FEDERAL MINISTRY OF EDUCATION

National Skills Qualifications FOR AGRICULTURAL EQUIPMENT MECHANICS

LEVEL 1, 2 & 3

February, 2025

NATIONAL BOARD FOR TECHNICAL EDUCATION
NBTE

Innovation Development and Effectiveness in the Acquisition of Skills (IDEAS) Project

THE WORLD BANK

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Plot B, Bida Road, P.M.B. 2239, Kaduna, Nigeria

NATIONAL SKILLS QUALIFICATION

AGRICULTURAL EQUIPMENT MECHANICS

LEVEL 1-3

FEBRUARY, 2025

Contents

NATIONAL SKILLS QUALIFICATION
AGRICULTURAL EQUIPMENT MECHANICS

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification is aimed at developing competence in Agricultural Equipment Mechanics across different types of farm machineries. The focus is on generic farm equipment training, repair and maintenance skills, personal development and workplace experience.

QUALIFICATION OBJECTIVES

To achieve this qualification, the Agricultural Equipment Mechanic should gain the following competencies:

- Apply safe working practices in their work environment
- Identify safety signs and symbols and how to use them correctly.
- Identify the benefits of effective communication in a working environment.
- Identify, read and follow sign and symbols as guide in the farm environment
- Identify concepts behind effective farm machinery management, and
- Carry out repair and maintenance concepts of various farm equipment.

GUIDE

Unit title	Provides a clear explanation of the content of the unit.
Unit number	The unique number assigned to the unit.
Unit reference	The unique reference number given to each unit at qualification approval by NBTE
Unit level	Denotes the level of the unit within the National Vocational Qualification framework NVQF.
Unit credit value	The value that has been given to the unit based on the expected learning time for an average learner. 1 credit = 10 learning hours
Unit aim	Provides a brief outline of the unit content.
Learning outcome	A statement of what a learner will know, understand or be able to do, as a result of a process of learning.
Assessment criteria	A description of the requirements a learner must achieve to demonstrate that a learning outcome has been met.
Unit assessment guidance	Any additional guidance provided to support the assessment of the unit.
Unit guided learning hours	The average number of hours of supervised or directed study time or assessment required to achieve a qualification or unit of a qualification.

NATIONAL SKILLS QUALIFICATION

This program is designed for three levels for professional Agricultural Equipment Mechanic:

1) Level I - Agricultural Equipment Mechanics (Grade III)
2) Level II - Agricultural Equipment Mechanics (Grade II)
3) Level III - Agricultural Equipment Mechanics (Grade I)

NATIONAL SKILLS QUALIFICATION

AGRICULTURAL EQUIPMENT MECHANICS

LEVEL 1

FEBRUARY, 2025

NATIONAL SKILLS QUALIFICATION
AGRICULTURAL EQUIPMENT MECHANICS
LEVEL 1

GENERAL INFORMATION

QUALIFICATION PURPOSE

The qualification is to provide knowledge and skills to qualify as Agricultural Equipment Mechanics, where the learner shall be supervised by higher officer such as a Farm Manager or Supervisor. The candidate is expected to assist and carry out tasks that are not of decision-making nature on the field or farm.

QUALIFICATION OBJECTIVES

To achieve this qualification, the learner should be able to:

- Perform farm work with hand tools.
- Repair Tillage Equipment.
- Repair of fertilizer and Organic Manure Application Equipment
- Perform Periodical maintenance of farm tractors.
- Repair Farm tractors
- Repair Livestock mechanisation equipment
- Repair Crop Processing and Storage Equipment
- Adhere to safety and health practices at work place.
- Carry out communication and interpersonal relationship at work place.
- Repair tractors, tyres and wheels
- Work in a Team

MANDATORY UNITS

S/No	Reference Number	NOS Title	Credit Value	Guided Learning Hours
1	AGR/AEM/L1/01	Use of Manual Hand tools	1	10
2	AGR/AEM/L1/02	Repair of Tillage Equipment	2	20
3	AGR/AEM/L1/03	Repair of Fertilizer and Organic Manure Application Equipment	2	20
4	AGR/AEM/L1/04	Periodical Maintenance of Farm Tractors	2	20
5	AGR/AEM/L1/05	Repair of Farm tractors	3	30
6	AGR/AEM/L1/06	Repair of Livestock Mechanization Equipment	2	20
7	AGR/AEM/L1/07	Repair of Crop Processing and Storage Equipment.	2	20
8	AGR/AEM/L1/08	Communication and Interpersonal Skills I	1	10
9	AGR/AEM/L1/09	Occupational Health, Safety and Environment I	1	10
10	AGR/AEM/L1/010	Repair of Tractor Tyres and Wheels	2	20
11	AGR/AEM/L1/011	Teamwork	1	10
Total			19	190

NOTE: This is a 19-credit unit qualification. To achieve this qualification; Learners are required to achieve all credits units in the level. Each Credit is equivalent to 10 Guided Learning Hours (GLH). The Total Learning Hours will therefore consist of the GLH plus the independent learning hours of the candidate, which is generally 50% – 150% of the GLH. The actual Total Learning Hours for each Credit will then be a minimum of 15 hours.

