SECTION A:	***QUALIFICATION DETAILS***																	
QUALIFICATION DEVELOPER (S)	Botswana International University of Science and Technology (BIUST)																	
TITLE	Master of Science in Forensic Science													***NCQF LEVEL***				*9*
STRANDS (where applicable)	*N/A*																	
FIELD	Natural, Mathematical and Life Sciences			***SUB-FIELD***			Biological Sciences							***CREDIT VALUE***				*240*
New Qualification						✓								*Legacy 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:

Forensic Science is a multidisciplinary field with influence from medicine, physics, engineering, computer science, psychology, chemistry, biology, and many others. In forensic science, these fields of science are

applied to the law. Forensic scientist often work hand in hand with experts from these fields in the reconstruction of crime scenes. For that reason, it is imperative that students who pursue a Master's degree in forensic science are equipped with the knowledge and skills relevant to forensic science for practical application within the relevant specialisations.

The developed MSc Forensic Science, which is the first and only one of its kind in Botswana, is aimed at preparing students for careers as Forensic Scientists in a variety of roles and settings. The master's qualification allows students to acquire knowledge, skills and insights related to forensic science; develop academic competences in forensic science; and most importantly to strengthen their aptitude in the area of independent scientific research. This qualification will formalize a learning and research pathway in the field of forensic science and will allow other professions that are linked to forensic science the opportunity to obtain advanced knowledge in this specific field and its multidisciplinary nature.

The Botswana National Development Plan 11 (April 2017-March 2023) has seen the need for continued investment in human resources. This need extends to the necessity of the government to provide sustainable infrastructure in research and all other related areas such as science and technology. Forensic science is considered a scarce skill in Botswana and neighbouring countries and has been listed as an occupation that is in critical shortage in the South African National Development Plan (2010-2030). There has been no change in the high demand in Botswana of Forensic Specialists in Information Computer Technology (ICT) and Forensic Scientists since the 2009 report of the Department of Research, Science and Technology under Botswana Ministry of Communications, Science and Technology on the Development Strategy of the Science and Technology Human Resource. International Standards for Forensic Science (ISO 21043-1:2018) were also considered when developing the qualification.

Both the Botswana Police Service (BPS) and the Department of Wildlife and National Parks (DWNP) are great users of forensic science and were consulted in the development of this qualification. They see Forensic Science qualifications as a great resource for collaborative research, innovation, and training. This is evidenced in their meetings with the BIUST in 2017.

PURPOSE:

The purpose of this qualification is to produce graduates with highly specialised knowledge, skills, and competences to:

- Examine and utilize analytical techniques relevant to forensic science to nurture innovation in the field.
- Plan, carry out and present an original, extended investigation or research project in an academic context.
- Use communication skills to communicate research to a wider audience effectively and scientifically.
- Implement research skills and techniques to conduct applied research to address various problems involving Forensic Science facing the country and the world at large working in multidisciplinary teams.

MINIMUM ENTRY REQUIREMENTS (including access and inclusion)

1.1. NCQF Level 7 –Bachelor of Science in Forensic Science or related subjects

- Applicants who do not meet the above criteria but possess relevant industry experience may be considered through Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer (CAT) policies for access. This consideration will be done following guidelines of the ETP which are aligned with BQA/National policies.

SECTION B	***QUALIFICATION SPECIFICATION***
GRADUATE PROFILE (LEARNING OUTCOMES)	***ASSESSMENT CRITERIA***
1. Assess, evaluate**,** and synthesise forensic science information in accordance with the scientific method.	1.1 Assess current forensic science evidence collection methods and techniques. 1.2 Critically evaluate forensic science evidence submitted to the criminal justice system. 1.3 Generate new knowledge through solving scientific problems in a forensic context using the scientific method.
2. Assess the constraints and opportunities of the current environment in which professional forensic science is carried out in resolving societal issues.	2.1 Deduce and demonstrate that Forensic Science problems have been adequately solved using available analytical techniques. 2.2 Make ethically and culturally sensitive decisions on the effects of scientifically based activities on society. 2.3 Identify and apply highly specialized forensic scientific knowledge that is relevant to current societal issues. 2.4 Identify the socio-economic impact of scientific interventions in society in a forensic context.
3. Devise, plan, carry out and present an original, extended investigation or research project in Forensic Science.	3.1 Design a hypothesis of an unsolved problem and construct a research plan to test the hypothesis. 3.2 Develop and perform controlled experiments in forensic science to test hypotheses. 3.3 Produce and organize results from forensic science experiments into a clear narrative that advances the field.

4. Integrate effective Information and Communication Technology (ICT) skills in course work and/or research in forensic science.	4.1 Assess the library portal including its data for appropriate literature data such as for problem solving and innovation. 4.2 Interpret gathered data in a research project in selected specialization of forensic Science.
5. Communicate forensic science evidence to a relevant audience efficiently and effectively	5.1 Explain forensic evidence clearly using the correct scientific language. 5.2 Compile seminar presentation in forensic science for a wider audience. 5.3 Defend collected forensic science evidence. 5.4 Critically evaluate presented forensic science evidence or research.

