QUALIFICATION SPECIFICATION						SECTION A
QUALIFICATION DEVELOPER	MINISTRY OF EMPLOYMENT, LABOUR PRODUCTIVITY AND SKILLS DEVELOPMENT					
TITLE	Certificate III in Maintenance Fitting			NCQF LEVEL	3	
FIELD	Manufacturing, Engineering and Technology	SUB-FIELD	Maintenance 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	40 credits					

RATIONALEAND PURPOSEOF THE QUALIFICATION

RATIONALE

The Botswana Vision 2036 states that development of the human capital and the informal sector and the micro and small enterprises (MSES) are essential in achieving the VISION 2036 pillars, in particular Sustainable Economic Development and Human and Social Development. Although Botswana has been fortunate to experience unprecedented economic growth since independence, this has not generated enough jobs to reduce unemployment. The most severely hit group amongst the unemployed is the youth, who account for about 51.7 % of the total unemployed, with the 15-19 age group most affected (Statistics Botswana , 2018).

On the same note the Botswana Education and Training Sector Strategic Plan (ETSSP 2015-2020) marks significant milestone in our collective efforts as a nation to bring about a more diversified, knowledge-based economy. Through a planned and careful development of human capital, the ETSSP seeks to refocus our education and training towards fulfillment of social and economic aspirations identified in our Revised National Policy on Education (RNPE)1994, the National Development Plan 11,Vision 2036 and as well as the Millennium Development Goals. In particular, the ETSSP is intended to strengthen the match between qualifications and labour market requirements, thereby ensuring that education and training outputs are more closely aligned to socio economic development needs of the country. In line with this strategic goal, the Human Resource Development Council (HRDC2016) report on top occupations in demand has identified mechanics inclusive of engineering maintenance fitters,fitting and machining, heavy plant, hydraulics, diesel and auto electrical as some of the priority skills for Transport and Logistics and Mining Mineral Energy and Water Resources Sectors.

Similarly, the mining industry in Botswana which includes Debswana diamond mining company's mines, Karowe mine, Khoemacau mine as well as other industries be in the service category or Manufacturing, Engineering and Technology category use a lot of varied machinery and equipment which needs maintenance from time to time. The maintenance of the machinery and equipment would be difficult without trained people in the field of engineering maintenance& fitting. Notable industries which have been consulted such as the Morupule Power Corporation, Debswana Diamond Mining Company, Botswana Meat Commission as well as others have shown a heavy reliance on Engineering Maintenance Fitters and Fitter Machinists due to the nature of their operations.

It is therefore against the foregoing that the Department of Skills Development finds it necessary to develop the qualification.

PURPOSE

The purpose of this qualification is to produce graduates who are able to:

- produce components using a variety of machining methods and operations;
- meet output requirements and work safely with due care for fellow workers and the environment;
- select and apply appropriate inspection methods to determine component compliance with specifications;
- perform fault finding, dismantle, maintain, assemble and install a variety of mechanical assemblies and make close tolerance adjustments to equipment and process;
- lubricate systems and maintain such systems and interprete basic engineering drawings;
- perform routine work under supervision and take some responsibility for own learning and completion of work.

ENTRY TO THIS QUALICATION IS THROUGH ANY OF THE FOLLOWING

- Any qualification equivalent to NCQF level 2 (e.g. JC)
- Candidates with relevant prior learning and any relevant part qualification may be considered for admission and or exempted in line with the national RPL and CATS polices.

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QUALIFICATION SECTION B	SPECIFICATION
GRADUATE PROFILE (LEARNING OUTCOMES)	**ASSESSMENT CRITERIA**
LO1 Communicate with clients, colleagues and others using appropriate forms of communication techniques.	1. Use written, verbal, non-verbal communication appropriate to the target audience. 2. Interpret stipulated instructions or requirements. 3. Apply information acquired in the performance of tasks or discussions with other people. 4. Apply relevant definitions, terminology, abbreviations and language. 5. Present information using appropriate language and formats. 6. Construct clear sentences to produce a written logical and coherent piece of writing. 7. Use appropriate presentation formats and styles of writing to produce error free business documents.
LO2 Use Information Communication Technology (ICT) for information retrieval and processing as well as communication and collaboration with others	1. Use ICT responsibly and ethically. 2. Manage information using ICT. 3. Organize and synthesize information using ICT. 4. Implement data loss prevention strategies using ICT. 5. Present information in a variety of formats using ICT
LO3 Apply knowledge in the selection and use of appropriate tools and equipment for engineering applications in accordance with job specification.	1. Select appropriate tools and equipment to be used in line with the job requirements. 2. Carry out the tasks in line with job specification. 3. Service and maintain tools and equipment in accordance with Original Manufacturers Specification (OMS) where applicable. 4. Perform quality checks on work done and make improvements where needed. 5. Clean tools and equipment and store them in an appropriate place after use. 6. Clean and tidy up the work area in accordance with organizational requirements
LO4 Perform measurements on engineering components	1. Select appropriate measuring instruments according to specified limits, fits and tolerance on the job 2. Plan and prepare for work in the workplace in accordance to