UNIT 001: USE OF MANUAL HAND TOOLS

Unit Reference Number: AGR/AEM/L1/01
Level: 1
Credit Value: 1
Guided Learning Hours: 10

Unit Purpose:
This unit is about basic use of tools relevant to agricultural mechanization for carrying out farm work with hand tools.

Objectives: At the end of this unit, the learner should be able to:

1. Recognize Hand tools for Agricultural Equipment repair and maintenance
2. Recognize hand tools for seedbed preparation and planting
3. Use hand tools for weeding and fertilizer/ manure application
4. Use hand tools for harvesting crops

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

Assessment methods will include:
1. Direct Observation(DO)
2. Oral questions (DO).
3. Question and Answer (QA).
4. Personal Statement (PS)
5. Witness Testimony
6. Assignment (ASS)

Unit 001: USE OF MANUAL HAND TOOLS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Recognize Hand tools for Agricultural Equipment repair and maintenance	1.1	Identify types of hand tools in Agricultural Equipment repair and maintenance									
	1.2	Describe the proper techniques for using each tool in 1.1									
	1.3	Identify type of hand tool required for agricultural equipment repair and maintenance.									
	1.4	Carry out maintenance of hand tools in accordance with safe working practices									
	1.5	Apply the safety measures required in handling hand tools for Agricultural Equipment.									
LO 2: Recognize hand tools for seedbed preparation and planting	2.1	Identify hand tools for seedbed preparation and planting									
	2.2	Carryout the maintenance process of each of these tools									
	2.3	Apply the safety measures required in handling hand tools for seedbed preparation and planting									
LO 3: Use hand tools for weeding and fertilizer/ manure application	3.1	Identify hand tools for weeding and fertilizer/ manure application.									
	3.2	Weed the plot using appropriate tools/equipment									
	3.3	Apply the safety measures required in handling hand tools for weeding and manure application									
	3.4	Store and secure workshop tools									
LO 4: Use hand tools for harvesting crops	4.1	Identify hand tools for harvesting crops: • Sickle • Cutlass • Hoe									
	4.2	Harvest crops, fruits and vegetables using appropriate tools/equipment									
	4.3	Maintain each of these tools in 1.1									
	4.4	Apply safety measures in handling hand tools for harvesting crops									

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

Unit 02: REPAIR OF TILLAGE EQUIPMENT

Unit Reference Number: `	**AGR/AEM/L1/02**
Level:	**1**
Credit Value:	**2**
Guided Learning Hours:	**20**

Unit Purpose:
This unit provides for the maintenance of Tillage equipment. It is about checking and maintaining all the components of the tillage equipment

Objectives: At the end of this unit, the learner should be able to:

1. Identify the different types of tillage equipment
2. Recognize types of maintenance for tillage equipment
3. Recognise appropriate method for maintaining tillage equipment
4. Carryout maintenance of primary tillage equipment

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

Assessment methods to be used include:

1. Direct Observation/ Oral questions (DO).
2. Question and Answer (QA).
3. Work Products (WP).
4. Personal Statement (PS)
5. Witness Testimony (WT)
6. Assignment (ASS)

Unit 002: REPAIR OF TILLAGE EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify the different types of tillage equipment	1.1	Identify tillage equipment									
	1.2	Identify the factors in tilling operation; soil type, moisture content, vegetation									
	1.3	Distinguish between primary and secondary tillage equipment									
LO 2: Recognize types of maintenance for tillage equipment	2.1	Identify Primary tillage equipment e.g.: • Plough • Sub-soiler • Ridger									
	2.2	Identify Secondary tillage equipment e.g.: • Harrow • Rotavator									
	2.3	Identify parts of the tillage equipment needed to be maintained									
	2.4	Carryout maintenance of tillage equipment: • Daily (routine) maintenance • Preventative maintenance • Planned maintenance • Breakdown maintenance • Shutdown maintenance									
LO 3: Recognise appropriate method for maintaining tillage equipment.	3.1	Identify the importance of selecting appropriate method for maintaining tillage equipment									
	3.2	Select appropriate method for maintaining tillage equipment. e.g.: • Daily • Preventive • Planned Breakdown • Shutdown • Running • Contract.									
	3.3	Explain the characteristics of each type of maintenance system.									
	3.4	Identify the functions of each of the maintenance system.									
	3.5	Describe the precautions and planning techniques in 3.2 above.									
	3.6	State the advantages or benefits derived from a successful maintenance system.									
	3.7	Apply safety precautions in maintenance									

