

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

QUALIFICATION SPECIFICATION SECTION A							
QUALIFICATION DEVELOPER			CONSTRUCTION INDUSTRY TRUST FUND				
TITLE		CERTIFICATE IV IN PLUMBING AND PIPE FITTING				NCQF LEVEL	
						IV	
FIELD	PHYSICAL PLANNING AND CONSTRUCTION			SUB-FIELD	PLUMBING AND PIPE FITTING		
New qualification		√	Review of existing qualification				
SUB-FRAMEWORK		General Education			TVET	√	Higher Education
QUALIFICATION TYPE		Certificate		√	Diploma		Bachelor
		Bachelor Honours			Master		Doctorate/ PhD
CREDIT VALUE						60	
RATIONALE AND PURPOSE OF THE QUALIFICATION							
<p>Rationale</p> <p>Government has identified high unemployment and poverty amongst youth as a national security risk, hence the need to train this section of the population in productive and income generating skills.</p> <p>Despite the country continuing to receive investments, these investments are biased towards capital intensive ventures. This situation has the inherent risk of unemployment continuing to surge, and the government, through its vital development policy paper, National Development Plan 11 (NDP 11), has identified areas of potential high employment uptake such as services, and manufacturing and has made a commitment to give these sectors extensive support with a view of making a meaningful contribution to the growth of the economy.</p> <p>Another policy document that make mention of skills development as a vehicle towards inclusivity and provision of opportunities for all, is the Vision 2036 document under the Human and Social Development (Pillar 2) which states that “Botswana society will be knowledgeable with relevant quality education that is outcome based, with emphasis on technical and vocational skills as well as academic competencies.”</p> <p>Plumbing and pipe fitting is one such sector with a high potential for employment uptake, as it is applicable in most building construction processes. Building construction, as an emerging sector with high potential for</p>							

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

contribution to GDP calls for the up skilling of the workforce as this would provide professionalism to this sector.

The 2016 report on Top Occupations of the future listed Plumbers in the Construction sector, as one of the occupations that are in demand (HRDC, 2016).

Purpose

The purpose of this qualification is to equip learners with knowledge, skills, and competences to:

- Apply principles of building construction technology
- Interpret building and engineering drawings
- Install below-ground drainage systems
- Carry out installation of cold, hot and rainwater systems
- Install above-ground soil waste
- Fit plumbing and sanitary fixtures
- Maintain vent systems and sanitary ware appliances

ENTRY REQUIREMENTS (including access and inclusion)

Entry Requirements:

- Certificate III in Plumbing and Pipefitting related field (NCQF Level 3) or equivalent.
- There shall be access through RPL and CAT in line with the National RPL and CAT Policies.

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

QUALIFICATION SPECIFICATION		SECTION B
GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA	
At the end of four months, learners undertaking this qualification should have completed the Learning Objectives below and been declared competent in their associated Assessment Criteria		
1. Apply fundamentals of building construction technology	1.1 Conduct risk assessments and apply methods to reduce risk 1.2 Calculate required quantity for materials from plumbing drawings 1.3 Use different instrument to determine levels and set out according to drawings specification.	
2. Install below-ground drainage systems.	2.1 Select materials and tools according to work site requirements 2.2 Install soil, waste, and vent pipes and fittings according to specifications 2.3 Apply air and water tests to the below-ground drain to determine optimum level of functioning 2.4 Maintain below-ground drainage systems	
3. Carry out installation of cold water and hot water systems.	3.1 Join different pipes, tubes and fittings according to drawings 3.2 Lay pressure water pipes under walls, surface beds, in or through floors, concrete slabs or walls 3.3 Install hot and cold-water supply pipes and components according to layout	
4. Install above-ground drainage systems.	4.1 Interpret Drawings to determine layout of the system 4.2 Install vent systems and sanitary ware appliances. 4.3 Test for leaks and functionality according to specifications 4.4 Carry out maintenance of pipes, valves, and sanitary ware	

