BQA NCQF QUALIFICATION TEMPLATE

SECTION A:	QUALIFICATION DETAILS		
QUALIFICATION DEVELOPER (S)	Department of Teacher Training and Technical Education		
TITLE	Diploma in Auto Body Repairs and Refinishing	**NCQF LEVEL**	6
STRANDS (where applicable)	N/A		
FIELD	Manufacturing, Engineering and Technology	**CREDIT VALUE**	380
SUB FIELD	Engineering and Engineering Trades		

New Qualification	✓	Legacy Qualification		Renewal Qualification	
				Registration Code	

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:

Auto Body Repair and Refinishing has been identified as one of the occupations in high demand in Botswana and beyond. The occupations or the skills are needed by the automotive, transport, mining, manufacturing, and health, construction, and agriculture sectors respectively. This is based on the Labour Market Analysis conducted by the HRDC.

The qualification Diploma Auto Body Repair and Refinishing in Engineering is developed as a response to the need established by Human Resource Development Council Report (HRDC 2023/24) of Top Occupations in Demand, which identified Auto Body Repair and Refinishing Technicians as one of the occupations in high demand in Botswana

The Education and Training Sector Strategic Plan (ETTSP): Technical Vocational Education & Training (TVET) subsector programmes three (3) and nine (9) touches on "developing high quality and relevant TVET programmes that are related to the needs of the economy as well rationalizing TVET institutions and programmes" respectively. This qualification addresses the above-mentioned subsectors as well as contributing to more diversified, knowledge and based economy because it will be aligned to the needs of the industry.

The Automotive industry is diverse, so this qualification offers a sequenced training which provides a wide range/ coverage of automotive which eventually will match the needs of the industry with the ever-changing technology.

In addition, the qualification will help ensure that learners have the necessary oral, written, and critical thinking skills to help with their professional responsibilities. Central to the rationale of this Auto Body qualification, is the development of a culture of professionalism and deeper understanding of Automotive engineering, which most importantly getting skills that will allow learners to be subjects of their country's development.

Lastly, this is further explained in Vision 2036 (EDUCATION AND SKILLS DEVELOPMENT pg, 20) as it states that the education curriculum should be aligned with the needs of the economy, thereby enabling graduates to effectively compete globally.

PURPOSE: (itemise exit level outcomes)

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

1. Read and interpret technical parameters, plan work and identify appropriate tools and materials according to set standards.
2. Perform task with due consideration to safety rules, accident prevention regulations and environmental protection regulations to comply with environment and sustainability act.
3. Install, troubleshoot, repair, service and maintain vehicle body parts, structure, electrical and electronics systems painting and auxiliary components to adhere to manufacturing standards.
4. Restore vehicles to their original factory specifications and condition in terms of appearance and functionality.

MINIMUM ENTRY REQUIREMENTS (including access and inclusion)

- Certificate IV, NCQF Level 4(General Education or TVET Intermediate Certificate)
- Applicants who do not meet minimum entry will be absorbed through RPL and CAT according to the ETP's policies aligned to BQA RPL and CAT policies.

SECTION B	QUALIFICATION SPECIFICATION
GRADUATE PROFILE (LEARNING OUTCOMES)	**ASSESSMENT CRITERIA**
1. Apply health and safety measures to ensure a health and safety compliant environment.	1.1 Adhere to health and safety regulations in the workplace to minimize risks and accidents. 1.2 Implement and monitor occupational, health and safety regulations, codes and practices in the workplace to ensure best safety practices. 1.3 Report injuries and accidents in the workplace to comply with health and safety reporting procedures.
2. Carry out repair of damaged vehicles as per manufacture's standards.	2.1 Diagnose damage on vehicles against its original specifications using a frame machine. 2.2 Prepare an estimate to determine the cost of the repair adhering to price control regulatory bodies. 2.3 Carry-out automotive body repairs according to set industry standards.
3 Carry-out auto electrical and mechanical repair activities to restore functionality.	3.1 Perform electrical diagnostic tests using visual inspection and test equipment. 3.2 Carry out repair procedures in accordance with identified correctional measures. 3.3 Carry out systems and component disassembly and assembly processes in accordance with manufacturers specifications.
4. Perform refinishing procedures on a vehicle after repair.	4.1 Use proper refinishing tools and equipment to meet factory required standards. 4.2 Apply different matching paints according to manufacturer's specifications.

