



COUNCIL ON HIGHER EDUCATION

**Higher Education Qualifications
Sub-Framework**

Qualification standard

For

**Bachelor of Science in Environmental
Management**

DRAFT

Version 14 FOR COMMENTS

The Council on Higher Education (CHE) is an independent statutory body established by the Higher Education Act, no. 101 of 1997 (amended). The CHE is the Quality Council for Higher Education, advises the Minister of Higher Education and Training on all higher education issues and is responsible for quality assurance and promotion through the Higher Education Quality Committee.

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HIGHER EDUCATION QUALIFICATIONS SUB-FRAMEWORK

STANDARDS DEVELOPMENT: POLICY AND PROCESS

Introduction

National policy and legislative context

In terms of the National Qualifications Framework (NQF) Act, 67 of 2008, the Council on Higher Education (CHE) is the Quality Council (QC) for Higher Education. The CHE is responsible for the quality assurance of higher education qualifications.

Part of the implementation of the Higher Education Qualifications Sub-Framework (HEQSF) is the development of qualification standards. Standards development is aligned with the *nested approach* incorporated in the HEQSF. In this approach, the outer layer providing the context for qualification standards are the NQF level descriptors developed by the South African Qualifications Authority (SAQA) in agreement with the relevant QC. One of the functions of the QC (in the case of higher education, the CHE) is to ensure that the NQF level descriptors 'remain current and appropriate'¹. The development of qualification standards for higher education, therefore, needs to take the NQF level descriptors, as the outer layer in the *nested approach*, into account. An ancillary function is to ensure that standards themselves remain current and appropriate in respect of qualifications awarded by higher education institutions. This means that they need to be responsive to the distinctive features of each field of study.

A secondary layer for the context in which qualification standards are developed is the HEQSF. This framework specifies the types of qualifications that may be awarded and, in some cases, the allowable variants of the qualification type. An example of variants is the provision for two variants of the Master's degree (including the 'professional' variant). Another example is the distinction in the Bachelor's degree type between the 'general' and 'professionally-oriented' variants. The HEQSF also specifies the purpose and characteristics of each qualification type. However, as indicated in the *Framework for Qualification Standards in Higher Education* (CHE, 2013), neither NQF level descriptors nor the HEQSF is intended fully to address, or indeed capable of addressing, the relationship between generic qualification-type purpose and the specific characteristics of that qualification type in a particular field of study. One of the tasks of standards development is to reconcile the broad, generic description of a qualification type according to the HEQSF and the particular characteristics of qualifications awarded in diverse fields of study and disciplines, as defined by various descriptors and qualifiers.

¹ NQF Act 67 of 2008

Framework for standards development

The development of qualification standards is guided by the principles, protocols, and methodology outlined in the *Framework*, approved by the Council in March 2013. The focus of a standards statement is the relationship between the purpose of the qualification, the attributes of a graduate that manifest the purpose, and the contexts and conditions for the assessment of those attributes. A standard establishes a threshold. However, on the grounds that a standard also plays a developmental role, the statement may include, as appropriate, elaboration of terms specific to the statement, guidelines for the achievement of the graduate attributes, and recommendations for above-threshold practice.

A qualification standard is a statement that indicates how the purpose of the qualification, and the level on the NQF at which it is awarded, are represented in the learning domains, assessment contexts, and graduate attributes that are typical for the award of the qualification. Qualification standards are not the same, in either scope or effect, as other modalities used for the establishment of standards in higher education, for example, resource allocation standards, teaching and learning standards, or standards used for the grading of individual students. Matters such as actual curriculum design, tuition standards, and standards for resource allocation for a programme are the responsibility of the institution awarding the qualification. Nor does the standard prescribe the duration of study for the qualification. It establishes the level of the NQF on which it is awarded and confirms the minimum number of credits as set by the HEQSF. The standard relates to all programmes leading to the qualification, irrespective of the mode of delivery, the curriculum structure, and whether or not a prior qualification at a lower or the same level on the NQF is a prerequisite.

The process of development

The standards development process aims to explore the extent to which the principles, procedures, content, and methodology of standards development meet the requirements of all relevant parties: the institutions awarding the qualifications, the CHE as quality assurer of the qualifications, the graduates of those qualifications; their prospective employers; and any relevant professional council or association. The standard is, therefore, cognisant of academic as well as professional interests, insofar as the latter apply.

