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## SECTION A: QUALIFICATION DETAILS

<b>QUALIFICATION DEVELOPER (S)</b>		University of Botswana										
<b>TITLE</b>	Bachelor of Science( Honours) in Environmental Health										<b>NCQF LEVEL</b>	8
<b>FIELD</b>	Health and Social Services		<b>SUB-FIELD</b>		Environmental Health					<b>CREDIT VALUE</b>	6 2 7	
New Qualification					<input checked="" type="checkbox"/>	Review of Existing Qualification						
<b>SUB-FRAMEWORK</b>		General Education		<input type="checkbox"/>	TVET		<input type="checkbox"/>	Higher Education		<input checked="" type="checkbox"/>		
<b>QUALIFICATION TYPE</b>	Certificate	I	II	III	IV	V	Diploma	Bachelor				
	Bachelor Honours		<input checked="" type="checkbox"/>	Post Graduate Certificate				Post Graduate Diploma				
	Masters				<input type="checkbox"/>	Doctorate/ PhD						

## RATIONALE AND PURPOSE OF THE QUALIFICATION

### RATIONALE:

Creating an appropriately skilled, highly motivated, client-focused health workforce is critical for Botswana to attain its ambition of ensuring an enabling environment, in which all people can reach and maintain the highest attainable level of health. The National Development Plan (NDP 11) put strategies on a Healthy Environment for a Healthy Population. It outlines Environmental health risks which should be managed to promote human health. Environmental health, which also refers to the theory and practice of ascertaining, correcting, controlling, minimizing, and preventing those aspects of the environment that can potentially and adversely affect the health of present and future generations is vital in attaining healthy environments to have a healthy population.

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Before the qualification offering in 2004, a needs assessment was undertaken in the Ministry of Local Governance and Rural Development, Ministry of Health and Wellness, Institute of Health Sciences, Parastatals, and industries. The participants echoed the importance of establishing and promoting Public Health disciplines such as Environmental Health in Botswana.

Another needs assessment was also carried out by the Center for Global Public Health (University of California, Berkeley) in 2010, and the report emphasized the need for undergraduate degree qualifications in Public Health. Furthermore, Public Health has been identified by Botswana Human Resources Council as one of the professions which are in short supply in the country.

#### **PURPOSE:**


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

- Carry out routine or unplanned investigations and inspections to ensure compliance of organisations and public entities with public health legislation and standards, and recommend actions to improve conditions.
- Investigate outbreaks of infectious disease and recommend preventative measures.
- Monitor environmental hazards emanating from different sources (air, land) to ensure public health safety.
- Arrange for proper management of hazardous waste and other materials.
- Advise on health and safety issues about new buildings and developments.

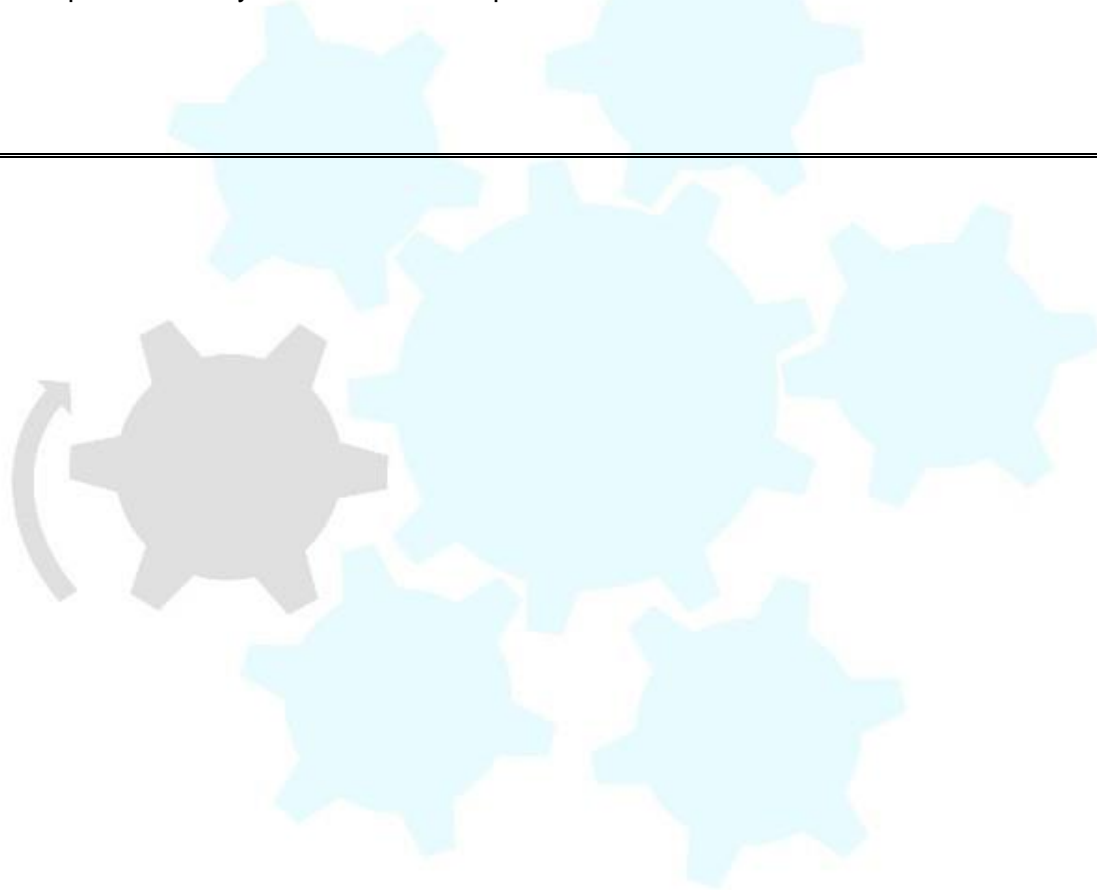
#### **ENTRY REQUIREMENTS (including access and inclusion)**