	4.3 Use different automotive finishes according to the set standards. 4.4 Operate the baking equipment for efficient paint curing. 4.5 Implement and monitor environmentally friendly methods of disposing used automotive materials according to environment and sustainability laws.
5. Apply engineering mathematics skills to analyse systems in auto body repair and finishing engineering discipline.	5.1 Perform calculations to solve problems in auto body repair and finishing engineering field. 5.2 Employ engineering mathematical concepts and principles in accordance with repair and maintenance procedures. 5.3 Perform technological related engineering mathematical calculations to solve auto body repair and finishing system problems
6. Apply engineering drawing techniques to solve auto body repair and refinishing system constructional and functional problems	6.1 Develop, read, and interpret engineering drawings to solve machine systems problems. 6.2 Use engineering drawings to solve auto body repair and refinishing system problems. 6.3 Diagnose constructional and functional problems using engineering drawing techniques
7. Apply professional skills in auto body repair and refinishing engineering discipline.	7.1 Employ ICT skills in auto body repair and refinishing engineering to execute the assigned tasks. 7.2 Use applicable skills to communicate effectively and efficiently in the auto body repair and refinishing field 7.3 Apply entrepreneurship practical skills in a business set up. 7.4 Perform administrative duties within auto body repair and refinishing discipline.

	7.5 Employ professional skills to carry out project management in auto body repair and refinishing discipline.
8. Work as an individual, in a team, and collaborate in a multidisciplinary project in the workplace	8.1 Adhere to personal development competency plan as per set standards. 8.2 Works effectively and efficiently as a team member by contributing towards workplace set goals and objectives. 8.3 Build and sustain an innovative work environment to enhance working relationship amongst different disciplines. 8.4 Apply engineering code of ethics in work environment.
9. Apply engineering management skills in the workplace	9.1 Adhere to continuous professional development schedule in the workplace. 9.2 Use information management system according to workplace standards. 9.3 Employ knowledge and understanding of engineering management principles and economic decision-making in Auto Body Repair and Refinishing discipline. 9.4 Implement, monitor policies and procedures for environmentally sustainable work practices.

SECTION C	QUALIFICATION STRUCTURE				
COMPONENT	TITLE	Credits Per Relevant NCQF Level			Total Credits
		Level [ ]	Level [5]	Level [6]	
FUNDAMENTAL COMPONENT Subjects/ Courses/ Modules/Units	Occupational Health and Safety		**6**		**6**
	Communication Skills		**8**		**8**
	Introduction to Computing		**8**		**8**
	Project Management Essentials			**10**	**10**
	Engineering Ethics			**8**	**8**
	Introduction to Research Methods			**8**	**8**
	Entrepreneurship			**8**	**8**
CORE COMPONENT Subjects/Courses/ Modules/Units	Engineering Mathematics		**18**	**18**	**36**
	Automotive Engineering Science		**20**		**20**
	Automotive Engineering Drawing		**6**		**6**

	Mechanics and Strength of Materials		**14**		**14**
	Thermo Fluids Mechanics		**14**		**14**
	Vehicle Construction		**7**		**7**
	Joining Procedures and Equipment		**16**		**16**
	Applied Thermodynamics			**14**	**14**
	Automotive Computer-Aided Design			**14**	**14**
	Painting Fundamentals			**9**	**9**
	Vehicle Surface Refinishing			**20**	**20**
	Metal Straightening and Frame Sectioning			**20**	**20**
	Automotive Repair Welding			**16**	**16**
	Automotive Electrical and Electronics Systems			**20**	**20**
	Automotive Repair Estimation			**8**	**8**
	Integrated Research Project			**30**	**30**
	Work Placement			**60**	**60**

STRANDS/ SPECIALIZATION	Subjects/ Courses/ Modules/Units	Credits Per Relevant NCQF Level			Total Credits
		Level [ ]	Level [ ]	Level [ ]	
1.					
	N/A				
2.					
Electives	N/A				

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	**Credit Value**
Level 5	**125**
Level 6	**255**
TOTAL CREDITS	***380***

Rules of Combination:

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

Fundamentals NCQF 5= 30
Fundamental NCQF 6 = 18

Core NCQF 5 = 90
Core NCQF 6=242

Total Credits 380

NCQF Level 5 and 6 fundamental modules add up to 48 credits. Credits for NCQF Level 6 for core and fundamental add up to 332. The total credits for the qualification is 380.

There are no electives for this qualification therefore the candidate has to pass all core modules and fundamentals modules

ASSESSMENT ARRANGEMENTS

Documentation
All necessary documents including qualification document, alignment matrices, assessment instruments and Assessment criteria/rubrics should be available.

Formative (60%)
The contribution of formative assessment to the final grading shall be 60%

Summative Assessment (40%)
The contribution of summative assessment to the final grade shall be 40%

Assessment shall be carried out by BQA registered and accredited Assessors

MODERATION ARRANGEMENTS

Internal and external moderators to be engaged will be BQA accredited subject specialists in relevant fields with relevant industry experience and academic qualifications. The moderators should be holders of Bachelor of Engineering in Automotive Body Repair, Bachelor of Engineering in Auto Body Technician, relevant /similar qualifications and industrial experience will be an added advantage.

RECOGNITION OF PRIOR LEARNING

Recognition of Prior Learning (RPL) will be considered for the award of credits according to applicable RPL policies.

