

BQA NCQF QUALIFICATION TEMPLATE

SECTION A: QUALIFICATION DETAILS											
QUALIFICATION DEVELOPER (S)			BA ISAGO University								
TITLE		Bachelor of Science in Safety, Health, and Environmental Management					NCQF LEVEL		7		
STRANDS (where applicable)		1. 2. N/A 3. 4.									
FIELD		Services					CREDIT VALUE		480		
SUB FIELD		Hygiene and Occupational Health Services									
New Qualification			Legacy Qualification			Renewal Qualification			✓		
						Registration Code		Q0058			
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:

Botswana as a rapidly developing nation, is witnessing unprecedented growth across various industries. However, this growth brings forth an array of challenges related to Safety, Health, and Environmental Management (SHEM) that demand urgent attention. According to recent reports by (Rantshilo et al., 2022; Khiba, Seda, and Fourie, (2023), Botswana experiences a notable number of occupational accidents and incidents annually. They indicated that in the construction industry alone, 61% of occupational deaths and 50% of all work-related injuries and accidents were recorded. The impact of industrial activities on the environment is evidently rising as well. Data shows a 50% increase in air and water pollution incidents in the past five years which leads to slow environmental degradation (Lassman et al., 2020). In addition, Rantshilo et al., (2022) has also indicated that Botswana has limited documentation of these issues despite reporting relatively high work-related accidents.

Unfortunately, the existing framework for Safety, Health, and Environmental Management reveals gaps of noncompliance to health and safety issues at workplaces which result in increased incidents and accidents. As Botswana also embraces emerging technologies in its different sectors like information technology and biotechnology, the lack of specific safety protocols has led to an increase in reported incidents (Molefi, 2021). The current state of being, underscores a critical need for skills development in Safety, Health, and Environmental Management, which will empower industries to proactively identify and mitigate occupational hazards, reducing their frequency. This is amplified by the Human Resource Development Council Priority Skills list (2023/2024), which listed SHEM specialists as top occupations in high demand.

This qualification aims at equipping prospects with advanced environmental management skills which are imperative to ensuring sustainable industrial practices, aligning with Botswana's commitment to environmental stewardship. It is also to build a cadre of well-trained SHE professionals who will elevate Botswana's capacity to meet international Occupational Safety and Environmental standards by ensuring compliance with safety measures, recording workplace incidents and accidents to contribute to national archives, and eventually enhancing the country's reputation in the global market. A safer and healthier workforce contributes to increased productivity, reduced absenteeism, and enhanced overall economic stability.

With reference to the National Development Plan 11 (NDP11), the development of the National Occupational Health and Safety Policy has been on the agenda to guard against Occupational Health and Safety issues (Ministry of Finance and Development, 2016). Currently, Botswana's occupational health and safety issues are addressed through various allied Acts of Parliament, such as the Factories Act, Food Control Act, and Atmospheric Pollution (Prevention) Act, just to mention a few. Consequently, there is no operational unequivocal Occupational Health and Safety Act in Botswana which then makes sense to produce graduates who can implement safety and health principles in their lines of work. (<http://www.gov.bw/globalassets/occupational-health-and-safety1.pdf>)

PURPOSE: (itemise exit level outcomes)

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

1. Apply occupational safety, health, and environmental management practices at the workplace, external communities and the general environment.
2. Identify, assess, and manage occupational risks in the workplace.
3. Implement effective risk mitigation strategies to ensure a safe and secure workplace.
4. Contribute to professional occupational health and safety practices through continuous professional development and lifelong learning.
5. Conduct applied research on Health, Safety and Environmental issues to contribute to the existing body of knowledge.

MINIMUM ENTRY REQUIREMENTS (including access and inclusion)

1. Applicants must have a minimum of Certificate IV, NCQF Level 4 (TVET/GE) or equivalent.
2. Candidates who do not meet the minimum academic qualifications stated above will be considered through the Recognition of Prior Learning, RPL, which shall be administered according to the national and institutional policies on RPL. There will also be a provision for Credit Accumulation and Transfer, CAT, as per national and institutional policies on CAT.