Minimum requirements for admission into the Bachelor of Science Honours (Environmental Health) degree are:


1. NCQF level 4 or equivalent, with at least grade C in English Language, Mathematics, Physics, Chemistry and Biology.


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2. Recognition of Prior Learning (RPL) and Credit Accumulation and Transfer (CAT) will be applicable for entry into this qualification by ETP and national policies on RPL and CAT.




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<b>SECTION B</b> <b>QUALIFICATION SPECIFICATION</b>	
<b>GRADUATE PROFILE (LEARNING OUTCOMES)</b>	<b>ASSESSMENT CRITERIA</b>
<p>1. Demonstrate competence in the integration and application of foundational, scientific principles and knowledge to environmental health science</p> 	<p>1.1. Integrate physical, chemical, biochemical, and biological principles in identifying, assessing, managing, and controlling of environmental health risks and services.</p> <p>1.2. Integrate social and behavioural principles and knowledge in community outreaches, project facilitation and related environmental health services.</p>
<p>2. Manage environmental and occupational health risks within natural, socio-economic, build and working environments within the scope of the profession</p>	<p>2.1. Identify current and potential health risks.</p> <p>2.2. Compile a comprehensive risk management plan.</p> <p>2.3. Apply various strategies to address current and potential risks.</p> <p>2.4. Monitor and review the effectiveness of the comprehensive risk management plan.</p> <p>2.5. Conduct public participation at all stages of the development and implementation of the risk management plan.</p> <p>2.6. Test and analyse water and food samples for safety and quality to meet the required public health standards.</p> <p>2.7. Test, analyse, and interpret environmental and occupational health samples to safeguard public health.</p> <p>2.8. Prepare and present scientific written reports.</p> <p>2.9. Disseminate the results to the relevant stakeholders.</p>


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	2.10. Develop and implement interventions to mitigate environmental and workplace hazards and risks.
<p>3. Design and implement health promotion programs in communities</p> 	<p>3.1. Conduct community health needs assessments and analyses to obtain comprehensive information about the community's current environmental health status, needs, and issues.</p> <p>3.2. Design sustainable health promotion programmes for effective implementation of environmental activities.</p> <p>3.3. Develop and implement preventive public and environmental health strategies for raising environmental health awareness.</p> <p>3.4. Implement, monitor and evaluate a health promotion programme.</p> <p>3.5. Participate in multi-disciplinary promotion programmes.</p>
<p>4. Demonstrate project management skills within a project management lifecycle.</p>	<p>4.1. Adhere to project management principles.</p> <p>4.2. Apply time and financial management principles within a project.</p> <p>4.3. Monitor and evaluate projects adhering to project management principles.</p> <p>4.4. Prepare and present a project report to stakeholders.</p>
	5.1. Identify research need/ theme/ problem.

