AUTOMOTIVE SECTOR
Motorcycle Maintenance and Repairs
SUMMARY OF LEVEL 2 (AS CLASSIFIED)

MANDATORY AND OPTIONAL UNITS

S/NO/UNIT	REFERENCE NO.	NOS TITLE	CREDIT VALUE	LEARNING HOUR	REMARKS
1	AUT/MTC/001/L2	**Health, Safety and Environment**	2	20	**Mandatory**
2	AUT/MTC/002/L2	**Communication in Auto Motor-cycle**	2	20	**Mandatory**
3	AUT/MTC/003/L2	**Application of Mechanical Fastening Techniques**	3	30	**Mandatory**
4	AUT/MTC/004/L2	**Tools and Materials**	3	30	**Mandatory**
5	AUT/MTC/005/L2	**General Assembly Work**	2	20	**Optional**
6	AUT/MTC/006/L2	**Engine System Maintenance**	2	20	**Mandatory**
7	AUT/MTC/007/L2	**Drive Train and Braking system repairs**	3	30	**Mandatory**
8	AUT/MTC/008/L2	**Wheels, tyres, steering & Suspension**	3	30	**Optional**
9	AUT/MTC/009/L2	**Electrical works, Indicators and Switches**	3	30	**Optional**
10	AUT/MTC/010/L2	**Bodywork**	6	60	**Optional**
TOTAL CREDIT VALUE/HOURS			**29**	**290**	

NOTE: Learners are required to select 2 Units from the optional units

Qualification Purpose: This Qualification covers the competence and knowledge learners need to carry out maintenance, service and general repairs of auto motor cycles. It includes identification of faults and replacement of mechanical and electrical components safely. The qualification also ensures that the learner is aware of health, safety & environment, communicate, learn the use of tools and their maintenance .It enables a candidate to dismantle 'live' components, for example engine, gearbox and back axle.

Unit: 001 HEALTH, SAFETY AND ENVIRONMENT (HSE) IN AUTOMOTIVE MOTOR CYCLE INDUSTRY

Unit reference number: AUT/MTC/001/L2

QCF level: 2

Credit value: 2

Guided learning hours: 20

Unit Purpose: This unit is about the application of knowledge and skills to competently carryout daily activities in an automotive motorcycle workshop while observing relevant health & safety regulations.

Unit assessment requirements/evidence requirements
This assessment can only be carried out in a real automotive motorcycle workplace environment where automotive activities are carried out. Simulation is not allowed in this unit and level.

Assessment method will include

1. Direct Observation / oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Project
6. Work product

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1 Apply safe work practices and instructions.	1.1	Use safe work practice and instructions									
	1.2	Identify safety signs and symbols									
	1.3	Use signs and symbols correctly									
	1.4	Carry out safe work practices and instructions									
	1.5	Work in accordance with health and safety practices.									
L.O 2: Demonstrate the understanding of safety hazards and risks											
	2.1	Identify work environment hazards									
	2.2	State types of hazard and risks in surface area									
	2.3	State types of hazards and risks in height and depth									
	2.4	Apply regulations as it relates to hazards and risk in work environment.									
L.O.3: Demonstrate the usage of personal protective equipment (PPE)											
	3.1	Identify the types of PPEs									
	3.2	Use PPEs in accordance with instructions									
	3.3	Select appropriate PPEs									

