SECTION A:	***QUALIFICATION DETAILS***														
QUALIFICATION DEVELOPER (S)	*GIPS*														
TITLE	*DIPLOMA IN DIESEL PLANT ENGINEERING*												***NCQF LEVEL***	*6*	
FIELD	*MANUFACTURING, ENGINEERING AND TECHNOLOGY*		***SUB-FIELD***		*ENGINEERING AND ENGINEERING TRADES*								***CREDIT VALUE***	*390*	
New Qualification			*X*		*Review of Existing Qualification*										
SUB-FRAMEWORK	*General Education*			*TVET*			*X*	*Higher Education*							
QUALIFICATION TYPE	*Certificate*	*I*		*II*		*III*		*IV*		*V*		*Diploma*	*X*	*Bachelor*	
	Bachelor Honours			*Post Graduate Certificate*				*Post Graduate Diploma*							
	Masters					*Doctorate/ PhD*									

RATIONALE AND PURPOSE OF THE QUALIFICATION

RATIONALE:

The Diploma in Diesel Plant Engineering is a robust qualification that meets the market needs, the students and relevant employers' needs. The Diploma qualifications offered by GIPS are work-applied meaning that the process is embedded into the courses. Work- applied learning is regarded as the leading approach for developing business leaders because it impacts on the real performance of managers working with real problems within organisations to produce real solutions to the organisation. GIPS is prepared to run the Diploma in Diesel Plant Engineering because of the fundamental principles and concepts of Technical, Management, the skills developments and attributes necessary to undertake research, evaluation of new information and a wide range of concepts necessary for a well rounded up graduate for the Corporate Industry.

The diesel plant engineering industry is exposed to the consistently expanding new innovation of diesel technology and emission gas reduction strategies as the climate change battles intensifies. This requires

learning programs to be grown so students entering this field of learning are acquainted with this new innovation at a beginning period of their vocation (GIPS: 2018).

Presenting students at this degree of adapting likewise shapes the help structure in a diesel plant mechanics shop from where adapting step by step advances to further developed fix procedures at more elevated levels of learning, along these lines presenting students to further developed and modern diesel plant engineering techniques and hardware assisting with creating experts in the field in accordance with the nation's order (HRDC: 2013).

This is the main capability in an arrangement and structures the reason for students who need to follow a profession in the field of diesel plant engineering. This capability centers on creating abilities and information important to start such a vocation. It likewise gives students who have increased important involvement with the working environment with a chance to acquire credits through a RPL procedure.

PURPOSE:

The reason for this qualification is to furnish students with the principles and the scope of learning required to work successfully in the Diesel Plant Engineering industry. This qualification will empower students to address the difficulties of an industry that has demonstrated a fast increment through the presentation of new innovation diesel plant engineering technologies and techniques in accordance with the vision 2036 of the nation in changing the nation into an information-based economy during this period of the fourth modern upheaval (NDP 11).

This qualification additionally serves to grow new abilities for new further innovation in the industry. It makes a framework of sound innovative help and openings in a work advertise with a developing interest to perceive individuals for their abilities and to address the difficulties of the Diesel Plant fix condition.

The essential aptitude that is perceived in this qualification is the capacity to comprehend and apply the pertinent hypothesis of diesel engine technology skills for diesel plant maintenance, project, process, environmental and energy management. Hand aptitudes in inspection, diagnosis, testing and repair of diesel

plant components additionally assume a significant job in this capability and effective students should apply such abilities in finishing their assignments.

The purpose of this qualification is to equip graduates with knowledge, skills and competencies to be able to:

- Use and keep up diesel workshop apparatuses and hardware.
- Inspect, repair or execute maintenance work to restore diesel plants to full functionality.
- Disassemble and re-assemble of diesel plant and components.

ENTRY REQUIREMENTS (including access and inclusion)

Entry to the Diploma in Diesel Plant Engineering is open to those applicants who have the following minimum requirement:

- NCQF Level IV with passes in Mathematics and Physics of Physical Science and English.
- Candidates with a Certificate V in Diesel Plant Engineering or equivalent in similar discipline will be granted exemption based on RPL and CATs policy in line with BQA national RPL/CAT policy.
- Certificate V in Diesel Plant Engineering or equivalent.

Provision for entry through recognition of prior learning will be done in accordance with institutional policies and guidelines which are aligned to BQA standards.

(Note: Please use Arial 11 font for completing the template)

SECTION B	***QUALIFICATION SPECIFICATION***
GRADUATE PROFILE (LEARNING OUTCOMES)	***ASSESSMENT CRITERIA***
1. Perform preventative and scheduled maintenance on diesel vehicles.	1. Demonstrate knowledge of general principles and critical issues relating to performing scheduled maintenance on diesel vehicles according to accepted industry standards. 2. Plan work systematically and prepared it according to task requirements. 3. Source technical information and correctly interpret it. 4. Remove, replace and teste components as per the service schedule. 5. Perform the service according to the manufacturer's schedule, specifications and timeframes. 6. Draft a maintenance report accurately reflecting the condition of all the required components and systems, including defective components. 7. Perform all activities according to safety and environmental requirements. 8. Ensure that workmanship industry standards are met
2. Dismantle, inspect, assess, repair and assemble engine and vehicle system components.	1. Translate general principles and critical issues related to removing, disassembling, assessing and replacing diesel engine and vehicle system components according to accepted industry standards is demonstrated. 2. Dispose all waste materials and ensure that the work area is restored according to health, safety and environmental requirements and all activities are performed according to safety and environmental requirements.