SECTION B QUALIFICATION SPECIFICATION	
GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA
<p>1. Investigate incidents/accidents and near misses as they occur at workplaces.</p>	<p>1.1 Promptly respond to incidents, accidents, and near misses in the workplace.</p> <p>1.2 Develop a comprehensive investigation plan outlining key steps, objectives, and responsibilities.</p> <p>1.3 Align the investigation plan with industry best practices and regulatory requirements.</p> <p>1.4 Collect relevant evidence related to the incident, accident, or near miss.</p> <p>1.5 Utilise appropriate methods and tools for evidence documentation to ensure accuracy and completeness.</p> <p>1.6 Apply sound analytical techniques to conduct a thorough root cause analysis.</p> <p>1.7 Address underlying factors contributing to the incident, accident, or near miss to prevent future occurrences.</p>
<p>2. Investigate incidents/accidents and near misses as they occur at workplaces.</p>	<p>2.1 Promptly respond to incidents, accidents, and near misses in the workplace.</p> <p>2.2 Develop a comprehensive investigation plan outlining key steps, objectives, and responsibilities.</p> <p>2.3 Align the investigation plan with industry best practices and regulatory requirements.</p> <p>2.4 Collect relevant evidence related to the incident, accident, or near miss.</p> <p>2.5 Utilise appropriate methods and tools for evidence documentation to ensure accuracy and completeness.</p> <p>2.6 Apply sound analytical techniques to conduct a thorough root cause analysis.</p>

	<p>2.7 Address underlying factors contributing to the incident, accident, or near miss to prevent future occurrences.</p> <p>2.8 Produce detailed and well-organised investigation reports.</p>
<p>3. Apply specialised knowledge of risk management to identify and mitigate safety, health, and environmental risks in the workplace and the external environment.</p>	<p>3.1 Identify a wide range of safety, health, and environmental risks and hazards systematically in the workplace and the external environment.</p> <p>3.2 Recognise both common and unique risks associated with specific industry or organizational contexts.</p> <p>3.3 Conduct thorough risk assessments, considering the severity, likelihood, and potential impacts of identified risks.</p> <p>3.4 Prioritise and address high-priority risks with targeted and efficient mitigation measures.</p> <p>3.5 Stay updated on relevant regulatory changes and adjust risk management strategies accordingly.</p> <p>3.6 Maintain thorough documentation of risk assessments, mitigation plans, and monitoring activities.</p> <p>3.7 Adapt to emerging technologies that can improve safety, health, and environmental risk management.</p> <p>3.8 Design promotional safety, health, and environmental awareness materials.</p> <p>3.9 Deliver specialised training programs to enhance awareness of safety, health, and environmental risks among employees.</p>
<p>4. Demonstrate mastery of professional practice for compliance with legislation and ethical principles in health, safety and environmental management which adhere to regional and international standards.</p>	<p>4.1 Apply relevant legal and regulatory processes to achieve safety and environmental sustainability at local, regional, and international levels.</p> <p>4.2 Integrate ethical principles into decision making processes, demonstrating integrity, accountability, and a commitment to responsible practices.</p>

	<p>4.3 Ensure compliance with relevant safety, health, and environmental regulations.</p> <p>4.4 Engage in ongoing professional development to stay informed about updates in legislation, standards, and ethical principles.</p> <p>4.5 Communicate compliance measures clearly to all stakeholders, ensuring a shared understanding of expectations.</p>
<p>5. Utilise relevant tools and technologies for safety, health, and environmental management.</p>	<p>5.1 Select relevant tools and technologies for safety, health, and environmental management.</p> <p>5.2 Integrate technology seamlessly into safety, health, and environmental management practices to enhance efficiency, accuracy, and data-driven decision-making.</p> <p>5.3 Implement monitoring and surveillance systems for real-time tracking of safety, health, and environmental indicators.</p> <p>5.4 Employ modelling software to assess and predict environmental impacts of organizational activities.</p> <p>5.5 Integrate safety, health, and environmental data with GIS (Geographic Information Systems) tools for spatial analysis.</p>
<p>6. Formulate programs with a mandate to drive environmental sustainability for safe, sustainable, and healthy human capital.</p>	<p>6.1 Communicate and drive environmental sustainability for a safe work environment.</p> <p>6.2 Engage in capacity building (stakeholder consultation and engagement) and public education addressing safety, health, and environmental management.</p> <p>6.3 Arrange counselling for employees who encounter incidents, accidents or near misses in an organisation to reduce psychological effects of such.</p>
<p>7. Conduct applied research to solve complex contemporary issues affecting the safety, health and environmental management industry.</p>	<p>7.1 Identify problems related to the field of occupational health, safety, and environmental management.</p> <p>7.2 Implement sound research techniques in formulating hypotheses, objectives, and</p>