LO 4: Carryout maintenance of primary tillage equipment	4.1	Identify the effects of tillage on physical properties of the soil									
	4.2	Check parts of the primary tillage equipment that require maintenance									
	4.3	Select appropriate maintenance methods for primary tillage equipment									
	4.4	Apply the precautionary measures when planning for maintenance to avoid total breakdown									
	4.5	Carry out maintenance of primary tillage equipment									
LO 5: Carryout maintenance of Secondary tillage equipment	5.1	Check parts of Secondary tillage equipment that require maintenance									
	5.2	Select appropriate maintenance methods for secondary tillage equipment									
	5.3	Apply the precautionary measures when planning for maintenance to avoid total breakdown									
	5.4	Carry out maintenance of secondary tillage equipment									
LO 6: Carryout repairs of tillage equipment	6.1	Identify parts of tillage equipment that require maintenance									
	6.2	Select appropriate tools for repair of tillage equipment									
	6.3	Carry out repairs of tillage equipment									
	6.4	Test run the tillage equipment									

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

Unit 003: REPAIR OF CHEMICAL FERTILIZER & MANURE APPLICATION EQUIPMENT

Unit Reference Number: AGR/AEM/L1/03
Level 1
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose:
This unit is designed to provide skills and competency for the maintenance of fertilizers and organic manure application equipment in the Agricultural Mechanization sector

Objectives: At the end of this unit, the learner should be able to:

1. Identify equipment for application of chemical fertilizer and manure
2. Carry out maintenance of chemical fertilizer broadcaster
3. Carryout maintenance of manure spreader
4. Carry out repairs of fertilizer broadcaster
5. Carry out repairs of manure spreader

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

Assessment methods to be used include:

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

Unit 003: REPAIR OF CHEMICAL FERTILIZER & MANURE APPLICATION EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify equipment for application of chemical fertilizer and manure.	1.1	Identify types of chemical fertilizer and manure applicators e.g.: • Knapsack • Manure spreaders									
	1.2	Identify parts of chemical fertilizer and manure applicators.									
	1.3	Identify appropriate equipment for applying chemical fertilizer and manure									
LO 2: Carry out maintenance of chemical fertilizer broadcaster	2.1	Identify types of maintenance of chemical fertilizer broadcaster to be carried out									
	2.2	Perform maintenance of chemical fertilizer broadcaster. • Wash and dry after use • Change worn out parts • Tighten loose bolt and nuts • Adjust Tension belt and chains • Lubricate bearings and ball joints									
	2.3	Perform the maintenance of related accessories of chemical fertilizer broadcaster. • Flush the sprayer • Clean filters • Replace plungers • Oil the plungers									
LO 3: Carryout maintenance of manure spreader.	3.1	Identify types of maintenance of manure spreader to be carried out									
	3.2	Perform maintenance of manure spreader									
	3.3	Perform the maintenance of related accessories of manure spreader e.g.: • Bearings • Bevel gear • Cutting blade									
LO 4: Carry out repairs of chemical fertilizer broadcaster	4.1	Identify types of repairs of chemical fertilizer broadcaster to be carried out									
	4.2	Select tools for chemical fertilizer broadcaster repairs									
	4.2	Perform repair of chemical fertilizer broadcaster. • Wash and dry after use									

		• Change worn out parts • Tighten loose bolts and nuts • Adjust tension belt and chains • Lubricate bearings and ball joints									
	4.4	Perform the repair of related accessories of chemical fertilizer broadcasters									
	4.5	Test run the chemical fertilizer broadcaster									
	4.6	Use suitable PPE throughout repair activities									
LO 5: Carry out repairs of manure spreader	5.1	Identify types of repairs of manure spreader to be carried out									
	5.2	Select tools for repairs of manure spreader									
	5.3	Perform repair of manure spreader									
	5.4	Test run the manure spreader									
	5.5	State the advantages derived from a successful repairs system									
	5.6	Use suitable PPE throughout repair activities									

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

Unit 004: PERIODIC MAINTENANCE OF FARM TRACTORS

Unit Reference Number: AGR/AEM/L1/04
Level: 1
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose:
This unit is about conducting routine examination, adjustment and replacement activities as part of the periodic maintenance of tractors.

Objectives: At the end of this unit, the learner should be able to:

1. Perform periodic maintenance of farm tractors
2. Use maintenance schedules for maintenance of tractors
3. Recognize types of filters
4. Carryout lubrication service
5. Service a tractor engine

Unit assessment requirements/ evidence requirements:
This assessment can only be carried in a real workplace environment in which tractor service and repair operations are carried out in a workshop environment effectively. Live engines and functional motor vehicles shall be provided. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation
2. Oral questions (DO).
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Personal Statement (PS)