	3.4	Maintain PPEs after use									
L.O. 4: Apply appropriate actions during accident/injury	4.1	Locate first aid facility									
	4.2	Use basic dressing materials									
	4.3	Respond to supervisor given instructions									
	4.4	Report accident/injury to the appropriate supervisor									
L.O. 5: carry out safe work habit and clean work environment	5.1	Use safe access and exit routes in the work environment									
	5.2	Identify appropriate working tools, materials and equipment									
	5.3	Use tools and equipment safely in accordance with the supervisors instructions									
	5.4	Return all tools, equipment and un used materials for appropriate storage									
	5.5	Carry out general housekeeping of work environment									
	5.6	Dispose all wastes appropriately to designated waste facilities									
L.O: 6. Apply correct methods of lifting, loading/offloading and stacking of materials	6.1	Identify lifting and stacking techniques									
	6.2	Demonstrate appropriately lifting techniques in loading and offloading of materials without assistance									
	6.3	Demonstrate correct lifting and loading techniques with mechanical assistance									
	6.4	Stack materials correctly									
L.O: 7 Demonstrate the understanding of the effects of materials on self and work environment	7.1	Explain the effect of gas, liquid and solid materials on self and work environment									
	7.2	Identify various types of protection against gaseous, liquid, and solid materials on self and work environment									
	7.3	Explain appropriate legislative standards with regards to safety									

Learners Signature:	**Date:**
Assessors Signature:	**Date:**
IQA Signature (if sampled)	**Date:**
EQA Signature (if sampled)	**Date:**

UNIT 002: COMMUNICATION IN AUTO MOTORCYCLE WORKSHOP

Unit reference number: AUT/MTC/002/L2

QCF level: 2

Credit value: 2

Guided learning hours: 20

Unit Purpose: To establish an effective communication system that is responsive and subject to change in meeting workers and employer's needs, in work environment

Unit assessment requirements/evidence requirements
This assessment can only be carried out in a real automotive motorcycle workplace environment where automotive activities are carried out.

Assessment method will include:

1. Direct Observation / oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1.0 Use a non-complex communication system in a work environment	1.1	Use a verbal means to pass on necessary information									
	1.2	Use non-verbal means to convey necessary information e.g. body language, signs									
	1.3	Interpret symbols and signs appropriately									
L.O: 2.0 demonstrate the ability to source information in a work environment											
	2.1	Identify the source of information in the work environment									
	2.2	Relate effectively with the source of information									
	2.3	Use the different information flow systems in a work environment									
	2.4	Use information gathered to avoid challenges in a work situation									
	2.5	Report findings appropriately in accordance with laid down procedure in the work environment Cards, Flip Chart									
L.O: 3.0 Demonstrate the use											

of various communication means in a work environment	3.1	Locate the various communication equipment in the work environment									
	3.2	Use effectively the various communication equipment in a work environment									
	3.3	Pass information effectively to the right personnel									
	3.4	Obey instructions in line with ethics of the work environment									

Learners Signature:	**Date:**
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EQA Signature (if sampled)	**Date:**

Unit: 003
FASTENING (JOINING) TECHNIQUES USED IN AUTOMOTIVE SERVICES AND REPAIR OPERATIONS

Unit reference number: AUT/MTC/003/L2

QCF level: **2**

Credit value: **3**

Guided learning hours: **30 HOURS**

Unit Purpose: This unit is about joining materials effectively using mechanical joining by fastening techniques

Unit assessment requirements/evidence requirements:
This assessment can only be carried in a real workplace environment in which automotive service, repair, and mechanical joining by fastening operations are carried out.

Assessment method will include:

1. Direct Observation / oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Work products
6. project

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1.0 Undertake safety precautions required in metal joining/fastening	1.1	Use the appropriate personal protective equipment when carrying out mechanical joining operations.									
	1.2	Protect the vehicle and its contents effectively when carrying out mechanical joining operation									
	1.3	Ensure that the tools, equipment and PPE you require are in a safe working condition									
	1.4	Dress and protect the repaired area to inhibit corrosion where applicable									
	1.5	Clean and store PPE and equipment in appropriate manner									
	1.6	Carry out mechanical joining operations following rules and regulations									