SECTION C	***QUALIFICATION STRUCTURE***				
COMPONENT	***TITLE***	***Credits Per Relevant NCQF Level***			***Total Credits***
		Level [9]	***Level [ ]***	***Level [ ]***	
FUNDAMENTAL COMPONENT *Subjects/ Courses/ Modules/Units*	***N/A***				
CORE COMPONENT *Subjects/Courses/ Modules/Units*	Quality Assurance and Ethics in Forensic Science	12			12
	Advanced Crime Scene Investigation	12			12
	Advanced Forensic Biology	12			12
	Advanced Forensic Chemistry	12			12
	Advanced Research Methods	12			12
	Skills for Employment and Entrepreneurship Development	12			12

	Master's Dissertation	9			120
STRANDS/ SPECIALIZATION	*Subjects/ Courses/ Modules/Units*	***Credits Per Relevant NCQF Level***			***Total Credits***
		Level [9]	***Level [ ]***	***Level [ ]***	
1. Taught	Advanced Environmental Forensics (Elective)	*12*			*12*
	Advanced Crime Scene Investigation (Elective)	*12*			*12*
	Wildlife Crime (Elective)	*12*			*12*
	Forensic Drug Chemistry (Elective)	*12*			*12*
	Forensic Intelligence (Elective)	*12*			*12*
	Advanced Criminalistics (Elective)	*12*			*12*
2. Research	Master's Dissertation	12			240

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	***Credit Value***
Level 9	***240***
TOTAL CREDITS	***240***

Rules of Combination:

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

Taught Strand

Table 1. Credit Contribution for Fundamental and Core modules (clarify: only apply)

Component	Credit Contribution
Core modules	192
Elective Modules	48
Total Credits	240

All core modules are compulsory Master of Forensic Science by course. The learners are to select 4 modules from the list of electives.

Research Strand

To graduate, a learner must accumulate 240 credits through research.

ASSESSMENT ARRANGEMENTS

Taught Strand

Formative Assessment

Formative assessment will contribute 50% to the final grade.

Summative Assessment

Summative assessment will contribute 50% to the final grade.

The MSc degree will be conferred to candidates who successfully pass the dissertation assessment in accordance with the ETP guidelines.

Research Strand

The MSc degree will be conferred to candidates who successfully pass the dissertation assessment in accordance with the ETP guidelines.

Assessors must be BQA registered and accredited.

The Master of Science in Forensic Science degree will be conferred to candidates who successfully pass the dissertation assessment in accordance with the ETP guidelines which are aligned to BQA/ National guidelines on the same.

MODERATION ARRANGEMENTS

Moderators must be BQA registered and accredited. Internal and external moderation will be done in line with both institutional and national policies.

RECOGNITION OF PRIOR LEARNING

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.

CREDIT ACCUMULATION AND TRANSFER

Credit Accumulation and Transfer (CAT) will be available to all potential learners which will be in line with the NCQF level and qualifications descriptors but also consistent with the quality and standards of the University's qualifications in accordance with the applicable university and national-level CAT policies and legislative frameworks.

Credit Accumulation and Transfer (CAT) for the award will be applied in line with ETP/ BQA guidelines on the same

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

This qualification is designed to facilitate vertical and horizontal progression both locally and internationally.

Work as:

- Forensic scientists
- Crime scene investigators
- Fire/Arson investigators
- Wildlife forensic experts
- Customs and Boarder forensic experts
- Science teachers in secondary schools
- Laboratory scientists
- Research scientists in Forensic science

Horizontal Progression

Graduates may progress horizontally to the following qualifications:

- Master of Science in Forensic Toxicology
- Master of Science in Forensic Chemistry
- Master of Science in Forensic Biology
- Master of Science in Forensic and Transnational crimes

Vertical Progression

Graduates may progress vertically to level 10 qualifications:

- Doctor of Philosophy in Forensic Toxicology
- Doctor of Philosophy in Forensic Chemistry
- Doctor of Philosophy in Forensic Biology
- Doctor of Philosophy in Forensic and Transnational crimes

Employment pathways

Graduates of the qualification may find employment in a range of public and private organisations. Typical roles include:

- Laboratory forensic scientists
- Crime scene investigators
- Fire/Arson investigators
- Wildlife forensic experts
- Customs and Boarder forensic experts
- Laboratory scientists
- Research scientists in Forensic science
- Entrepreneurs

QUALIFICATION AWARD AND CERTIFICATION

A candidate will be awarded a qualification in Master of Science in Forensic Science upon meeting the minimum of 240 credits as prescribed in the rules of combination.

Certificate and transcript will be issued to graduates upon successful completion of Master of Science in Forensic Science.