3. Diagnose and repair faults in diesel engine and vehicle systems and their components	1. Demonstrate knowledge of the operating principles of diesel engine and vehicle systems and components. 2. Demonstrate knowledge of general principles and critical processes, sequence and safety requirements for diagnosing and repairing diesel engine and vehicle systems and their components according to accepted industry standards is demonstrated. 3. Operate diagnostic equipment according to the manufacturer's procedures and standards. 4. Interpret diagnostic codes and events correctly. 5. Source technical information and correctly interpreted it. 6. Diagnose all faults correctly and within stipulated timeframes. 7. Repair all faults according to the manufacturer's procedures and specifications. 8. Restore the work area according to health, safety and environmental requirements.
4. Communicate with peers and supervisors in an automotive work context.	1. Communicate effectively with specific reference to corporate communication, interpreting verbal and nonverbal communication, professional writing and handling small groups. 2. Use terminology that is appropriate to the situation and in accordance with normal workplace usage. 3. Access and interpret information related to work tasks from a range of written and oral sources to ensure that work requirements are understood. 4. Ensure communication is clear and unambiguous and at an appropriate level for designated target audiences. 5. Communicate information that is accurate and convey it in accordance with acceptable timeframes.
6. Access information from a range of written and oral sources to ensure that work requirements are understood.	1. Design the vehicle to make it safe to work with in accordance with manufacturer specifications. 2. Identify auto electrical features of the vehicle in relation to access to the faulty circuit. 3. Identify vehicle safety features in terms of precautions when working during operations.

	4. Repair faulty circuits in accordance with workplace procedures. 5. Clean faulty components and dismantle them according to organizational requirements. 6. Conduct work with due consideration for other team members and overall productivity.
7. Interpret information from different sources of technical data for use on diagnosis	1. Retrieve vehicle specifications with easiness 2. Minimize time for diagnosis in searching for required data. 3. Reduce damage to vehicles and components. 4. Achieve highest levels safety
8. Select and use vehicle lifting equipment and engineering tools	1. Discuss the basic operation of automobile lifting equipment and the function of various components related to hoists is explained. 2. Operate various types of lifting equipment in order to complete the auto electrical tasks on a vehicle. 3. Select hand and power engineering tools and use them according to manufacturer's specifications. 4. Maintain hand and power engineering tools and maintain them according to workplace procedure. Automobile lifting equipment and hand and power engineering tools are used with due care for self, fellow workers, machines, equipment, materials and environment.
9. Explain the importance of occupational health and safety	1. Explain the safety, health and environmental requirements applicable in a specific workplace. 2. Monitor workplace compliance to safety, health and environmental requirements against specified requirements. 3. Evaluate the performance of workplace safety activities as required by safety, health and environmental management programmes. Recommendations to remediate workplace non-compliance to and non-performance of safety, health and environmental requirements and programmes are made to ensure the safety of all in the workplace.

SECTION C	***QUALIFICATION STRUCTURE***				
COMPONENT	***TITLE***	***Credits Per Relevant NCQF Level***			***Total*** ***(Per** Subject/ Course/ Module/ Units)*
		Level [4]	***Level [5]***	***Level [6]***	
FUNDAMENTAL COMPONENT *Subjects/ Courses/ Modules/Units*	Engineering Mathematics I		10		10
	Engineering Science		10		10
	Engineering Drawing		15		15
	Introduction to Diesel Plant Mechanics		10		10
	Introduction to Motor Vehicle Technology		15		15
	Engineering Mathematics II			10	10
	Introduction to Technical Communication		10		10
	Introduction to Electrical and Electronics		15		15
	Diesel Plant Workshop Practice		15		15

	Introduction to Information Technology		15		15
CORE COMPONENT *Subjects/Courses/ Modules/Units*	Introduction to Thermodynamics			10	10
	Diesel Plant Technology			10	15
	Introduction to Fluid Mechanics			10	10
	Computer Applications			15	15
	Practical Risk Assessment and Workshop Safety			15	15
	Engineering Mathematics III			15	15
	Applied Mechanics			10	10
	Motor Vehicle Technology			10	10
	Theory of Machines			10	10
	Pneumatics and Hydraulics			10	10
	Strength of Materials			10	10
	Introduction to Tribology			10	10
	Industrial Attachment			50	50
	Practical Project			30	30

	Computer Aided Design and Manufacturing (CAD/CAM)			15	15
	Design of Machine Elements			10	10
ELECTIVE/ OPTIONAL COMPONENT *Subjects/Courses/ Modules/Units*	Vehicle Estimation and Costing/ Vehicle Dynamics/ Vehicle Body Design **(Choose 1)**			15	15
	Entrepreneurship/ Business Finance/ Project Management **(Choose 1)**			10	10

SUMMARY OF CREDIT DISTRIBUTION FOR EACH COMPONENT PER NCQF LEVEL	
TOTAL CREDITS PER NCQF LEVEL	
NCQF Level	***Credit Value***
5	***125***
6	***265***
TOTAL CREDITS	***390***

Rules of Combination:

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

The qualification consists of 365 credits distributed as follows.