according to job specifications in line with adopted International System Organization (ISO).	job specification. 3. Select and state the importance of correct operating specifications for limits, fits and tolerances in the engineering environment. 4. Measure all dimensions in accordance with standard specifications and tolerances by using various precision measuring instruments. 5. Record, compare and confirm measurements results in line with standard specifications.
LO5 Apply knowledge of metallic and non-metallic materials to perform basic metal removal processes for a specified job	1. Select engineering materials correctly for different engineering applications 2. Carry out simple tests to distinguish between metallic and non-metallic materials where applicable. 3. Carry out material removal processes tasks as per job specification, adhering to health, safety and quality standards
LO6 Apply basic fastening and joining techniques in a specified job.	1. Select and use appropriate fasteners and joining techniques for specific purposes. 2. Carry out tasks as per job specification, adhering to health, safety and quality standards 3. Perform quality checks on the job done
LO7 Carry out simple forming techniques in the fabrication of projects.	1. Select appropriate materials, forming techniques, tools and equipment in line with the job specification. 2. Carry out fabrication of projects in accordance with established codes of practice and job specification. 3. Perform quality checks on work done and make improvements where needed.
LO8 Apply basic knowledge of dismantling and assembling of equipment and machinery to implement maintenance schedule	1. Examine the nature of work to be done to determine tools and equipment to be used in dismantling and assembling. 2. Identify parts of equipment and machinery to be dismantled and assembled. 3. Select appropriate tools and equipment to carry out the task. 4. Perform tasks as per job specification, adhering to health, safety and quality standard. 5. Perform quality checks on the job done to confirm functionality 6. Prepare and carry out maintenance work in accordance with job specifications and adhere to SHERQ and OMS. 7. Keep records and report to immediate supervisor as needed

LO9 Build and maintain basic electrical circuits.	1. Select appropriate materials, tools and equipment to be used to design and build the circuit according to the job specification 2. Construct electrical circuits on panel board according to established codes of practice and job specification 3. Use an appropriate electrical tester and measuring instruments to test electrical circuits on panel board according to job specification 4. Perform fault finding and rectify faults accordingly in electrical circuits.
LO10 Read, interpret and construct Engineering Drawings for specific purpose.	1. Analyze the drawings to be done to determine appropriate drawing equipment to be used 2. Select the appropriate drawing equipment to be used. 3. Produce drawings according to task specification; adhering to health, safety and quality standard. 4. Perform quality checks on the job done for adherence to quality standard.
LO11 Prepare for and perform turning operations in accordance with job specification.	1. Interpret drawings, instructions, and specifications to establish job requirements. 2. Machine and finish components to specified tolerances, without damage to machine and tools adhering to health, safety and quality standard. 3. Perform quality checks on work done in line with job specification and make necessary improvements 4. Clean and dispose machine waste material in accordance with worksite procedures and store tools and equipment in appropriate places after use.

QUALIFICATION STRUCTURESECTION C			
FUNDAMENTAL COMPONENT Subjects / Units / Modules /Courses	**Title**	**Level**	**Credits**
	Communication Skills	3	3
	Information and Communications Technology (ICT)	3	3
CORE COMPONENT Subjects / Units / Modules /Courses	Basic Metal Work	3	10
	Introduction to Machining	3	10
	Engineering Materials	3	3
	Introduction to Engineering drawing	3	5
	Introduction to Maintenance Principles	3	6
ELECTIVE COMPONENT Subjects / Units / Modules /Courses	N/A		
		TOTAL	**40**

Rules of combinations, Credit distribution(where applicable):

A candidate is required to achieve a minimum of 40 credits inclusive of 6 credits from the two fundamental modules and 34 credits from the core units.