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

<p>5. Perform plumbing systems installation</p>	<p>5.1 Connect water supply systems and prevent backflow with vacuum breaker</p> <p>5.2 Install foul water system components according to drawings</p> <p>5.3 Carry out installation of solar water system components</p> <p>5.4 Install gutters and down pipes according to drawing</p> <p>5.5 Connect domestic fire sprinklers and different valves to specifications</p>
<p>6. Fit plumbing fixtures</p>	<p>6.1 Fit plumbing and sanitary fixtures in line with installation specifications</p> <p>6.2 Install electrical high-pressure geyser according to industry standards</p> <p>6.3 Maintain sanitary plumbing appliances and fixtures according to procedures</p>
<p>7. Apply the principles of Occupational Health and Safety in the Work Environment</p>	<p>7.1 Identify hazards in the Workplace</p> <p>7.2 Carry out assessment of possible risks in the workplace</p> <p>7.3 Maintain Good Housekeeping</p> <p>7.4 Select Appropriate Personal Protective Equipment</p>
<p>7. Demonstrate knowledge of Entrepreneurial principles in the workplace</p>	<p>7.1 Plan for given work assignments</p> <p>7.2 Solve problems creatively in the workplace</p> <p>7.3 Mobilise people and resources to execute tasks</p>

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

	7.4 Create value through implementation of innovative ideas
--	---

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

QUALIFICATION STRUCTURE SECTION C			
FUNDAMENTAL COMPONENT Subjects / Units / Modules /Courses	Title	Level	Credits
	Safety, health and environmental protection	3	3
	Interpret engineering drawings	4	2
	Working at Heights	3	3
	Entrepreneurship	3	3
	Total		11
CORE COMPONENT Subjects / Units / Modules /Courses	Introduction to Building Construction Technology	3	3
	Fundamentals of Plumbing and Pipe Fitting	3	4
	Water Mains Pipe System	4	5
	Cold and Hot Water Systems	4	5
	Sanitary Fixtures	4	3
	Electrical High Pressure Geyser	4	3
	Rain Water Systems	4	5
	Sheet Metal Work	4	5
	Flashings	4	3
	Drainage Systems	4	5
	Domestic Plumbing Maintenance	3	5
	Power Tools and Machinery	3	3
	Total		49
ELECTIVE COMPONENT Subjects / Units / Modules /Courses			
	Total		60

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

Rules of combinations, Credit distribution (where applicable):

The qualification consists of fundamental and core components.

To be awarded the qualification learners are required to obtain a minimum of **60** credits as detailed below.

Fundamental Components:

The Fundamental components consist of generic skills that include calculations, safety, and entrepreneurship to the value of **11** credits all of which are compulsory

Core Components:

The core components consist of modules containing applied knowledge and practical skills to the value of **49** credits which are compulsory.

Elective Components:

There are no elective modules for the qualification.

Modules	Fundamental	Core	Elective
Level 3	9	15	0
LEVEL 4	2	34	0
Total Credit	11	49	0
Total Credit Value			60

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

ASSESSMENT AND MODERATION ARRANGEMENTS

All assessments leading/contributing to the award of credits, or a qualification shall be based on learning outcomes and/or sub-outcomes.

1. Formative assessment:

Formative or continuous assessment would be conducted to inform teaching and learning and establish the learner's level of readiness for progression to the next learning unit or module.

Formative assessment shall constitute 60% of the Final Mark

2. Summative assessment:

Internal summative assessments shall be carried out in accordance all applicable examination rules, and the weighting of the assessment shall constitute 40% of the Final Mark

All assessment shall be carried out by BQA registered and accredited Assessors.

3. Moderation

There shall be internal and external moderation carried out by BQA registered and accredited Moderators

RECOGNITION OF PRIOR LEARNING (if applicable)

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.