	1.7	Conform to health safety and legal requirements									
L.O: 2.0 Select tools and equipment for carrying out mechanical joining operations											
	2.1	Select the correct tools and equipment for carrying out mechanical joining operations									
	2.2	Ensure that the tools and equipment and PPE you require are in a safe working condition									
	2.3	Check stability of tooling									
L.O: 3 Carry out joining/fastening operations	3.1	Prepare material and align to enable suitable joint to be achieved									
	3.2	Treat meeting flanges before joining									
	3.3	Set up equipment to carry out mechanical joining operations such as: check suitability of joining technique check suitability of tooling check consumables are correct									
	3.4	Check integrity of the joint.									
	3.5	Carry out mechanical joining operations within the agreed timescale									
	3.6	Identify common fastener failures									

Learners Signature:	**Date:**
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EQA Signature (if sampled)	**Date:**

UNIT: 004 SERVICE TOOLS AND EQUIPMENT

Unit reference number: AUT/MTC/004/L2

QCF level: LEVEL 2

Credit value: 3 CREDITS

Guided learning hours: 30 HOURS

Unit Purpose: This unit is about the basic use of tools, materials and waste disposal methods relevant to the automotive motorcycle sector

This unit is about;

1. Apply manufacturer's information
2. Apply safe and healthy working practices
3. Selecting materials and equipment
4. Service and maintenance of workshop tools & equipment
5. Coordinate storage of workshop tools and equipment

Unit assessment requirements/evidence requirements
Assessment must be carried out in real workplace environment in which automotive motorcycle services and repair operations are carried out. Simulation is not allowed in this unit and level.

Assessment method will include:

1. Direct Observation / oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Project
6. Work products

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1. Select workshop tools and materials	1.1	Identify types for workshop hand tools such as: marking tools, cutting tools, metal removing tools, fastening tools									
	1.2	Identify functions of workshop hand tools listed above									
	1.3	Select correct tools for marking operations									
	1.4	Select correct tools for cutting operations									
	1.5	Select correct tools for metal removing operations									
	1.6	Select correct tools for fastening operations									

L.O: 2. Use hand tools										
	2.1	Carry out marking out operations								
	2.2	Carry out filing operations								
	2.3	Carry -out cutting operations								
	2.4	Carry -out fastening operation.								
	2.5	Loose bolts and nuts with correct tools								
	2.6	Identify problems associated with incorrect tools use								
L.O. 3 Select service materials correctly	3.1	Identify materials for servicing in accordance to the manufacturer's specification such as :engine oil, differential oil, filters, plug, grease								
	3.2	Identify materials for repairs such as: gaskets, sealants, seals Fittings, fasteners								
	3.3	Select correct personal protective equipment for different operations								
L.O. 4: Maintain workshop tools	4.1	Service tools as specified by manufacturer's /workshop requirement.								
	4.2	Adjust tools as specified by manufacturer's /workshop requirement.								
	4.3	Store tools as specified by manufacturer's /workshop requirement								
	4.4	Clean used tools								

Learners Signature:	**Date:**
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EQA Signature (if sampled)	**Date:**

UNIT: 05 GENERAL ASSEMBLY WORK

Unit reference number: AUT/MTC/005/L2

QCF level: LEVEL 2

Credit value: 2

Guided learning hours: 20 HOURS

Unit Purpose: This unit is about conducting routine assembly, adjustment, coupling and test-running activities.

Unit assessment requirements/evidence requirements:
This assessment can only be carried in an environment in which automotive motorcycle assembly are carried out in a commercial environment effectively.

Assessment method will include:

1. Direct Observation / oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Project
6. Work product

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1. Apply basic knowledge of assembly work	1.1	Identify types of Motorcycle Cab Pickup									
	1.2	Identify brand of Motorcycle Bajaj TVS Piaggio									
	1.3	Examine the motor cycle system and components following the manufacturer's approved methods									
L.O: 2. Assemble motorcycle components											
	2.1	Select correct tools/equipment for assembly of a motor cycle									
	2.2	Identify genuine motor cycle parts in line with manufacturer's specification									
	2.3	Apply correct tools in line with manufactures specification.									
	2.4	Carry out motor cycle assembly activities such as: Electrical wiring, Tyres, wheels Upholsteries									
	2.5	Carry-out test- running Engine condition, Braking									

		system, Electrical system Suspension									

Learners Signature:	**Date:**
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IQA Signature (if sampled)	**Date:**
EQA Signature (if sampled)	**Date:**