Unit 004: PERIODIC MAINTENANCE OF FARM TRACTORS

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Perform periodic maintenance of farm tractors.	1.1	Service farm tractors in accordance with operator's manual.									
	1.2	Identify regular maintenance schedules									
	1.3	Carryout regular maintenance of equipment and tools.									
	1.4	Follow guidelines for storage of spare parts and other agricultural machines/ implements.									
	1.5	Keep machines clean and check for leakage of fuel.									
	1.6	Keep service records sheets									
LO 2: Use maintenance schedules for maintenance of tractors	2.1	Observe daily routine maintenance									
	2.2	Use manufacturer's routine maintenance checklist accurately									
	2.3	Observe adjustments on attachment linkages.									
	2.4	Use suitable personal protective equipment throughout all tractor maintenance activities									
LO 3: Recognize types of filters	3.1	Identify the various types of filters and their components.									
	3.2	Identify pre-filtration and filtration systems.									
	3.3	Fix the appropriate filters for the filtration systems									
	3.4	Fix the filters according to safety rules and precaution									
LO 4: Carryout lubrication service	4.1	Identify the type of lubricants									
	4.2	Lubricate different parts of farm tractors.									
	4.3	Record the next lubrication schedule									
LO 5: Service a tractor engine	5.1	Apply suitable personal protective equipment throughout all vehicle maintenance activities									

	5.2	Locate the position of tractor drain plug.									
	5.3	Unplug the drain plug to drain old engine oil									
	5.4	Identify location of oil filters.									
	5.5	Remove the old filter and replace with new ones									
	5.6	Plug back the drain plug									
	5.7	Add new engine oil									
	5.8	Remove old fuel filter and replace with new one									
	5.9	Remove air cleaner elements									
	5.10	Blow dirt off cleaner using air compressor									
	5.11	Replace serviced air cleaner elements									
	5.12	Change damaged or clogged air cleaner element									

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

Unit 005: REPAIR OF FARM TRACTORS

Unit Reference Number: AGR/AEM/L1/05
Level: 1
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit is about carrying out minor repair of Farm Tractors

Objectives: At the end of this unit, the learner should be able to:

1. Recognize the basic procedures needed before repair of tractors
2. Differentiate the different types of engines.
3. Recognize engine Systems
4. Recognize Tractor power unit

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

Assessment methods to be used include:

1. Direct Observation
2. Oral questions (DO).
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Personal Statement (PS)

Unit 005: REPAIR OF FARM TRACTORS

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Recognize the basic procedures needed before repair of tractors	1.1	Identify component or system to be repaired									
	1.2	Select tools for the repairs									
	1.3	Carry out the repairs									
	1.4	Observe safety regulations in carrying out the repairs									
	1.5	Test run the parts repaired									
LO 2: Differentiate the different types of engines.	2.1	Sketch different types of engines.									
	2.2	Differentiate between types of engines. e.g. : • Steam engine • Steam turbine • Gas turbine • Internal combustion engine									
	2.3	Differentiate internal and external combustion engines.									
LO 3: Recognize engine Systems	3.1	Identify different engine systems and parts such as: • Air intake and exhaust system • Fuel system, i.e., fuel filter, fuel lines, fuel pump and oil pump. • Lubrication system. • Cooling system, i.e., water pump, water hoses, fan, and radiator. • Electrical system • Hydraulic system									
	3.2	Identify the complete engine									
	3.3	Identify hand tools used in tractor repairs with their sizes, e.g.: • Spanners • Screw drivers • Allen keys etc.									
	3.4	Carry out bleeding of engine fuel system									
LO 4: Recognize Tractor power unit	4.1	Identify the power unit in tractors e.g.: • Engine									

		• Transmission • Final drive									
	4.2	Identify faults in power units in 4.1									
	4.3	Identify tools to be used to carry out repairs									
	4.4	Carry out repairs of power units									
	4.5	Test run the power units									

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

Unit 006: REPAIR OF LIVESTOCK MECHANIZATION EQUIPMENT

Unit Reference Number:	**AGR/AEM/L1/06**
Level:	**1**
Credit Value:	**2**
Guided Learning Hours:	**20**

Unit Purpose:
This unit provides for the maintenance of Livestock mechanization equipment
Objectives: At the end of this unit, the learner should be able to:

1. Apply safety precautions in Livestock equipment workshop
2. Identify the methods of maintaining Livestock mechanization equipment.
3. Carryout maintenance of Livestock mechanization equipment
4. Identify feeding and milking equipment
5. Undertake conveyance of feed materials.
6. Perform livestock feeding equipment repair
7. Perform livestock milking equipment repair
8. Perform repair of livestock weighing equipment
9. Identify livestock health monitoring devices

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

Assessment methods to be used include:

1. Direct Observation (DO)
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony(WT)
6. Personal Statement(PS)

Unit 006: REPAIR OF LIVESTOCK MECHANIZATION EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Apply safety precautions in Livestock equipment workshop	1.1	Identify protective wears in livestock mechanization equipment workshop.									
	1.2	Apply the safety rules in the workshop.									
	1.3	Identify the precautionary measures when planning for maintenance to avoid total breakdown.									
	1.4	Recognize the benefits of successful maintenance practice.									
LO 2: Identify the methods of maintaining Livestock mechanization equipment.	2.1	Identify types of livestock equipment e.g.: • Feeding and milking equipment • Weighing equipment									
	2.2	Recognize the functions of equipment listed in 2.1									
	2.3	Identify the methods for carrying out maintenance of livestock mechanization equipment.									
LO 3: Carryout maintenance of Livestock mechanization equipment	3.1	Identify the Livestock mechanization equipment to be maintained									
	3.2	Select appropriate maintenance method of Livestock mechanization equipment according to: • Daily (routine) maintenance • Preventative maintenance • Planned maintenance • Breakdown maintenance • Shutdown maintenance									
	3.3	Identify parts needed to carry out the maintenance									
	3.4	Carryout maintenance types listed in 3.1 of the part identified									
	3.5	State the benefits derived from each of a successful maintenance method.									
LO 4: Identify feeding and milking equipment	4.1	Identify different livestock feeding and milking equipment.									
	4.2	Recognize the functions of each identified in 4.1 above.									
	4.3	Identify the different livestock milking equipment.									
	4.4	Recognize the functions of each listed in 4.3 above.									

LO 5: Undertake repairs feed conveyance equipment.	5.1	Identify different livestock feed conveyance equipment e.g.: • Forklift • Trolleys • Wheelbarrow • Auger									
	5.2	Identify equipment suitable for the conveyance of each material, e.g.: • Poultry feed • Fish feeds • Hay									
	5.3	Perform repairs of feed conveyance equipment e.g.: • Bulk delivery vehicle • Auger • Endless chain									
LO 6: Perform livestock feeding equipment repair	6.1	Carryout repair of manual livestock feeders									
	6.2	Carryout repair of Automated livestock feeders									
	6.3	Repair livestock water troughs with sensors									
LO 7: Perform livestock milking equipment repair	7.1	Identify faults in livestock milking equipment, locked pipe/hoses, faulty pumps									
	7.2	Recognize faults in different livestock milking machines									
	7.3	Carry out repair of livestock milking machine									
LO 8: Perform repair of livestock weighing equipment	8.1	Identify different types livestock weighing scales									
	8.2	Recognize faults in different livestock weighing equipment									
	8.3	Carryout repair of different types of livestock weighing equipment									
LO 9: Identify livestock health monitoring devices	9.1	Identify different types of livestock health monitoring devices									
	9.2	Recognize faults in different livestock health monitoring devices									
	9.3	Repair faulty livestock health monitoring devices.									
	9.4	Use suitable personal protective equipment during repair activities									

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

Unit 007: MAINTENANCE OF CROP PROCESSING AND STORAGE EQUIPMENT

Unit Reference Number	**AGR/AEM/L1/07**
Level:	**1**
Credit Value:	**2**
Guided Learning Hours:	**20**

Unit Purpose:
This unit provides knowledge for maintenance of crop processing and storage equipment (threshers, decorticators, winnowers, silos, etc.)

Objectives: At the end of this unit, the learner should be able to:

1. Identify crop processing and storage equipment
2. Identify Maintenance of crop processing and storage equipment
3. Perform maintenance of grain moisture content measuring equipment
4. Undertake maintenance of different types of crop dryers

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

Assessment methods to be used include:

1. Direct Observation (DO)
2. Oral questions
3. Question and Answer (QA).
4. Witness Testimony(WT)
5. Personal Statement(PS)
6. Work Products (WP).

Unit 007: MAINTENANCE OF CROP PROCESSING AND STORAGE EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify crop processing and storage equipment	1.1	Identify common crop processing and storage equipment e.g.: • Maize thresher • Winnowers • Sheller • Dehuskers • Groundnut decorticators • Silos • Rhombus, etc.									
	1.2	Identify the functions of crop processing and storage equipment in 1.1									
	1.3	Distinguish between different equipment for crop processing equipment and storage systems									
LO 2: Identify Maintenance of crop processing and storage equipment.	2.1	Identify the processes involved in the maintenance of processing and storage equipment									
	2.2	Recognize faults in each crop processing and storage equipment identified									
	2.3	Carryout basic maintenance of different crop processing equipment and storage systems									
LO 3: Perform maintenance of grain moisture content measuring equipment	3.1	Identify different grain moisture content measuring equipment. E.g. moisture content probe, moisture meter,									
	3.2	Identify faults in various types of moisture content measuring equipment									
	3.3	Carryout basic maintenance of moisture content measuring equipment									
LO 4: Undertake maintenance of different types of crop dryers	4.1	Identify different types of crop dryers e.g. tray dryers, solar dryers, etc									
	4.2	Identify faults in various types of crop dryers									
	4.3	Carryout maintenance of different types of crop dryers.									
	4.4	State the advantages or benefits derived from a successful maintenance system.									
	4.5	Use suitable personal protective equipment throughout all maintenance activities									
Learners Signature: Assessors Signature: IQA Signature (if sampled)			**Date:** Date: Date:								
EQA Signature (if sampled)			**Date:**								

Unit 008: REPAIR OF TYRES AND WHEELS FOR AGRICULTURAL EQUIPMENT

Unit reference number: **AGR/AEM/L1/10**
NSQ level: **1**

Credit value: **2**

Guided learning hours: **20**

Unit Purpose:
This unit is about inspecting agricultural equipment trail tyres and tractor wheels to assess their conditions and determine if routine replacement and maintenance activities would be required. It includes replacement and repair procedures for wheels, tyres and tubes.