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<p>5. Design and conduct scientific research to inform evidence-based programming and public health policy development or review.</p>	<p>5.2. Apply research principles in the design and conduct of an investigation.</p> <p>5.3. Manage research data in line with prescribed guidelines.</p> <p>5.4. Disseminate research findings to relevant stakeholders and policymakers.</p> <p>5.5. Utilise research findings to develop interventions in line with identified needs.</p> <p>5.6. Implement and evaluate intervention measures.</p> <p>5.7. Prepare and present a scientific report.</p>
<p>6. Demonstrate leadership and managerial skills in the execution of environmental health services.</p>	<p>6.1. Demonstrate competency in the management of resources.</p> <p>6.2. Prepare and present financial and manpower budgets for funding.</p> <p>6.3. Apply relevant policies and legislation for the provision of environmental health services and development control.</p> <p>6.4. Contribute to the development of policies and legislation for environmental health services.</p> <p>6.5. Apply skills and techniques to manage human resources in an environmental health context.</p> <p>6.6. Manage financial matters and physical resources of an environmental health service.</p> <p>6.7. Demonstrate computer literacy skills in the execution of administrative duties.</p> <p>6.8. Apply project management principles in the planning and delivery of environmental health services.</p>

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<p>7. Demonstrate interpersonal relations and professional behaviour in terms of ethical code.</p> 	<p>7.1. Demonstrate leadership skills in assigned duties.</p> <p>7.2. Develop and manage communication strategies to improve environmental health services.</p> <p>7.3. Communicate verbally, in writing and electronically according to requirements to all stakeholders.</p> <p>7.4. Facilitate conflict resolution within the work environment.</p> <p>7.5. Manage communication and marketing strategies that are related to environmental health.</p> <p>7.6. Interpret and apply the code of ethics in implementing the code of practice for environmental health practitioners.</p>


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SECTION C		QUALIFICATION STRUCTURE				
COMPONENT	TITLE	Credits Per Relevant NCQF Level				Total (Per Subject/ Course/ Module/ Units)
		Level [ 5]	Level [6]	Level [7]	Level [8]	
<b>FUNDAMENTAL COMPONENT</b>  Subjects/ Courses/ Modules/Units	Principles of Biology	16				16
	General Chemistry	32				32
	Geometrical Options, Mechanics, Vibrations and Waves	16				16
	Introductory Mathematics	24				24
	Introduction to Communication and Academic Literacy Skills for Health Sciences	11				11
	Computer Skills Fundamentals I	22				22
	Diversity of Plants and Animals	16				16
	Electricity and Magnetism	16				16




	Health Communication (Health Sciences and Pre-Med)	11				11
	Cell Biology		15			15
	Quantitative Biology				15	15
	Introduction to Environmental Health		10			10
	Epidemiology		12			12
	Introduction to Town Planning		11			11
	Environment and Comfort		7			7
	General Microbiology		15			15
	Human Physiologies		12			12
	Principles and Practice of Health education		16			16
	Control of Communicable Diseases		11			11
Health Informatics		12			12	


	Environmental Engineering			14		14
	Basic Toxicology			14		14
	Food Hygiene & Safety			15		15
	Liquid & Solid Waste Management			15		15
	Introductory Housing		<b>6</b>			6
	Environmental Health Sampling and Analysis			16		16
	Occupational Health, Safety and Hygiene			<b>14</b>		<b>14</b>
	Food Technology and Meat Hygiene			14		14
	Law and Environment			14		14
	Elements of Air Pollution			14		14
	Elements of Air Pollution			14		14
	Internship			40		40
	Environmental Risk Assessment				12	12
	Environmental Health Seminars				25	25

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	Operational Management for Health Practice				12	12
	Environment and Disease			12		12
	Environmental Hazards and Disaster Management			12		12
	African Environments			12		12
	Water Resources, Development & Management			12		12
	Inspection, Compliance and Practice				12	12
	Research Project in Environmental Health				30	30
	Case Studies				12	12
<b>ELECTIVE/ OPTIONAL COMPONENT</b>  <i>Subjects/Courses/ Modules/Units</i>	<b>N/A</b>					

