh knowledge, discovering new things and developing new skills.

PURPOSE:

The Doctor of Philosophy (PhD) degree qualification responds to the need to prepare practitioner educators who can better serve in a variety of educational positions. On one hand, the qualification's focus is on preparation of practitioner professionals for leadership roles in teacher preparation at graduate and undergraduate levels, on-going professional developments as well as positions centered on practices, life-long learning, innovative problem-solving, critical thinking, research, and reflective practices. On the other hand, the program recognizes the need to prepare knowledgeable teacher education curriculum specialists to fill leadership roles in educational reform efforts at school, college, and university levels. The development and implementation of Outcome Based Education (OBE) at all levels of education also creates a demand for professionals who can assume leadership roles on curriculum revision projects and provide evaluation services to assess the effectiveness of teacher education reform efforts. A robust PhD qualification in the country would therefore be ideal to address these outcomes.

As a practitioner degree, the PhD in Science Education considers the student's expectation for future employment in education. Graduates are trained to hold responsible positions as curriculum specialists, college and university instructors, educational researchers, curriculum evaluators, and instructional specialists in government, businesses, and industry.

Graduates of this qualification should be able to:

- Conduct independent inquiry and apply technology to assist in the overall inquiry process in Science Education.
- Discover, interpret and communicate new knowledge through original research of publishable quality which satisfies peer review.
- Display the ability to develop or create curriculum in different disciplines as well as design a variety of assessment tools to assess curriculum and student outcomes.

ENTRY REQUIREMENTS (including access and inclusion)
• Master's Degree NCQF Level 9 in a cognate field. • Entry through Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer (CAT) is allowable to applicants through institutional policies in line with the national RPL and CAT policies.

SECTION B	***QUALIFICATION SPECIFICATION***
GRADUATE PROFILE (LEARNING OUTCOMES)	***ASSESSMENT CRITERIA***
LO1: Demonstrate an understanding of and ability to participate in lifelong learning	**AC1.1:** Employ appropriate social skills for life-long learning. **AC1.2:** Apply technology to communicate effectively within the profession and with public **AC1.3:** Evaluate relevant information to draw and support conclusions related to specific problem/assignment **AC1.4:** Apply collaborative practices with other professionals, students, and other stakeholders. **AC1.5:** Develop an aptitude for continuing professional development
LO2: Valuate a variety of prominent developmental learning theories and connect them to good teaching practices	**AC2.1:** Examine prominent developmental learning theories and their implication on instruction and assessment **AC2.2:** Apply developmental learning theories to teaching and assessment. **AC2**.3**:** Apply development learning theories in selecting and sequencing of content for better teaching and student learning.

LO3: Conduct independent inquiry and apply technology to assist in the overall inquiry process	**AC3.1:** Perform original research in Science education. **AC3.2:** Critically analyse a body of current published science education research. **AC3.3:** Effectively communicate by defending original research in writing and oral presentations **AC3.4:** Apply professional ethics in conducting research.
LO4: Display the ability to develop or create curriculum in different disciplines as well as design a variety of assessment tools to assess curriculum and student outcomes	**AC4.1:** Develop science school curricula **AC4.2:** Evaluate assessment tools used in evaluating curricula and student learning outcomes. **AC4.3:** Formulate assessment tools used to evaluate curriculum and student learning outcomes.
LO5: Exhibit knowledge of how instructional choices and actions affect students and other professionals in the teaching and learning community.	**AC5.1:** Evaluate curriculum and instruction practices based on Pedagogical Content Knowledge and student characteristics. **AC5.2:** Apply research on pedagogical practices, student learning, and educational policies and issues. **AC5.3:** Investigate ideas that will improve teaching and learning to advance the profession. **AC5.4:** Engage in critical reflection on how their frame of references and potential biases impact expectation for and relationships with learners.

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SECTION C	***QUALIFICATION STRUCTURE***				
COMPONENT	***TITLE***	***Credits Per Relevant NCQF Level***			***Total*** ***(Per** Subject/ Course/ Module/ Units)*
		Level [8]	***Level [9]***	***Level [10]***	
FUNDAMENTAL COMPONENT *Subjects/ Courses/ Modules/Units*					
CORE COMPONENT *Subjects/Courses/ Modules/Units*	Supervised Research and Thesis in Science Education (MPhil)			***10***	***180***
	Supervised Research and Thesis in Science Education (PhD)			***10***	***180***
ELECTIVE/ OPTIONAL COMPONENT *Subjects/Courses/ Modules/Units*					

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SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	***Credit Value***
10	***360***
TOTAL CREDITS	***360***
Rules of Combination: ***(Please Indicate combinations for the different constituent components of the qualification)***	

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ASSESSMENT ARRANGEMENTS

The qualification is solely researched based. All assessments shall be carried out by BQA registered and accredited assessors (or equivalents) as prescribed in the institutional regulations.

MODERATION ARRANGEMENTS

- There shall be provision for both internal and external moderation and examination in accordance with institutional policies aligned with national policies.
- Moderators shall all be registered and accredited with BQA.

RECOGNITION OF PRIOR LEARNING

There shall be provision for Credit Accumulation Transfer (RPL) in line with existing institutional and national policies

CREDIT ACCUMULATION AND TRANSFER

There shall be provision for Credit Accumulation Transfer (CAT) in line with existing institutional and national policies

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

LEARNING

Horizontal Articulation

- PhD in Curriculum and Instruction
- PhD in Measurement and Evaluation

EMPLOYMENT

- Teacher educator
- Researcher
- Curriculum designer/developer
- Resource developer

- Education officer/Inspector/Administrator
- Educational Consultant

QUALIFICATION AWARD AND CERTIFICATION

Qualification Award

To be awarded a Ph. D. (Science Education) degree, a candidate must acquire a minimum of 360 credits.

Certification

Candidates meeting the prescribed requirements will be awarded the Ph. D. (Science Education) and will be issued an official transcript and certificate.

REGIONAL AND INTERNATIONAL COMPARABILITY

- The qualification was compared to the following Universities: University of South Africa in SA, University of Pretoria in SA, and the University of Wisconsin-Madison in USA. All these qualifications respond to the need to prepare practitioners to serve in a variety of education positions, including scholars, and leaders in teacher preparation programs for work in practice, research and policy in colleges and universities, secondary school districts. Candidates' complete coursework and submit a dissertation in their areas of specialization, i.e. science education. The all emphasis on research and life-long learning.
- There are differences in credit loads and NQF levels depending on the country, and candidates at the University of Wisconsin-Madison generally emphasizes on the general curriculum and instruction as well.

The employment pathways for Ph.D. holders in Science education graduates of the three universities are mainly: College Science education instructors and related subjects, as well as:

- curriculum development officers,
- education officers

REVIEW PERIOD

The qualification shall be reviewed every five (5) years.

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