Objectives: At the end of this unit, the learner should be able to:
1. Identify Wheels/tyre classification
2. Maintain Tools/equipment for wheels/tyre
3. Repair of Agricultural equipment tyres and wheels

Unit assessment requirements/evidence requirements;
This assessment can only be carried out in a real Agricultural Mechanization workshop environment in which replacement and repair procedures for wheels, tyres, and tubes are carried out.

Assessment method will include
1. Direct Observation (DO)/ oral questions
2. Question and Answer (QA)
3. Practical assessment
4. Witness Testimony (WT)
5. Personal statement (PS)

Unit 008: REPAIR OF TYRES AND WHEELS FOR AGRICULTURAL EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify tractor and agricultural equipment Wheels/tyre classification											
	1.1	Identify various types of tractor and agricultural equipment tyres and wheels classification									
	1.2	Identify tractor and agricultural equipment wheel/tyre data according to manufacturer's specifications.									
	1.3	Use tractor and agricultural equipment wheel/tyre data according to manufacturer's specifications.									
LO 2: Maintain Tools/equipment for tractor and agricultural equipment wheels/tyre											
	2.1	Select tools and equipment used in tractor and agricultural equipment wheels/tyre repairs. e.g.: • Tyre pressure gauge • Wheel spanner • Jack									
	2.2	Carry out repair and replacement activities using suitable tools and equipment.									
	2.3	Check tractor and agricultural equipment tyre/wheel tools and equipment are safe prior to use.									
	2.4	Store tools in line with workshop procedures									
LO 3: Repair of tractor and agricultural equipment tyres and wheels											
	3.1	Use suitable sources of technical information to support your inspection, repair and replacement of tractor and agricultural equipment tyres and wheels									
	3.2	Operate in a way which minimizes the risk of damage to the tractor and its systems.									
	3.3	Carry out all inspection, repair and replacement activities using • The correct inspection technique • The correct type and size of component • Suitable tools and equipment									
	3.4	Check inflation pressure of tyres are within limit specified									
	3.5	Store tyres and wheels in line with workplace procedures.									

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

Unit 009: COMMUNICATION AND INTERPERSONAL SKILLS

Unit Reference Number: AGR/AEM/L1/08
Level: 1
Credit Value: 1
Guided Learning Hours: 10

Unit Purpose: This unit specifies the competencies required to demonstrate good communication and interpersonal skills. It involves the ability to read and understand documented instructions and the ability to know how to communicate respectfully when in a bad mood or under pressure.

Objectives:

At the end of this unit, the learner should be able to:

1. Understand the concept of communication
2. Understand signs and symbols used to communicate
3. Understand information from any given document.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in real workplace environment in which Tractor services and repair operations are carried out. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)/oral questions
2. Question and Answer (QA).
3. Personal Statement (PS).
4. Reflective Journal (RJ).

Unit 009: COMMUNICATION AND INTERPERSONAL SKILLS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.				
LO 1: Understand the concept of communication	1.1	Define communication.										
	1.2	Know the different types of communication. E.g. verbal, non-verbal, written, visual, listening										
	1.3	Identify factors to be considered when using each method in 1.2. e.g. preference, characteristic, expectations										
LO 2: Understand signs and symbols used to communicate.	2.1	State the reasons for using signs and symbols in workshops, offices and public places.										
	2.2	Explain why good communication is important.										
	2.3	Draw signs and symbols commonly used in work spaces.										
	2.4	Interpret signs and symbols commonly used in work spaces.										
LO 3: Understand information from any given document.	3.1	Comprehend information from:- • charts • log books • warning instructions • manuals • operation procedures, etc.										
	3.2	State reasons for good understanding of information given in the documents in 3.1.										
	3.3	Apply steps necessary when skipping through bulky information manuals.										

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

Unit 010: OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT

Unit Reference Number:	**AGR/AEM/L1/09**
Level:	**1**
Credit Value:	**1**
Guided Learning Hours:	**10**

Unit Purpose: This unit specifies the competencies required to demonstrate understanding of safe work practices. It involves learning about workplace safety, correct use of signs and symbols, identifying and reducing risks of hazards in the work environment.