The drafting of this standards statement is the work of a group of academic experts in the field of study, convened by the CHE. Members of the Standards Development Reference Group participate in their individual capacity, not as representatives of any institutions or organisations.

QUALIFICATION TITLE

Bachelor of Science in Environmental Management

QUALIFICATION TYPE AND VARIANT

Bachelor's degree (*General*)

BACHELOR'S DEGREE: CHARACTERISTICS

There are two types of Bachelor's Degrees, namely general and professionally-oriented Bachelor's Degrees. Both types of degrees may be structured as a 360-credit qualification with an exit at level 7 or as a 480-credit qualification with an exit at level 8 on the National Qualifications Framework.

The 480-credit Bachelor's Degree at NQF level 8 has both a higher volume of learning and greater cognitive demand than the 360-credit degree at level 7 and should prepare students to be able to undertake Master's level study by providing them with research capacity in the methodology and research techniques of the discipline.

The primary purpose of both the general and the professional Bachelor's Degree is to provide a well-rounded, broad education that equips graduates with the knowledge base, theory, and methodology of disciplines and fields of study, and enables them to demonstrate initiative and responsibility in an academic or professional context. Both the 360- and 480-credit Bachelor's Degrees may require students to undertake research in a manner that is appropriate to the discipline or field of study in order to prepare them for postgraduate study.

The general Bachelor's Degree emphasises general principles and theories as preparation for entry into general employment or for a postgraduate programme. The professional Bachelor's Degree prepares students for professional training, post-graduate studies, or professional practice in a wide range of careers. Therefore, it emphasises general principles and theory in conjunction with procedural knowledge in order to provide students with a thorough grounding in the knowledge, theory, principles, and skills of the profession or career concerned and the ability to apply these to professional or career contexts. The degree programme may contain a component of work-integrated learning.

(Higher Education Qualifications Sub-Framework, CHE, 2013)

PREAMBLE

South Africa strives to establish and implement a comprehensive national environmental framework to manage, direct, and guide the development process to achieve national and global sustainable development goals, considering relevant social, economic, and ecological factors. The global principles of Sustainable Development Goals (SDGs) are incorporated into new policies and legislation, as well as the National Environmental Management Act (Act 107 of 1998 (NEMA), as amended) and the National Development Plan (NDP). The Act aims to promote sustainable development while also ensuring the rights of people and recognising the need for economic progress. NEMA is the primary environmental legislation in the country and provides a framework for integrating environmental management into all development activities' decision-making processes. It also identifies principles such as the holistic evaluation/integration principle, internalisation of externalities principle, the precautionary principle, pollution avoidance principle, sustainable development, sense of place, and consideration of alternatives, inter alia. These principles are grounded in the NEMA legislation, which promotes the application of appropriate environmental management tools to ensure the integrated management of activities and sustainable development, in line with the provisions of the South African Constitution (Act 108 of 1996, Chapter 2, Section 24).

Sustainable development is the integration of social, economic and environmental factors into planning, implementation and decision-making to ensure that development serves present and future generations. Environmental management is a management or governance strategy that derives its authority from a well-established legal mandate, such as environmental laws (legislation, ordinances and by-laws). The environment comprises the natural (plant, animal, land, water, and atmospheric) elements and human-made surroundings (aesthetic and cultural properties) that affect and sustain life on Earth. The environment is composed of various physical, chemical, and biological components that interact with each other and with human activities. The environment is also influenced by social, economic, political, and cultural factors that shape human values, health, attitudes, behaviours, and institutions. Environmental management is, therefore, an interdisciplinary field that systematically integrates knowledge from the Earth sciences, Life sciences, and Social sciences to understand, analyse, and evaluate the interactions between human and natural systems to address the causes, consequences, and solutions of environmental problems/issues; to develop plans and strategies for managing and conserving natural resources in a way that sustains the health and well-being of both humans and the planet/environment.

The need for a standard for certified environmental assessment practitioners was initiated by the Environmental Assessment Practitioners Association of South Africa (EAPASA), but it is now even more necessary due to the escalation of environmental disasters and the urgent need for sustainable development and the need for credible Environmental Assessment Practitioners (EAPs) to address these issues in a professional and competent manner. This interdisciplinary, NQF-level 7 Environmental Management qualification promotes an understanding of key environmental issues (in the local, regional, and global context) within

socioeconomic development, sustainability, and environmental management, and how to appraise them critically. This qualification aims to provide a well-rounded and broad education that equips graduates with the knowledge base, theory, practical skills and methodology of Integrated Environmental Management (IEM) and environmental legal principles and framework for development projects subject to the South African Environmental Impact Assessment (EIA) regulations (NEMA, as amended).