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)
<p>Articulation and Education Pathways</p> <p>Horizontal Articulation:</p> <p>Graduates of this qualification may consider pursuing to other qualifications on the same levels in the field of building construction such as</p> <ul style="list-style-type: none"> • Certificate IV in Solar Water Heating Systems • Certificate IV in The Built Environment • <p>Vertical Articulation:</p> <p>Learners may progress to higher level in the same field such as</p> <ul style="list-style-type: none"> • Certificate V in Plumbing and Pipefitting • Certificate V in Pipefitting • Certificate V in Construction Engineering • <p>Employment Pathways</p> <p>Learners who attain this qualification will have competencies and attributes to work as:</p> <ul style="list-style-type: none"> • Plumber and Pipe Fitter • Maintenance Operative
QUALIFICATION AWARD AND CERTIFICATION
<p>To be awarded this qualification, the candidate must have met the following requirements:</p> <ul style="list-style-type: none"> ▪ All exit level outcomes ▪ Minimum 60 credit requirements <p>Certification</p> <p>Upon completion of the qualification the candidate will be awarded a CERTIFICATE IV IN PLUMBING AND PIPE FITTING</p>

REGIONAL AND INTERNATIONAL COMPARABILITY

The Proposed Qualification was compared with the following Qualifications.

1. Amber Tower Training, Further Education and Training Certificate: Plumbing, (160 credits). South Africa
2. Able Skills, City and Guilds, (Level 2): City and Guilds Plumbing. United Kingdom
3. Namibia College of Open Learning: Plumbing and Pipefitting. Namibia
4. Victoria University Polytechnic: Certificate III in Plumbing. Australia

The following Similarities and Differences of the qualifications examined were observed.

Similarities

All the qualifications place great importance on occupational health and safety and have included a module on the same. The exit level outcomes of the 4 qualifications examined are similar and their scope covers work organisation, pipework, installation of fittings, sanitary ware, hot and cold-water systems, and drainage.

Since the qualification is skills based, assessment is integrated, and competencies are achieved through the design and development of assessment activities that make use of a variety of assessment methods and tools that measure not only the learner's knowledge and ability to perform practical tasks and activities within a familiar context, but which also challenge learners to demonstrate their ability to deal with problem situations that might or can arise in the workplace from time and which require learners' to demonstrate their ability to adapt their performance to meet the requirements of changed circumstances and to reflect on what they are doing and why. The Victoria University Polytechnic in Australia has even gone further and included Industry projects and live work as part of the assessment.

Differences

While all the four qualifications contain similar core plumbing and pipefitting modules and outcomes, there are slight variations when it comes to the peripheral outcomes. The UK qualification from Able Skills have included Electrical principles and processes, while the Namibian one from the Namibian College of Open Learning have incorporated sheet metal work, erection and dismantlement of scaffolding, and basic oxy-acetylene welding techniques.

The qualifications, with the exception of the one from South Africa, have no fundamental modules such as communications, mathematical literacy, and communication in other national language other than English. While not stated in most of the qualifications stated, with the exception of South Africa

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

at 120 Credits, they are long term qualifications exceeding 12 months, with the Australian qualification being stated as an apprenticeship programme.

Comparability and Articulation of the Proposed Qualification with the ones examined

The proposed qualification generally compares well with the qualification studied since the exit outcomes cover similar scope and depth and are aligned to exit-level descriptors typical of this level and as done within the region and beyond as well as competencies required for employment as a plumber and pipefitter.

The examined qualifications, specifically those of the UK and Namibia, while offering core plumbing and Pipefitting skills, have added additional value adding modules such as electrical principles and processes, oxy-acetylene welding, scaffolding, and sheet metal work. The proposed qualification has only focused on core modules, save for some fundamentals, hence the lower credit weighting of 60.

What sets this qualification apart from the qualifications examined is that there is provision for development of attributes such as effective communication and entrepreneurship, thus offering the learners with a window of opportunity for self-employment. The qualification is also spanning less than 12 months, with only 60 Credits.

REVIEW PERIOD

This qualification shall be reviewed after 5 years from the date of registration.

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

Other information – please add any supplementary information to help the application for this qualification for NCQF Registration.

This qualification is Outcome- Based and modularized. It is suitable for candidates wishing to build their careers in plumbing and pipefitting, as well as construction technicians and engineers who may need to polish their practical plumbing and pipefitting skills.

BQA NCQF Qualification Template

DNCQF.FDMD.GD03

Issue No.: 01

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	