Objectives: At the end of this unit, the learner should be able to:

1. Identify the various safe working Practices and Instructions
2. Identify Safety Hazards and risks
3. Identify the safe work habit and clean work environment

Unit assessment requirements/ evidence requirement

Assessment must be carried out in real workplace environment in which Tractor services and repair operations are carried out. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO).
2. Question and Answer (QA).
3. Professional Discussion (PD).
4. Reflective Journal (RJ).
5. Witness Testimony(WT)
6. Personal Statement(PS)

Unit 010: OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT

LEARNING OBJECTIVE (LO) The learner will		**PERFORMANCE CRITERIA The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Identify the various safe working Practices and Instructions	1.1	Identify safety work practice and instructions.									
	1.2	Identify safety signs and symbols.									
	1.3	Explain safety signs and symbols correctly.									
	1.4	Describe how to work in accordance with health and safety best practices.									
LO 2: Identify Safety Hazards and risks	2.1	Identify various work environment hazards.									
	2.2	Identify ways to avoid common workplace hazards									
	2.3	Identify methods to reduce the risk of work hazards.									
LO 3: Identify the safe work habit and clean work environment	3.1	Identify the safe access and exit routes in the work environment.									
	3.2	Apply safe work habit and clean work environment.									
	3.3	Perform how to dispose all wastes appropriately to designated waste facilities									

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

Unit 011: TEAM WORK

Unit reference number: AGR/AEM/L1/011
NSQ level: 1
Credit value: 1
Guided learning hours: 10

Unit Purpose:
The purpose of this unit is to acquaint the learner with skills, knowledge and understanding required to develop team spirit and positive working relationships.

Objectives: At the end of this unit, the learner should be able to:
1. Comply with organizational policies
2. Show responsibilities within the team
3. Understand working relationship with colleagues

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

Assessment method will include:
1. Direct Observation (DO)
2. Oral questions (DO)
3. Question and Answer (QA)
4. Witness Testimony (WT)
5. Personal statement (PS)

Unit 011: TEAM WORK

LEARNING OBJECTIVE (LO) The learner will		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Comply with organizational policies	1.1	Recognize organizational code of conduct.									
	1.2	Use organizational code of practice.									
	1.3	Work In line with organizational standard and structure.									
LO 2: Show Responsibilities within the team											
	2.1	Recognize own role and responsibilities within the team.									
	2.2	Perform individual tasks in line with the team rules and regulations.									
	2.3	Participate effectively in teamwork.									
LO 3: Understand working relationship with colleagues											
	3.1	Identify the need for developing positive relationship with colleagues.									
	3.2	Recognize the importance of relating with other people in a way that makes them feel valued and respected.									
	3.3	Assist team members when required.									
	3.4	Report to the appropriate personnel when request/requesting for assistance fall outside area of responsibility.									
	3.5	Communicate information to colleagues about own work that might affect others.									

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

NATIONAL SKILLS QUALIFICATION

AGRICULTURAL EQUIPMENT MECHANICS

LEVEL 2

FEBRUARY, 2025

NATIONAL SKILLS QUALIFICATION
AGRICULTURAL EQUIPMENT MECHANICS
LEVEL 2

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification is aimed at developing a learner as Agricultural Equipment Mechanic 2, and shall be expected to have knowledge and competences in the use and operation of modern farm machinery in tilling, planting, etc.

QUALIFICATION OBJECTIVES

To achieve this qualification, the learner should be able to:

- Use fastening techniques in tractor service repair operations.
- Carry out communication and interpersonal relationships at workplace.
- Carry out health and safety procedures at the workplace.
- Perform the maintenance of farm machinery equipment for planting and transplanting operations.
- Perform the repairs and maintenance of crop protection equipment.
- Perform the repairs and maintenance of harvesting equipment.
- Perform the maintenance of crop processing equipment.
- Perform periodic maintenance of tractors
- Know workshop organization and management
- Perform wheel balancing and alignment of tractor tyres and wheels

MANDATORY UNITS

S/No	Reference Number	Units	Credit Value	Guided Learning Hours
1	**AGR/AEM/L2/01**	**Fastening Techniques used in Tractor service and repair operation**	**3**	**30**
2	**AGR/AEM/L2/02**	**Communication and Interpersonal Skills II**	**1**	**10**
3	**AGR/AEM/L2/03**	**Occupational Health and Safety II**	**2**	**20**
4	**AGR/AEM/L2/04**	**Team Work**	**1**	**10**
Total Credit Hours			**7**	**70**

OPTIONAL UNITS

S/No	Reference Number	Units	Credit Value	Guided Learning Hours
5	**AGR/AEM/L2/05**	**Repair of Planting and Transplanting Equipment**	**3**	**30**
6	**AGR/AEM/L2/06**	**Repair of Crop Protection Equipment**	**3**	**30**
7	**AGR/AEM/L2/07**	**Repair of Harvesting and Threshing Equipment**	**3**	**30**
8	**AGR/AEM/L2/08**	**Repair of Crop processing equipment**	**3**	**30**
9	**AGR/AEM/L2/09**	**Periodic Maintenance & Repair of Tractors**	**3**	**30**
10	**AGR/AEM/L2/010**	**Workshop organization and management**	**2**	**20**
11	**AGR/AEM/L2/011**	**Tractor Wheel Balancing and Alignment Operation**	**4**	**40**
Total Credit Hours			**21**	**210**