PURPOSE

The primary purpose of this Bachelor of Science in Environmental Management programme is to provide well-rounded and broad education in an interdisciplinary field, that equips graduates with the scientific knowledge of natural (earth and life) and social systems and interactions that can be applied to environmental and natural resource problem solving in a policy and management context, and can address environmental crises to achieve sustainable development.

This Bachelor's degree requires achievement in research methods, investigation, environmental assessment, and report writing. The qualification aims to prepare graduates with an appropriate level of scientific and management knowledge, both theoretical and technical, of Socio-Environmental Systems, analytical skills, and stakeholder engagement skills to conduct environmental assessments, as well as prepare graduates for postgraduate study.

This standard is designed to meet the educational requirement towards registration as a candidate Environmental Assessment Practitioner with the EAPASA.

NQF LEVEL AND CREDITS

The minimum number of credits allocated to the qualification is 360 credits. A minimum of 120 credits must be awarded at the exit level (NQF level 7)².

GRADUATE ATTRIBUTES

The qualification may be awarded when this qualification standard has been met or exceeded. The following graduate attributes are evident upon successful completion of the qualification.

² Note that the Standard does not specify the duration of a programme leading to the qualification; that is determined by the institution offering the programme.

³IEM is Integrated Environmental Management.

Core Knowledge

Fundamental knowledge and understanding of:

- the biophysical environment and the attributes and functioning of its interconnected components, including the biosphere, lithosphere, hydrosphere, and atmosphere;
- the cultural environment and the attributes and functioning of its interconnected socio-economic components, including the key economic, political, social, urban, rural, and historical elements of the anthroposphere;
- the theory of human-environment interaction and the socio-economic and cultural factors and principles that influence environmental outcomes;
- the causes, consequences, and dynamics of environmental impacts, including global warming and climate change, pollution, natural resource depletion, deforestation, and biodiversity loss.

Advanced knowledge and understanding of:

- the institutional framework for Integrated Environmental Management at local, national, and international levels, including relevant agreements, protocols, policies, laws, regulations, and governance structures;
- sustainable development and sustainability principles, and their relevance for Integrated Environmental Management;
- relevant approaches to environmental and social justice, and its relevance for Integrated Environmental Management;
- the scope, purpose, and process flow of environmental assessment, monitoring, and management tools;³

³ Such tools include Strategic Environmental Assessment, Environmental Impact Assessment, Social Impact Assessment, Environmental Management Plans, Environmental Management Systems,

- geospatial technologies, including Global Positioning Systems, Geographical Information Systems, Remote Sensing, and Artificial Intelligence;
- relevant research methods, techniques, and empirical processes of the relevant natural and social sciences;
- scientific integrity, ethical research practice, and regulatory professional standards relevant to the field of Environmental Management.

Application of Knowledge and Skills

The graduate is able to demonstrate:

- application, through critical thinking, of an integrated/holistic understanding of theoretical approaches to the bio-physical and cultural environment, environmental problems, and human-environment interaction, in order to conceptualise, analyse, and comprehend environmental and socio-economic problems;
- application, through critical thinking, of an integrated/holistic understanding of the institutional framework for IEM, sustainable development and sustainability principles, and relevant approaches to environmental and social justice, in order to formulate appropriate solutions for environmental and socio-economic problems and impacts;
- the application of a wide range of environmental assessment tools to conceptualise, analyse, comprehend, address and mitigate environmental and socio-economic impacts;
- the selection and application of relevant research methods and techniques, including geospatial technologies, and appropriate empirical processes, to produce and interpret scientific data that will inform the analysis, comprehension, and mitigation of environmental and socio-economic aspects and impacts;

Environmental Auditing, Environmental Rehabilitation, as well as stakeholder engagement, conflict resolution, and project management, among others.

- effective communication of relevant information through scientific report writing and digital presentations, and the ability to clearly communicate scientific and other information to relevant stakeholders;
- the integration of an ethos of scientific integrity, ethical research practice, and regulatory professional standards into all aspects of relevant Environmental Management practice;
- capacity to engage in lifelong learning and continuous professional development.

CONTEXTS AND CONDITIONS FOR ASSESSMENT

Assessment is an integral part of the qualification standard.