CREDIT ACCUMULATION AND TRANSFER

Credit Accumulation and Transfer will be considered for the award of the credits according to applicable RPL policies. The qualification may be achieved in part or in whole through the recognition of the amount of learning in a qualification or part qualification (credit) based on the acknowledgement for studies already completed. The formal arrangement of credit transfer is negotiated between ETPs based on the comparability of qualifications.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

LEARNING PATHWAYS

Horizontal Articulation (related qualifications of similar level that graduates may consider)

- Diploma in Automotive Engineering
- Diploma in Risk Management and Insurance
- Diploma in Heavy Equipment Engineering

Vertical Articulation (qualifications to which the holder may progress to)

- Bachelor of Automotive Collision Repair.
- Bachelor of Automotive Engineering (Honours).
- Bachelor of Science Degree in Automotive.

- Bachelor of Degree in Automotive Management.
- Bachelor of Automotive Engineering Technology.

Employment Pathways

- On successful completion of this qualification the holder may be absorbed in the job market as:

- Collision Repair/ Refinishing Instructor/ Lecturer
- Automotive Detailing Specialist
- Automotive Fabricator
- Collision Parts/ Tools Distributor
- Automotive Glass Installer
- Vehicle Damage Assessor
- Body shop Manager/ Owner
- Auto Body Fitter/ Stripper
- Parts/Paint Manufacturer's Representative
- Collision Repair / Refinishing Technician.

QUALIFICATION AWARD AND CERTIFICATION

Qualification Award

Candidate meeting the required minimum of 380 credits will be awarded Diploma in Auto Body Repairs and Refinishing Engineering in accordance with the qualification composition rules and applicable policies.

Certification

There will be certification upon awarding of Diploma in Auto Body Repairs and Refinishing.

SUMMARY OF REGIONAL AND INTERNATIONAL COMPARABILITY

Introduction

The Diploma in Auto Body Repairs and Refinishing Engineering is a three-year (National Credit Qualification Framework: NCQF Level 6) qualification which aims to produce a competent Auto Body Repairs and Refinishing Technician. The qualification has been benchmarked with other qualifications from Madison Area Technical College (United States of America) and Centennial College (Canada). There are no qualifications to benchmark with regionally.

Title of Qualifications

The developed qualification is named Diploma in Auto Body Repairs and Refinishing Engineering, Madison Area Technical College qualification is titled Diploma in Auto Collision Repair and Refinishing technician whereas for Centennial College is Diploma in Auto Repair Technician. The three qualifications produce a technician with similar competencies despite different tittles.

The qualification has captured all Graduates Attributes required by ECSA which include problem solving, application of scientific and engineering knowledge, engineering design and others. All the six ECSA knowledge areas and their minimum credits have been covered. It has also adhered to international standards such as to ISO 13 which deals with environmental protection, and

occupational safety and industrial hygiene and ISO 45001 which focuses on improving employee safety, reducing workplace risks and creating better safe working conditions.

Duration and Level
The duration of the qualification for the proposed qualification is three years while for Madison Area Technical College and Centennial College is two years. The developed qualification has two entry levels which are at year 1(NCQF Level 4) and at year 2(NCQF Level 5). Madison Area Technical College and Centennial College qualification entry is for college students with Recognition of Prior Learning hence the two years duration.

Main Exit outcomes
The benchmarked qualifications and the developed qualification have similar competencies such as developing repair plan, performing plastic repairs on various types of vehicles, practicing structural welding and frame sectioning, evaluating and repairing structural damage, creating computerized repair estimates and others.

Modules
The developed and the benchmarked qualification share some similar modules that cover content of communication, occupational health and safety, mathematics, vehicle and body construction, collision repair welding, repair and welding fundamentals (welding procedures and equipment) and others.

Assessment strategies and Weightings
The developed and the benchmarked qualifications have formative and summative assessments.

Qualification rules and minimum Standards for the award of the qualification

The developed and the benchmarked qualifications have stated that the candidate has to satisfy all the minimum set standards to be awarded the diploma.

Articulation

The students of the developed qualification can articulate horizontally or transfer to institutions offering similar qualifications. Horizontal articulation qualifications include but are not limited to Diploma in Auto Repair Technician, Diploma in Auto Collision Repair and Refinishing Technician, Diploma in Automotive Engineering and Diploma in Mechanical Engineering.

Students can articulate vertically to NCQF /NQF, or other qualifications frame works at Level 7 in Bachelor of Automotive Engineering and Bachelor of Mechanical Engineering.

The graduates of the developed qualification can be employed as Automotive Detailing Specialist, Automotive Fabricator, Collision Parts/ Tools Distributor, among others.

REVIEW PERIOD

The qualification will be reviewed every five (5) years or as and when required depending on the changing needs of the market

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**	