	<p>methodologies for research in safety, health, and environmental problems.</p> <p>7.3 Use advanced data collection methods to gather information on key trends and developments in the field of safety, health and environmental management.</p> <p>7.4 Analyse quantitative and qualitative data to determine complex and unpredictable challenges within the field of safety, health and environmental management.</p> <p>7.5 Recommend actions from the identified problems.</p> <p>7.6 Disseminate findings to inform decision-making and policy formulation for better practices in safety, health and environmental management.</p>
<p>8. Conduct an environmental impact assessment for proposed projects to evaluate the potential environmental consequences and risks associated with project implementation.</p>	<p>8.1 Conduct a thorough evaluation of potential environmental consequences associated with project implementation, including direct and indirect impacts on air quality, water resources, soil integrity and socio-economic factors.</p> <p>8.2 Employ suitable methodologies such as field surveys and predictive modelling techniques to assess potential environmental impacts and risks throughout a project lifecycle.</p> <p>8.3 Engage meaningfully with stakeholders including local communities, indigenous groups and non-governmental organizations soliciting input and incorporating feedback into the assessment process.</p> <p>8.4 Prepare a comprehensive environmental impact assessment report documenting the findings, conclusions and recommendations of the assessment, including detailed descriptions of potential impacts, risk assessments, and proposed mitigation measures.</p>

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<p>9. Conduct an audit on waste management, pollution status and natural resource degradation to inform better practice.</p>	<p>9.1 Conduct a baseline analysis of the status of the environment.</p> <p>9.2 Quantify the factors influencing the current environmental scenario.</p> <p>9.3 Propose mitigation measures to alleviate current and future environmental problems.</p> <p>9.4 Implement localised sustainable mitigation strategies.</p>
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SECTION C	QUALIFICATION STRUCTURE				
COMPONENT	TITLE	Credits Per Relevant NCQF Level			Total Credits
		Level [6]	Level [7]	Level [8]	
FUNDAMENTAL COMPONENT Subjects/ Courses/ Modules/Units	Business Communication	10			10
	Computing and Information Skills.	10			10
	Chemistry		11		11
	Physics		11		11
	Biology		11		11
	Mathematics for Safety, Health, and Environmental Management	10			10
	Research Methods		12		12

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CORE COMPONENT Subjects/Courses/ Modules/Units	Introduction to Occupational Health and Safety Management.	10			10
	Risk Management	10			10
	Environmental Management	10			10
	Occupational Health and Safety Law	10			10
	Safety Management and the Built Environment	10			10
	Quality Management	10			10
	Occupational Diseases		11		11
	Occupational Epidemiology		11		11
	Ergonomics	11			11
	Principles of Emergency Preparedness and Disaster Management		11		11
	Organisational Behaviour	10			10
	Biostatistics		11		11
	Occupational Toxicology		11		11

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	Fire Ecology and Management		11		11
	First Aid Procedures		11		11
	Incident/Accident Investigation		11		11
	Concepts and Principles of Climate Change		11		11
	Environmental Impact Assessment		11		11
	Waste Management and Pollution Control		11		11
	Safety Procedures at the workplace		11		11
	Occupational Hygiene		11		11
	Radiation Safety		11		11
	Industrial Attachment		60		60
	Security Management		11		11
	Global Health Dynamics		11		11
	Research Project		24		24
	Counselling at the workplace.		11		11
	Records Management in the Workplace.		11		11

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	Environmental Sustainability			10	10
	Safety, Health, and Environmental Management Systems			10	10
STRANDS/ SPECIALIZATION	Subjects/ Courses/ Modules/Units	Credits Per Relevant NCQF Level			Total Credits
		Level []	Level []	Level []	
1.					
2.					
Electives	Choose 2				
	Employee Relations		11		11
	Health and Safety in Transport		11		11
	Building Maintenance		11		11
	Introduction to Geographical Information Systems for SHEM			11	11
	Introduction to Mine Safety			11	11

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	Food Safety and Hygiene			11	11
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SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL

TOTAL CREDITS PER NCQF LEVEL

NCQF Level	Credit Value
6	110
7	350
8	20
TOTAL CREDITS	480

Rules of Combination:

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

The credit combination for this qualification is 75 credits for fundamental components, 383 core components, and 22 from the elective component where candidates would choose two (2) modules

ASSESSMENT ARRANGEMENTS

Formative Assessment

The weighting of formative assessment is 60 % of the Final assessment mark.

Summative Assessment.

The weighting of the summative assessment is 40 % of the Final assessment mark.

Assessors for the qualification should be registered by Botswana Qualifications Authority or any recognised and equivalent body.

MODERATION ARRANGEMENTS

There will be provision for internal and external moderation, conducted by moderators registered with Botswana Qualifications Authority, BQA.

RECOGNITION OF PRIOR LEARNING

Recognition of Prior Learning, RPL, will be applicable for consideration for award of credits towards this qualification as specified in policies by the Education and Training Provider (ETP) in line with the National RPL policies.