UNIT: 06 ENGINE SYSTEM REPAIRS

Unit reference number: AUT/MTC/006/L2

QCF level: LEVEL 2

Credit value: 2

Guided learning hours: 20 HOURS

Unit Purpose: This unit is about identification of faults, repairs, service, examination, adjustment and replacement activities in motorcycle engine.

Unit assessment requirements/evidence requirements:
This assessment can only be carried in a real workplace environment in which automotive motorcycle service and repair operation are carried out in a workshop environment effectively. Live engines and functional motorcycle shall be provided.

Assessment method will include

1. Direct Observation / (DO)
2. Question and Answer/oral questions (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Project
6. Work product

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1. Demonstrate knowledge of engine configuration.	1.1	Identify types of motorcycle engine									
	1.2	Identify components of a motor cycle engine.									
	1.3	State the function of each component of a motorcycle engine									
	1.4	Describe the operations of a motorcycle engine.									
L.O: 2. Service engine											
	2.1	Examine the motorcycle system and components following the manufacturer's approved methods									
	2.2	Select correct tools/equipment for servicing a motorcycle engine									
	2.3	Identify genuine filter, plug and lubricants in line with manufacturer's specification									

	2.4	Carry out motorcycle servicing activities such as: Spark plugs cleaning Fuel filter cleaning Air filter cleaning									
	2.5	Change engine oil									
L.O. 3 Repair carburettor	3.1	Identify the faults by visual inspection									
	3.2	Identify the faults Observation									
	3.3	Identify fault sound									
	3.4	Use manufacturer's service information									
	3.5	Identify tools / equipment for motorcycle carburettor servicing									
	3.6	Dismantle the carburettor to clean jets/ nut of blockage									
	3.7	Replacement of worn or damaged parts.									
	3.8	Assemble the carburettor									
L.O. 4: Repair injector	4.1	Identify the faults by visual inspection, direct Observation and sound									
	4.2	Use manufacturer's service information									
	4.3	Identify tools/equipment for motorcycle injector servicing									
	4.4	Dismantle the injector to clean jets/ nut of blockage.									
	4.5	Replace worn or damaged parts									
	4.6	Assemble the injector									
L.O. 5: Overhaul motorcycle engine	5.1	Identify the need for overhaul of motorcycle engine by customer complain/test-run the motorcycle.									
	5.2	Select correct tools for dismantling motorcycle engine									
	5.3	Dismantle the engine unit									
	5.4	Check parts for replacement or re-use									
	5.3	Couple the engine back									
	5.4	Test run the motor cycle									

Learners Signature:	**Date:**
Assessors Signature:	**Date:**
IQA Signature (if sampled)	**Date:**
EQA Signature (if sampled)	**Date:**

Unit: 007 DRIVETRAIN & BRAKING SYSTEM REPAIRS

Unit reference number: AUT/MTC/007/L2

QCF level: 2

Credit value: 3

Guided learning hours: 30

Unit Purpose: This unit is about identifying and rectifying faults within the powertrain, rolling chassis and braking system. It includes the procedures of inspecting and assessing the conditions and overhauling of the transmission system in line with manufacturers' specifications

Unit assessment requirements/evidence requirements
This assessment can only be carried out in a real automotive motor cycle workplace environment. Assessment method will include:

1. Direct Observation / oral questions (DO)
2. Question and Answer
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Work product
6. Project