Level and Credits	**Fundamental**	**Core**	**Elective**
Level 5…credits….125	**125 Credits**		
Level 6…credits….260		**240 Credits**	**25 credits (Choose 2)**
Total Credits	**125 Credits**	**240 Credits**	**25 credits**

ASSESSMENT ARRANGEMENTS

Formative Assessment

Formative assessment will contribute 60% towards the final assessment mark.

Summative assessment:

Integrated assessment, focusing on the achievement of the exit-level outcomes, will be done by means of a written examination (of at least 3 hours) at the end of every module (per module) which will contribute 40% to their final assessment mark.

MODERATION ARRANGEMENTS

Both internal and external moderation will be done in-line with the Moderation policy of the Institution. In addition, all Moderators and Assessors must be registered and accredited with Botswana Qualification Authority (BQA).

RECOGNITION OF PRIOR LEARNING

Recognition of prior learning (RPL) will be considered for the award of this qualification

CREDIT ACCUMULATION AND TRANSFER

Any candidate applying for Credit Accumulation and Transfer (CAT) will be expected to provide evidence of such learning.

PROGRESSION PATHWAYS (LEARNING AND EMPLOYMENT)

LEARNING PATHWAYS

Learners who have graduated with a Diploma in Diesel Plant Engineering can proceed vertically to do:

- Higher National Diploma in Automotive Engineering,
- Degree in Automotive Engineering,
- Degree in Mechanical engineering
- Degree in Heavy Plant Engineering
- Degree in Mechatronics

Learners who have graduated with a Diploma in Diesel Plant Engineering can horizontally articulate the following learning pathways:

- Diploma in Auto Electrical Engineering
- Diploma Motor Vehicle Body Repair & Refinishing
- Diploma in Electronics
- Diploma in Welding and Fabrication
- Diploma in Hydraulics & Pneumatics

EMPLOYMENT PATHWAYS

The jobs within the Diesel Plant Engineering could be any of the following:

- Technical support Engineering Technician
- Engine Calibration Engineering Technician
- Fuel test Engineering Technician
- Automotive project manager Assistant
- Interior Automotive Design Engineering Technician
- Workshop manager Assistant
- Service Advisor
- Diesel Mechanic
- Training Officer
- Assistant Manpower Development officer
- Assistant Plant Engineer
- Diesel Plant Engineering Technician / Assistant

QUALIFICATION AWARD AND CERTIFICATION

A learner will be awarded Diploma in Diesel Plant Engineering after attaining 390 credits. The learner will be issued a certificate and an official transcript. This qualification does not have compensatory awards.

REGIONAL AND INTERNATIONAL COMPARABILITY

The Program satisfies national, regional, and worldwide requirements, as stated in the Institution's mission statement. This is shown by the method of work-based learning, which provides managers with the practical development skills they need in today's industry, motor trade, and commerce. The Diploma Program is recognized on a national, regional, and worldwide level since it is accredited by the Botswana Qualifications Authority (BQA), which uses internationally and globally proven, tested, and trusted best practices. Furthermore, the graduate skills competency in the Motor and Automotive sector satisfies the requirements of stakeholders on a national, regional, and worldwide level. The automotive industry in Botswana is rapidly expanding, necessitating a large number of

Diesel Plant Engineers for both current businesses and new businesses that will be started via entrepreneurial ownership.

The qualification series was compared to similar outcome-based qualifications in New Zealand, Malaysia, and Canada as well as some African countries in the Southern African Development Community (SADC), such as Zimbabwe, Mozambique and Botswana, and the East African Community (EAC), such as Kenya, Tanzania, and Uganda. The Botswana Training Authority's website contains information on the development and coordination of an integrated and standards-based vocational training system in Botswana. The creation of standards-based credentials via a Botswana Vocation Education and Training System (BVET) is now focused on the wholesale and retail, as well as the tourism sectors.

Similarities

- The basic methods of assessment include Coursework, Oral Examination, Portfolio of Evidence, Practical Demonstration/Assignment, Practical Examination and Written Examination.
- Another similarity can be seen in the employment pathway with all the qualifications selected citing jobs in the Diesel plant engineering industry.
- Also, the graduates follow similar employment paths.

Differences

- The duration of study is differing in all the qualifications.
- The NCQF for the three qualifications range from Level 3-6, which are certificate levels (BQA manual).
- Credits points differs from 88- 390

REVIEW PERIOD

This qualification will be reviewed after 5 years.