The following contextual factors must be considered :

- physical resources required to implement effective assessment activities to test the fundamental theoretical knowledge, problem-solving ability, and practical and technical skills required for the qualification;
- an adequate student-staff ratio for effective learning and assessment;
- a sufficient pool of academics who are qualified and experienced in environmental management and its relevant tools and instruments;
- appropriate library and information technology resources;
- opportunities for practical training and assessment in real-world or simulated environments, for example, relevant case studies, to enable the graduate to acquire the applied competencies.

The assessment approaches should:

- be incremental in the complexity of theoretical and practical competencies, and include appropriate proportions of formative and summative assessment;
- be premised on the principles of validity, reliability, fairness, transparency, and consistency of assessment;

- provide feedback after assessment tasks to enable graduates to learn from their mistakes and successes;
- be diverse and balanced to encompass theoretical knowledge, applied competence, independent thinking, critical analysis, development of research skills, problem-solving skills, interdisciplinary skills and application of knowledge;
- be quality assured at all levels and externally moderated by qualified and experienced personnel at least at the exit level;
- be aligned with progression from one year of study to the next year, which will be guided by the rules of the institution where the qualification is awarded.

PROGRESSION

A Bachelor's Degree is the minimum entry requirement for admission to a relevant Bachelor Honours Degree or Postgraduate Diploma in a related discipline. Entry into these qualifications is usually in an area of specialisation taken in the Bachelor's Degree.

Guidelines

“Simulated environments” include any practical application of developing knowledge and skills in situations removed from, but transferable to, a real environmental science and management workplace. This might include campus-based laboratory work, moot debates, peer-group presentations, campus-based environmental tasks, online research tasks, etc.

The Bachelor of Science in Environmental Management Degree (NQF Level 7) provides opportunities for graduates to move into different programmes for their postgraduate studies. For the students who wish to continue within the Environmental space, the degree provides them access to get registered as Candidate Environmental Assessment Practitioners and Candidate Environmental Control Practitioners with EAPASA automatically. The registration with EAPASA is in line with the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

EAPASA has also been recognized as a statutory professional body by the South African Qualifications Authority, and therefore, the requirements of the National Qualifications Framework (NQF) Act, Act 67 of 2008, also apply to EAPASA-registered EAPs.

FOR COMMENT

ANNEXURE A

NQF LEVEL DESCRIPTORS

NQF Level Seven

- a. Scope of knowledge, in respect of which a learner is able to demonstrate integrated knowledge of the central areas of one or more fields, disciplines or practices, including an understanding of and the ability to apply and evaluate the key terms, concepts, facts, principles, rules and theories of that field, discipline or practice; and detailed knowledge of an area or areas of specialisation and how that knowledge relates to other fields, disciplines or practices.
- b. Knowledge literacy, in respect of which a learner is able to demonstrate an understanding of knowledge as contested and the ability to evaluate types of knowledge and explanations typical within the area of study or practice.
- c. Method and procedure, in respect of which a learner is able to demonstrate an understanding of a range of methods of enquiry in a field, discipline or practice, and their suitability to specific investigations; and the ability to select and apply a range of methods to resolve problems or introduce change within a practice.
- d. Problem-solving, in respect of which a learner is able to demonstrate the ability to identify, analyse, evaluate, critically reflect on and address complex problems, applying evidence-based solutions and theory-driven arguments.
- e. Ethics and professional practice, in respect of which a learner is able to demonstrate the ability to make decisions and act ethically and professionally, and the ability to justify those decisions and actions, drawing on appropriate ethical values and approaches within a supported environment.
- f. Accessing, processing and managing information, in respect of which a learner is able to demonstrate the ability to develop appropriate processes of information gathering for a given context or use; and the ability to independently validate the sources of information and evaluate and manage the information.
- g. Producing and communicating information, in respect of which a learner is able to demonstrate the ability to develop and communicate his or her ideas and opinions in well-formed arguments, using appropriate academic, professional, or occupational discourse.

- h. Context and systems, in respect of which a learner is able to demonstrate the ability to manage processes in unfamiliar and variable contexts, recognising that problem solving is context and system-bound, and does not occur in isolation.
- i. Management of learning, in respect of which a learner is able to demonstrate the ability to identify, evaluate and address his or her learning needs in a self-directed manner, and to facilitate collaborative learning processes.
- j. Accountability, in respect of which a learner is able to demonstrate the ability to take full responsibility for his or her work, decision-making and use of resources, and limited accountability for the decisions and actions of others in varied or ill-defined contexts.