ASSESSMENT AND MODERATION ARRANGEMENTS

ASSESSMENT

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

Formative assessment

Formative assessment or continuous assessment contributing towards the award of credits should be based on course outcomes. This can include tests, assignments and projects as well as simulated and real clinical practice or care settings. The contribution of formative assessment to the final grade shall be 60%.

Summative assessment

Learners may undergo assessment including written and practical and simulated projects. The final examination for each course contributes 40 % of the final mark for that course.

MODERATION

The qualification will be internally and externally moderated process by moderators who are accredited with BQA in their specialist area as moderators in accordance with approved institutional assessment and moderation policies.

RECOGNITION OF PRIOR LEARNING (if applicable)

Recognition of Prior Learning (RPL)

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 the ETP RPL policy and relevant national policy and legislative framework. Implementation of RPL shall also be consistent with requirements, if any, prescribed for the field or sub-field of study by relevant national, regional or international professional bodies.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

Horizontal Articulation (Related qualification of similar level that graduate may consider).

- Certificate III in Heavy plant Mechanics
- Certificate III in Welding and Fabrication
- Certificate III in Borehole Mechanics
- Certificate III in Auto Mechanics
- Certificate III in Auto Electrics
- Certificate III in Fitting& Machining

Vertical Articulation (Qualification to which the graduate may progress to)

- Certificate IV in Fitting and Machining
- Certificate IV in Engineering Maintenance & Fitting

EMPLOYMENT PATHWAYS

On completion of the qualification the candidates can become self-employed Entrepreneur or get employment as ;

- Handyman or Semi-skilled Craftsman
- Store person
- Workshop attendant

QUALIFICATION AWARD AND CERTIFICATION

Minimum standards of achievement for the award of the qualification

A candidate is required to achieve the stipulated minimum of 40 credits inclusive of 6 credits for fundamentals and 34 credits for the core modules to be awarded with Certificate III in Maintenance Fitting.

Certification

Candidates meeting prescribed requirements of this qualification will be issued with Certificate.

REGIONAL AND INTERNATIONAL COMPARABILITY

The foreign qualifications of South African Qualification Authority **(**SAQA) and Australia Qualification Framework (AQF) examined are generally comparable and the similarities noted are as follows:

Characteristics of SAQA and AQF

The foreign qualifications examined are generally comparable. It was noted that the two qualifications frameworks; regional and international, the South African Qualification Authority (SAQA) and Australian Qualification Framework (AQF) respectively have the following similarities:-

1. They both have credits values and levels.

2. The terms or conditions of awarding certificates are the same.
3. They both recognize Recognition of Prior learning **(**RP).

The foreign qualifications of South African Qualification Authority (SAQA) and Australia Qualification Framework **(**AQF) examined are generally comparable and the differences noted are as follows:-

Characteristics of SAQA

1.National Certificate: Mechanical Engineering Fitting Level 3 - Credit value:174
2.The status and relevance of this qualification will attract and retain quality learners and employees, who may even have the potential to progress to level 4 in the field of Fitting and Machining where the learner will be able to specialize
3. The South African Qualification Authority does not require learners to have ascertained First Aid Certificate in order to pursue the course.

Characteristics of AQF

1. AQF-Certificate III in Engineering-Mechanical Trade (Maintenance) Fitting
: Minimum Credit value:120
2**.** On successful completion of this qualification graduates may progress to Samoa certificate lll in Fitting and Machining/Maintenance Fitting
3. This qualification recognizes competence to work within the Maintenance and Fitting industry at the level of an assistant in Maintenance Fitting/ Fitting and Machining.
4.The qualification is designed to maximize the international opportunities for recognition of the skills inherent in the certificate
5. Australia Qualification Framework **(**AQF) requires learners to have ascertained First Aid Certificate in order to pursue the course.

Characteristics of Proposed Qualification

1. Certificate III in Maintenance Fitting - Credit value:40
2. This qualification will be awarded to people who have met the requirements of the learning outcomes of the compulsory modules for Level 3.
3. Learners must undergo First Aid Training.
4. This qualification is designed to maximize the international opportunities for recognition of the skills inherent in the certificate.
5. This qualification is designed to recognize RPL.

SUMMARY OF COMPARISONS

After the research was made, it was found that the proposed qualification is almost similar in content to SAQA and AQF in terms of main exit outcomes and progression pathways (learning and employment).However basing on the NCQF this qualification will have 40 credits which is far below as compared to SAQA and AQF. The proposed qualification must have a requirement for First Aid Certificate in order to pursue Level4 and must also maximize the International opportunities for recognition of the skills inherent in the certificate.

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