

 BOTSWANA Qualifications Authority	BQA NCQF QUALIFICATION TEMPLATE	Document No.	DNCQF.QIDD.GD02
		Issue No.	01
		Effective Date	04/02/2020

Manufacturing, Engineering and Technology SECTION A:					QUALIFICATION					
DETAILS										
QUALIFICATION DEVELOPER (S)			Woo International							
TITLE	Certificate IV in Plumbing and Pipe Fitting						NCQF LEVEL	4		
FIELD	Manufacturing, Engineering and Technology		SUB-FIELD	Plumbing and Pipe Fitting			CREDIT VALUE	60		
<i>New Qualification</i>				✓	<i>Review of Existing Qualification</i>					
SUB-FRAMEWORK		<i>General Education</i>			<i>TVET</i>		✓	<i>Higher Education</i>		
QUALIFICATION TYPE	<i>Certificate</i>	<i>I</i>	<i>II</i>	<i>III</i>	<i>I</i>	<i>V</i>	✓	<i>V</i>	<i>Diploma</i>	<i>Bachel or</i>
	<i>Bachelor Honours</i>			<i>Post Graduate Certificate</i>				<i>Post Graduate Diploma</i>		
	<i>Masters</i>				<i>Doctorate/ PhD</i>					

RATIONALE AND PURPOSE OF THE QUALIFICATION

RATIONALE:

The reasons for training learners on Plumbing and Pipe Fitting facilitating the holistic development of who can operate in a global context, is to achieve a high quality and fitness of purpose for training offered.

The policy, statutory and legislative context on the basis of which this qualification is being developed for registration and eventual awarding are include in the creation of a knowledge-based education system to respond to economic needs, responding to diversification of the economy to include education and skills development and citizen economic empowerment using education and training as a tool and asset.

The scope of the qualification covers finding of training needs assessment undertaken in a specific desk research, job tasks analysis and determination of what employers believe are the knowledge, skills and competences. This coverage is to make the course relevant for its intended use, be of value to those who will access it and bring improvement in skills levels of people in the vocation which hopefully would improve productivity in workplaces.

By developing and packaging it as an outcomes-based credits awarding qualifications makes it credible valuable and useful to enable mobility of holders across borders and as entry currency to other similar level and higher qualifications in this vocation (horizontal and vertical articulation). This design thus conforms to NCQF policy for enabling lifelong learning by outcomes and credits system, which opens access to education to many through RPL, and enable CAT across ETPs and qualifications.

HRD Sector Skills Plans (2017) indicators identifies demand for people with plumbing and pipe fitting at this level, to support productive safe work that contributes to economic growth of different sectors of the economy that are dependent on skilled human resources domain

Labour statistics analysis, SONA reports, other indicators and NDP 11 identified various mega development projects that will apply plumbing and pipe fitting services for these projects.

This thus raises demand for human resources with plumbing and pipe fitting competences and qualified with a suit of skills required in these jobs. The qualification could contribute to address the national problem of unemployed youth and increase the employability of graduates in certain vocational areas with acquisition of plumbing and pipe fitting skills.

The qualification is designed to guide providers in developing learning programmes, according to the needs of industry for people with this skill, and circumstances of the learners. People credited with this qualification contribute to the Installation and maintenance of plumbing and drainage systems units by the application of knowledge and skills.

This qualification serves the needs of the society and the economy by providing plumbing support services. It will help in producing competent learners who are able to contribute to improved productivity and efficiency within the engineering support environment. They will be able to work according to legislative, regulatory and quality assurance requirements and industry standards.


PURPOSE:

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


- Read and interpret technical drawings and plans.
- Install and maintain cold and hot water systems.
- Install and maintain drainage systems.
- Install underground and overhead piping system.
- Install a bath, toilet and hand wash basin.
- Apply Fault finding and system testing procedures.

ENTRY REQUIREMENTS (including access and inclusion)

- Certificate III in Plumbing and Pipe fitting (NCQF Level 3) or equivalence.
- There shall be consideration for RPL and CAT according to national RPL and CAT policies.

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QUALIFICATION SPECIFICATION		SECTION
B		
GRADUATE PROFILE (LEARNING OUTCOMES)	ASSESSMENT CRITERIA	
At the end of approximately three months, learners undertaking this qualification should have completed the Learning Objectives below and been declared competent in their associated Assessment Criteria		
1. Draw and interpreted technical drawings and plans.	1.1 Interpret technical drawings and plans to determine design specifications. 1.2 Interpret signs, symbols and data used in plumbing and pipe fitting. 1.3 Perform measurements and calculations to determine quantities.	
2. Apply principles of plumbing and pipe fitting technology	2.1 Use principles of plumbing and pipe fitting technology. 2.2 Locate different types of components and accessories of plumbing system. 2.3 Select various types of materials used in plumbing and pipe fitting.	
3. Install underground and overhead piping system	3.1 Inspect pipe systems and related components in accordance with specification. 3.2 Cut, bevel and thread pipes in accordance with specification. 3.3 Install overhead piping system in accordance with specification. 3.4 Install underground piping system in accordance with specification. 3.5 Install drainage systems in accordance with specification.	
4. Install and maintain of cold and hot water systems.	4.1 Select materials, pipes and equipment according to job requirements. 4.2 Install sanitary fixtures faucets, and appliances. 4.3 Installed and maintained cold and hot water systems in accordance with specifications.	