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1. Carry out repairs on chain and sprockets of motor cycle.	1.1	Identify the features of the motorcycle gear box									
	1.2	Carry-out adjustment of chain & sprocket									
	1.3	Identify faults of chain & sprocket									
	1.4	Select correct tools/equipment									
	1.5	Dismantle the chain & sprocket									
	1.6	Replace damaged parts Sprocket chain adjuster bearing(hub)									
	1.7	Assembly the unit									
	1.8	Test run the motor cycle									
L.O. 3 Carry out clutch repairs.	3.1	Identify faults in the clutch unit									
	3.2	Dismantle clutch unit									
	3.3	Replace damaged parts such as: clutch plate, clutch drive clutch bearing and bushings clutch housing, dumper rubber									
	3.4	Grind the clutch housing									
	3.5	Dismantle the clutch plate									

	3.6	Repair the rivet of the clutch plate									
	3.7	Couple the clutch unit									
	3.8	Test run the motor cycle									
L.O. 4 Carry out braking system repairs.	5.1	Identify faults in the braking system.									
	5.2	Use correct tools									
	5.3	Dismantle braking system									
	5.4	Adjustment of brake liners with the correct tools									
	5.5	Replace damaged parts such as brake liner/springs									
	5.6	Couple the braking system									
	5.7	Test the brake for functionality.									

Learners Signature:	**Date:**
Assessors Signature:	**Date:**
IQA Signature (if sampled)	**Date:**
EQA Signature (if sampled)	**Date:**

UNIT: 008 WHEEL TYRES, STEERING & SUSPENSION

Unit reference number: AUT/MTC/008/L2

QCF level: 2

Credit value: 3

Guided learning hours: 30

Unit Purpose: This unit is about inspecting standard motorcycle tyres and wheels to assess their conditions and suitability for repair and carrying out necessary repair, replacement or refitting activities. It includes replacement and repair procedures for wheels, tyres, steering & suspension.

Unit assessment requirements/evidence requirements;

This assessment can only be carried out in a real automotive motorcycle workshop environment in which replacement and repair procedures for wheels, tyres, steering & suspensions are carried out.

Assessment method will include:

1. Direct Observation / oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Project
6. Work product

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O:1 Carry-out steering repairs	1.1	Service the steering bearings such as (top and bottom bearings)									
	1.2	Service the steering bushings									
	1.3	Identify faults relating to steering									
	1.4	Dismantle the steering unit									
	1.5	Replace damaged parts such as: steering bearing (top and bottom) steering bushings									
	1.6	Couple the unit									
	1.7	Test run the motorcycle									
L.O: 2. Carry out repair on motorcycle suspension system											
	2.1	Identify faults in shock absorber									
	2.2	Identify faults in suspension bushings									
	2.3	Select correct working tools									
	2.4	Dismantle suspension unit									

	2.5	Replace damaged parts such as: shock absorber(Oil seal and spring)									
	2.6	Replace shock absorber bushings									
	2.7	Test run the motorcycle									
L.O.3: Carry out repair in tyre and tubes	3.1	Identify types and tubes used in motorcycles									
	3.2	Use correct tools and techniques									
	3.3	Remove tire from the wheel									
	3.4	Check for leakages									
	3.5	Repair tube and tyre									
	3.6	Inflate tyre according to the manufacturer's specification									
L.O. 5: Carry out wheel alignment repairs.	5.1	Check wheel alignment									
	5.2	Identify causes of mis-alignment									
	5.3	Remove wheel from the body									
	5.4	Check the bearing and bushing/spooks									
	5.5	Replace the damaged bearing and bushing									
	5.6	Assemble the wheel									

Learners Signature:	**Date:**
Assessors Signature:	**Date:**
IQA Signature (if sampled)	**Date:**
EQA Signature (if sampled)	**Date:**

UNIT: 009 REFITTING OF ELECTRICAL WORK, SWITCHES AND INDICATORS

Unit reference number: AUT/MTC/009/L2

QCF level: 2

Credit value: 3

Guided learning hours: 30

Unit Purpose: This unit is about the appropriate removal and fitting of basic electrical components to motorcycles. It is also about checking the operation (s) of the components fitted and the functionality of the indicators.