CREDIT ACCUMULATION AND TRANSFER

Credit Accumulation Transfer (CAT) will be applicable for consideration for award in this qualification. as specified in policies by the Education and Training Provider (ETP) in line with the National CAT policies.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Learning Pathways

Horizontal Articulation:

- Bachelor of Science in Occupational Hygiene.
- Bachelor of Arts in Public Policy and Health.
- Bachelor of Science in Environmental Management.
- Bachelor of Science in Environmental Science.
- Bachelor of Science in Risk Management.

Vertical Articulation:

- Bachelor of Science (Hons) Occupational Safety, Health, and Environmental Management.
- Bachelor of Science (Hons) Environmental Management.
- Bachelor of Science (Hons) Occupational Health
- Postgraduate Diploma in Occupational Health.

- Postgraduate Diploma in Environmental Management.
- Post-Graduate Diploma in Occupational Safety, Health, and Environmental Management.
- Postgraduate Diploma in Risk and Safety Management.
- Master of Arts in Public Policy and Health.
- Master of Science in Safety and Risk Management.
- Master of Science in Occupational Health and Safety Management.
- Master of Science in Environmental, Health and Safety Management.
- Master of Science in Environmental Science.

Employment Pathways

- Occupational Health and Safety Management Consultants.
- Safety, Health, and Environment officers.
- Health and Safety Advisors
- Health and Safety Specialists
- Environmental Officers.
- Risk Control Officers.
- Loss Control Officers.
- Safety Officers.
- Safety Auditors.
- Industrial and Environmental Assessors.
- Safety Health Assessors.
- Occupational Health and Safety (OHS) Inspector.
- Health and Safety Practitioner.
- Environmental Control/Protection Officer.
- Industrial Hygienist.
- Environmental Impact Assessment Officer/Specialist.
- Occupational Health and Safety Management Assistant Researcher.

QUALIFICATION AWARD AND CERTIFICATION

To be eligible for the award of the Bachelor of Science in Safety, Health, and Environmental Management, candidates should have obtained a minimum of 480 credits. A certificate will be issued to learners who are awarded the qualification.

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

A comparative analysis has been done against qualifications offered by reputable entities within the region and internationally as follows:

- i. Bachelor of Science in Occupational Health and Safety -The Institute of Development Management (IDM), Eswatini.

- ii. Bachelor of Science in Occupational Health, Safety and Environment- University of Doha for Science and Technology, Qatar
- iii. Bachelor of Science (Health, Safety and Environment)- Curtin University, Malaysia

The proposed qualification compares favourably with the qualifications offered by the regional and international institutions it was compared with. All the qualifications together with the proposed are pegged at Level 7, (NCQF, ESQF, QNQF, AQF). The titles of all the qualifications are similar.

Learner Exit Outcome: The main exit outcomes of all the qualifications are similar, their main aim is to produce learners with knowledge and skills to manage safety and health at work, assess and mitigate risks at both the workplace and the external environment and adhere to regional and international standards that promote safety and health in the workplace and external environment.

Domains: The proposed qualification together with the ones compared to have similar domains which are Fundamentals of Occupational Health and Safety, Occupational Hazards & Controls, Hazard Recognition and Control, Toxicology and Employment and Environmental Law.

Internship: All the qualifications have an element of field practice which allows the students a platform to transfer the knowledge and skills acquired through their classes into a work setting.

Assessment: With regards to assessment strategies, all the qualifications have adopted formative and summative type of assessments.

Requirements for Award of Qualification: This field practice that cuts across all the qualification is one of the minimum requirements for award of a qualification upon successful completion.

Duration: In terms of qualification duration, all three institutions run their qualifications for four (4) years whilst Curtin University's qualification runs for 3 years on a full-time basis.

Differences

Credit Value: There are visible differences in the credits value, the proposed qualification carries 480 credits, whilst IDM's qualification has 332, University of Doha's qualification carries 282 and Curtin University's qualification has 600 credits. The varying of these credits results from different frameworks and systems adopted by each country.

Articulation

In terms of articulation, the proposed qualification compares favourably with other regional and international qualifications used for benchmarking. Just like the qualifications offered by other Universities, the proposed Bachelor of Science in Safety, Health, and Environmental Management allows students to progress and pursue honours and postgraduate studies in the field of Safety, Health and Environmental Management and the learners are further prepared for employment in the area of Safety, Health, and Environmental Management as Health and Safety Advisor, Health and Safety Specialist and Safety, Health and Environment officers in either government or private entities.

The employment pathways are also similar for all the qualifications.

REVIEW PERIOD



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This qualification will be reviewed every 5 years.

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	

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