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	4.4 Install a bath, toilet and wash hand basin in accordance with specifications.
5. Perform installation and maintenance of drainage systems.	<p>5.1 Select materials, pipes and equipment according to job requirements.</p> <p>5.2 Install pipes, fittings bends, junctions in accordance with the line of the drain.</p> <p>5.3 Install drainage systems in accordance with set procedures and specifications.</p> <p>5.4 Install and maintain septic systems out in accordance with set procedures and specifications.</p>
6. Demonstrate knowledge and use requirements of current legislation impacting on Safety, Health and Environmental (SHE) issues in the workplace.	<p>6.1 Apply current legislation, regulations and standard practices to the right SHE incident and scenario to meet set targets.</p> <p>6.2 Implement legislation that affects ones occupational SHE to handle all incidents and scenarios.</p> <p>6.3 Identify workplace safe work procedures by name and use.</p>
7. Use verbal and written language to communicate effective in teamwork.	<p>7.1 Use verbal communication to interact effectively in the industry.</p> <p>7.2 Use written forms of communication appropriate for normal teamwork processes.</p> <p>7.3 Interpersonal attributes applicable to work environment are portrayed at all times, for the safety and health of self and others</p>

SECTION C		QUALIFICATION STRUCTURE			
COMPONENT	TITLE	Credits Per Relevant NCQF Level			Total (Per Subject/ Course/ Module/ Units)
		Level [3]	Level [4]	Level [5]	
FUNDAMENTAL COMPONENT <i>Subjects/ Courses/ Modules/Units</i>	Health and Safety Requirements for Refrigeration	3			3
	Interpreting technical drawings	3			3
	Scaffolding, working at heights,	2			2
	Team and Interpersonal Skills	2			2
CORE COMPONENT <i>Subjects/Courses/ Modules/Units</i>	Introduction to Plumbing	3			3
	Plumbing Systems		3		3
	Designing & Installing Plumbing Systems		3		3
	Pipe Fitting		5		5
	Installation and maintenance of Water Mains Pipe System		5		5
	Installation and maintenance of Cold and Hot Water Systems		5		5

ELECTIVE/ OPTIONAL COMPONENT <i>Subjects/Courses/ Modules/Units</i>	Install Electrical High Pressure Geyser		5		5
	Drainage Systems Installation and Maintenance		5		5
	Bench work		3		3
	Fabricate pipe systems		5		5
	Plumbing Safety & Tools	3			3
	Manual Metal Arc (MMA) welding process		5		5
	Cut, Gas Weld And Braze		5		5
	Irrigation Systems		5		5
	TOTAL CREDITS				60

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SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	Credit Value
3	16
4	44
TOTAL CREDITS	60
Rules of Combination: (Please Indicate combinations for the different constituent components of the qualification)	
<p>This Certificate IV in Plumbing and Pipe Fitting comprises 60 credits, comprising of Fundamental, Core and elective Components</p> <p>Fundamental Components: The Fundamental components consist of foundational knowledge to the value of 10 credits all of which are compulsory</p> <p>Core Components: The core components consist of modules containing applied knowledge and practical skills to the value of 45 credits which are compulsory.</p> <p>Elective Components: Learners are to choose elective unit standard to the value of at least 5 credits so as to attain a minimum of 60 credits for the qualification.</p> <p>Credits Summary</p> <p>16 Credits at level 3. 44 Credits at level 4.</p> <p>Total Minimum Credit 60</p>	

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ASSESSMENT ARRANGEMENTS

- Assessment will include both formative and summative modes.
- Formative assessment will contribute 50% to the overall course grade. Summative assessment will constitute the other 50% of the overall course grade.
- Assessment shall be carried out by BQA accredited Assessors.
- Assessment will be carried out in accordance with the institutional policies and in line with the national policy.

MODERATION ARRANGEMENTS

- There will be both Internal Moderation and External moderation
- Moderation for assessment shall be carried out by BQA accredited moderators.
- Moderation will be done in accordance with the institutional policies and in line with the national policy.

RECOGNITION OF PRIOR LEARNING

There is provision for award of this qualification through RPL.

CREDIT ACCUMULATION AND TRANSFER

There is provision for award of this qualification through CAT

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

- Horizontal Pathways**
- Certificate IV in Plumbing Systems
 - Certificate IV in Pipe Fitting
 - Certificate IV in Installation and maintenance of Water Mains Pipe System
 - Certificate IV in Drainage Systems Installation and Maintenance
- Vertical Pathways**
- Certificate V in Plumbing Systems
 - Certificate V in Pipe Fitting
 - Certificate V in Installation and maintenance of Water Mains Pipe System
 - Certificate V in Drainage Systems Installation and Maintenance

Employment Pathways

- Plumber
- Pipe fitter
- plumbing and heating mechanic

QUALIFICATION AWARD AND CERTIFICATION

QUALIFICATION AWARD

Graduates will be awarded Certificate IV in Plumbing and Pipe Fitting upon attainment of a minimum of 60 credits.

CERTIFICATION

There will be issuance of a certificate and an official transcript at award.

REGIONAL AND INTERNATIONAL COMPARABILITY

The proposed qualification was benchmarked Regionally and International as presented in the Comparability Matrix.

The qualification content is similar in the broad context to Certificate in Plumbing and Pipefitting offered by Vocational Training Council (VTC)- China. It is however a hybrid of the South African one which only offers the pipe-fitting component while the proposed qualification has merged plumbing and pipe fitting to render graduates more marketable.

Vocational Training Council (VTC)- China has been chosen as the primary benchmark for the development of this qualification series. The Chinese Qualification has worldwide recognition and dominates the international standard. This is largely due to the leadership role played by the China in process control within the plumbing and fitting Industry.

REVIEW PERIOD

The qualification will be reviewed every 5 years.