Unit assessment requirements/evidence requirements
This assessment can only be carried out in a real motorcycle workplace environment in which the removal and fitting of basic mechanical, electrical components are carried out.

Assessment method will include:

1. Direct Observation (DO)
2. Question and Answer/ oral questions (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Work product

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O: 1 Carry-out repairs in motorcycle wiring system	1.1	Apply manufacturer's wiring system									
	1.2	Identify wires by colours									
	1.3	Select correct working tools									
	1.4	Trace faults									
	1.5	Rectify faults									
	1.6	Replace damaged parts									
	1.7	Test for functionality									
L.O: 2. Carry out battery maintenance											
	2.1	Identify the features of a battery									
	2.2	Select correct tools/instruments									
	2.3	Identify areas of fault such as: rust of battery terminals level of acid, voltage level									
	2.4	Rectify the faults									
	2.5	Replace the battery									
	2.6	Test for functionality									
L.O.3: Replace indicators and switches	3.1	Identify switches/indicators in motorcycle									
	3.2	Test the switches for functionality									

	3.3	Check the indicators for functionality with correct tools/equipment									
	3.4	Identify faults in switches with correct instrument									
	3.5	Identify faults in indicators with correct instrument									
	3.6	Replace damaged parts such as: Bulbs, switches, indicators, fuses Wires									
L.O. 4 Carry-out electrical kick starter work	4.1	Identify the fault									
	4.2	Remove the kick starter with correct tools									
	4.3	Replace the damage part of the kick starter									
	4.4	Couple the kick starter to motorcycle									
	4.5	Crank the motor cycle									

Learners Signature:	**Date:**
Assessors Signature:	**Date:**
IQA Signature (if sampled)	**Date:**
EQA Signature (if sampled)	**Date:**

Unit: 010 MOTORCYCLE BODY WORKS

Unit reference number: AUT/MTC/010/L2

QCF level: 2

Credit value: 6

Guided learning hours: 60

Unit Purpose:

This unit is to apply the knowledge and skills needed to improve the physical appeal of a vehicle and also to protect it from damages. It includes beautifying both the interior and exterior part of the motor vehicle.

Unit assessment requirements/evidence requirements

This assessment can only be carried out in a real automotive workplace environment where automotive activities are carried out. Simulation is not allowed in this unit and level.

Assessment method will include:

1. Direct Observation (DO)
2. Question and Answer/ oral questions (QA)
3. Witness Testimony (WT)
4. Personal statement (PS)
5. Work product (WP)

L.O (Learning outcome)	Criteria:-		Evidence Type					Evidence Ref Page number			
L.O: 1 Carry-out basic panel beating work	1.1	Carry-out visual inspection of the body of a motorcycle									
	1.2	Identify areas that requires panel beating in the body									
	1.3	Carry-out marking-out									
	1.4	Cut suitable metal in line with manufacturer's specification									
	1.5	Prepare joining surfaces									
L.O: 2 Carry out basic welding operations.											
	2.1	Identify types of welding machines for motorcycle body welding									
	2.2	Select correct welding tools/equipment									
	2.3	Carry-out welding operations									
	2.4	Check the welded joints for defects									
	2.5	Grind welded surface									
L.O.3: Carry out spraying/painting operations.	3.1	Identify areas requiring body filler									
	3.2	Apply correct mix of body filler									
	3.3	Carry-out polishing operations									

	3.4	Apply priming chemicals								
	3.5	Carry-out spraying operations								
L.O. 4 Carry out upholstery work in motorcycle	4.1	Remove auxiliary components with correct tools such as: seat cover, Plastic parts								
	4.2	Select auxiliary component								
	4.3	Replace auxiliary component								

Learners Signature:	**Date:**
Assessors Signature:	**Date:**
IQA Signature (if sampled)	**Date:**
EQA Signature (if sampled)	**Date:**