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

Taught Strand

University of Strathclyde, MSc Forensic Science

In terms of international comparison, this MSc in Forensic Science degree from the University of Strathclyde, is the longest running MSc Forensic Science course in the UK. The MSc in Forensic Science is offered under The Scotland Credit and Qualifications Framework (SCQF), UK at level 11. It is accredited by the Chartered Society of Forensic Science, which is a professional body with members in over 60 countries and one of the oldest and largest such associations in the world. Students can participate in a major practical crime scene and courtroom exercise. There is input by forensic practitioners and professional scientists. Students may specialise in forensic biology or forensic chemistry in the second semester. The course is 12 months and requires 180 credits with 150 credits at Level 11.

University of the West of England Bristol, MSc Forensic Science

At UWE Bristol, an MSc Forensic Science, the FHEQ Level of this award is 7 and it requires completion of a total of 180 credits. These are attained through completion of four modules: Crime Scene Investigation (45 credits), Advanced Forensic Analysis (45 credits), Interpretation, Evaluation and Presentation of Evidence (30 credits), and Forensic Research Project (60 credits). The Learning outcomes develop an in-depth knowledge and skills in Forensic Science.

Research Strand

University of the Free State (UFS), Master in Forensic Science by dissertation

Regionally, the University of the Free State (UFS) offers a Master in Forensic Science by dissertation. The duration of the course is 2 years. If is NQF Exit level 9 with180 credits. The aim of the Forensic Science Qualification is to introduce students to the various biological and physical evidence types found on crime scenes. It covers aspects relating to the scientific basis of the recovery of evidence and the subsequent analysis of these evidence.

King's College London, Forensic Science MRes

At King's College London, an MRes in Forensic Science requires a total of 240 credits. These are attained through completion of a research module which is 120 credits. The assessment entails an experimental plan, journal article, poster and viva (MRes seminar presentation). The FHEQ Level for the final award is 7.

Comparability and articulation of the proposed qualification with the ones examined

The taught strand of the developed qualifications, Master of Science in Forensic Science comparability with two international qualification descriptors has been demonstrated. The international comparability was done against the University of the West of England Bristol in the United Kingdom and University of Strathclyde in Scotland. These qualifications are course based. There are no taught masters in the field of forensic science degrees currently being offered in the SADC region.

The titles of the qualifications are the same as the developed qualifications - Master of Science in Forensic Science. Both are NQF Level 7 with 180 credits whilst the NCQF denotes a Masters qualification at level 9 with 240 credits illustrating a 60-credit difference with UK's Regulated Qualifications Framework (RQF). The courses at both the University of Strathclyde and West of England contain fewer modules. The main exit outcomes have similar goals which involves providing a postgraduate experience that is professionally accredited and practically focused, utilising extensive simulation and laboratory facilities in order to prepare one for a life as a forensic scientist. All courses have written coursework with laboratory reports, and formal written examinations. They also contain similar employment pathways.

For the research-based Master of Science in Forensic Science qualification, comparison was made regionally with the University of the Free State in South Africa and internationally with the King's College London, in the United Kingdom. The University of the Free State and King's College London have different names for their qualifications, Master of Science majoring in Forensic Science and Master of Forensic Science (MRes) respectfully. King's College London is NQF Level 7 with 240 credits which is comparable to this proposed qualification. Meanwhile, the University of the Free State is NQF Level 9 with 180 credits. At King's College London, the Forensic Research Project is assessed with an experimental plan, journal article, poster and viva. At the University of the Free State, the Forensic Sciences Dissertation is assessed with a mini-thesis or interrelated publishable manuscripts/published articles.

The proposed qualification generally compares well with the qualifications studied in terms of content, scope, learning outcomes and hours to be achieved before assessment. The assessment assesses the ability to

analyse concepts, synthesize whole ideas and concepts, and to evaluate the value of concepts, prepare and communicate a research report.

NQF comparability notes

In terms of NQF levels, the NCQF places a master's qualification at level 9 with 240 credits. The SAQA NQF also denotes a master's qualification at level 9 with a minimum of 180 credits. UK's Regulated Qualifications Framework (RQF) places the master's qualification at FHEQ level 7 with 180 credits. The Scotland Credit and Qualifications Framework (SCQF), places the master's qualification at Level 11 (equivalent to NCQF Level 9) with 180 credits.

Careers available for Forensic Scientist for the developed and benchmarked qualifications include forensic chemist/ scientists (trace evidence), forensic toxicologist, crime scene investigator, wildlife forensic experts, etc. Graduates of all these qualifications can further study horizontally in Masters Science in Forensic Toxicology, Masters of Science in Forensic Chemistry, Masters of Science in Forensic and Transnational crimes etc. Available doctoral studies are Doctor of Philosophy in Forensic Toxicology, Doctor Philosophy in Forensic Chemistry, Doctor of Philosophy in Forensic Biology etc. The developed qualification therefore offers equivalent study and work opportunities just like those it was benchmarked from.

REVIEW PERIOD

Review period is 5 Years and as and when the need arises.