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<b>SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL</b>	
<b>TOTAL CREDITS PER NCQF LEVEL</b>	
<b>NCQF Level</b>	<b>Credit Value</b>
<b>Level 5</b>	<b>164</b>
<b>Level 6</b>	<b>127</b>
<b>Level 7</b>	<b>233</b>
<b>Level 8</b>	<b>103</b>
<b>TOTAL CREDITS</b>	<b>627</b>
<b>Rules of Combination:</b> <b>(Please Indicate combinations for the different constituent components of the qualification)</b>	
<p>Fundamental courses: 164 credits  Core courses: 463 credits  Electives: None  Total credits: 627</p> <p>All fundamental and core courses must be achieved for the qualification to be awarded.</p>	

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### **ASSESSMENT ARRANGEMENTS**

All assessments, formative and summative, leading/contributing to the award of credits or qualifications would be based on learning outcomes and/or sub outcomes. Unless specified otherwise, the formative assessment mark shall constitute 50% and the summative mark 50% of the overall assessment for the qualification.

All assessment processes shall be conducted by assessors who are registered and accredited by Botswana Qualifications Authority or any recognised and relevant body.

### **MODERATION ARRANGEMENTS**

Internal and external moderation shall be undertaken to ensure consistency of assessments with the learning outcomes, by ETP and national policies on moderation.

All moderation processes shall be conducted by moderators who are registered and accredited by Botswana Qualifications Authority or any recognised and relevant body.

### **RECOGNITION OF PRIOR LEARNING**


There shall be a provision for the award of Bachelor of Science (Honours) in Environmental Health through Recognition of Prior Learning, RPL by ETP and national policies on RPL.

### **CREDIT ACCUMULATION AND TRANSFER**

There shall be a provision for the award of Bachelor of Science (Honours) in Environmental Health through Credit Accumulation and Transfer, CAT by ETP and national policies on CAT.

### **PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)**

- Master of Science (Environmental Health).
- Master of Science (Public Health).
- Master of Science in Food Safety and Quality Management.
- Master of Science (Epidemiology and Biostatistics).
- Master of Occupational Health and Safety.
- Master of Science in Health Promotion.

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- Master of Science in Sanitary Engineering.
- Master of Science in Ergonomics.
- Master of Science in Environmental Engineering.

Horizontal Articulation.

Graduates may consider related qualifications at NCQF Level 8.

This qualification articulates horizontally with any relevant bachelor's degree in the area of Health Management, for example:


- Bachelor of Science Honours (Occupational Health and Safety).
- Bachelor of Science Honours (Health Education and Promotion).
- Bachelor of Science Honours (Health System Sciences).
- Bachelor of Science Honours (Public Health).
- Bachelor of Science Honours (Nursing).
- Bachelor of Science Honours (Medical Laboratory Science).

Possible jobs or employment which the holder of this qualification may take up include the following:

- Environmental Health Practitioner.
- Environmental and Safety Officer.
- Housing Officer.
- Food Quality Assurance Officer.
- Researcher in Academic Institutions.
- Policy Advisor.
- Environmental and Occupational Health Consultancy.

#### **QUALIFICATION AWARD AND CERTIFICATION**

***Minimum standards of achievement for the award of the qualification***

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For learners to be awarded Bachelor of Science Honours (Environmental Health), they must attain a minimum of 627 credits.

### **Certification**

Learners who have been awarded the qualification will be issued a certificate.

### **REGIONAL AND INTERNATIONAL COMPARABILITY**


The Bachelor of Science Honours (Environmental Health) has been benchmarked against similar qualifications in regional and international universities, namely:

- Bachelor of Environmental Health offered by the Tshwane University of Technology and Nelson Mandela University, South Africa.
- Bachelor of Science (Hons) in Environmental Science and Health offered by the National University of Science and Technology (NUST) in Zimbabwe.
- Bachelor of Environmental Health Science, Namibia University of Science and Technology
- Bachelor of Environmental Health (Hons), • Cardiff Metropolitan University.

Similarities include admission requirements, recognition of prior learning and core Environmental Health modules offered as well as similar learning outcomes.

The qualification title for South African technical institutions does not include honours but the qualification is offered at NQF level 8. The credits weightings also differ within the four Universities, but the content is almost similar. The difference has been identified with the Bachelor of Environmental Health (Hons) offered by Cardiff Metropolitan University, which is at Credit and Qualification Framework for Wales Level 6, yet everything else is the same.

Furthermore, unlike the proposed Bachelor of Science (Honours) in Environmental Health, South African university students go for onone-yearooof mmunity service after graduation. Whereas the proposed qualification students go for an internship for two and half months (10 weeks)

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### **REVIEW PERIOD**

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