NOTE: This is a 29-credit unit qualification. To achieve this qualification; Learners are required to achieve all credits in the mandatory units and at least five (5) from the optional units. Each Credit is equivalent to 10 Guided Learning Hours (GLH). The Total Learning Hours will therefore consist of the GLH plus the independent learning hours of the candidate, which is generally 50% – 150% of the GLH. The actual Total Learning Hours for each Credit will then be a minimum of 15 hours.

Unit 001: FASTENING TECHNIQUES USED IN TRACTOR SERVICES AND REPAIR OPERATIONS

Unit reference number: AGR/AEM/L2/02
NSQ level: 2
Credit value: 3
Guided learning hours: 30

Unit Purpose:
This unit is about joining materials effectively using metal joining and fastening techniques.

Objectives:
At the end of this unit, the learner should be able to:
1. Identify safety requirements in metal joining /fastening
2. Use tools and equipment for metal joining operations
3. Carry out Metal Joining and fastening

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

Assessment method will include
1. Direct Observation (DO) / oral questions
2. Question and Answer (QA)
3. Practical assessment
4. Witness Testimony (WT)
5. Personal statement (PS)

Unit 001: FASTENING TECHNIQUES USED IN TRACTOR SERVICES AND REPAIR OPERATIONS

LEARNING OBJECTIVE (LO) The learner will		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No			
LO 1: Identify Safety requirements in metal joining/fastenig	1.1	Identify safety precautions required in metal joining and fastening									
	1.2	Identify the procedures involved in metal joining and fastening operations									
	1.3	Use the appropriate Personal Protective Equipment (PPE) when carrying out metal joining operations.									
	1.4	Carry out metal joining and fastening operations following Health and Safety requirements.									
LO 2: Use tools and equipment for metal joining operations											
	2.1	Select tools and equipment for carrying out metal joining operations.									
	2.2	Ensure that the tools, equipment and PPE required are in a safe Working condition.									
	2.3	Ensure suitability of tools and material before use.									
	2.4	Use correct tools and equipment for carrying out metal joining operations									
LO 3: Carry out Metal Joining and fastening											
	3.1	Prepare material and align to enable suitable joint to be achieved.									
	3.2	Treat lapping or meeting parts before joining.									
	3.3	Set up equipment for metal joining operation									
	3.4	Identify and remedy joint defects.									
	3.5	Visual inspect integrity of the joint(s).									
	3.6	Carry out metal joining operations									
	3.7	Identify common fastener failures									
	3.8	Protect the repaired area to prevent corrosion where applicable.									
	3.9	Ensure that the tools, equipment and PPE required are in a safe working condition.									

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

Unit 002: COMMUNICATION AND INTERPERSONAL SKILLS

Unit Reference Number: AGR/AEM/L2/02
Level: 2
Credit Value: 1
Guided Learning Hours: 10

Unit Purpose: To establish a quality communication system that is responsive and subject to change in meeting workers and employers need, in work environment It involves the ability to read and understand documented instructions and the ability to know how to communicate respectfully when in a bad mood or under pressure.

Objectives:
At the end of this unit, the learner should be able to:
1. Identify the importance of good communication
2. Demonstrate how to follow documented instructions
3. Identify how to create documented instructions

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

Assessment methods to be used include:
1. Direct Observation (DO)/Oral question
2. Question and Answer (QA).
3. Professional Discussion (PD).
4. Reflective Journal (RJ).
5. Witness Testimony (WT)

Unit 002: COMMUNICATION AND INTERPERSONAL SKILLS

LEARNING OBJECTIVE The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify the importance of good communication	1.1	Identify reasons why good communication is important.									
	1.2	Identify ways to communicate effectively.									
	1.3	Exhibit patience and a mild demeanour while communicating with colleagues, managers and clients.									
	1.4	Speak in a professional manner.									
	1.5	Use respectful body language even when in a bad mood or while under pressure.									
	1.6	Use a simple verbal means to pass on necessary information									
	1.7	Identify and explain symbols and signs appropriately									
LO 2: Demonstrate how to follow documented instructions	2.1	Read and accurately follow steps outlined in documents.									
	2.2	Interpret documented instructions.									
	2.3	Identify specific class definitions in documented instructions.									
	2.4	Use information sources to address challenges in a work environment.									
	2.5	Communicate findings in accordance to procedure in a work environment.									
LO 3: Identify how to create documented instructions	3.1	Identify what is needed in a documented instruction									
	3.2	Identify how the scope of the documented instruction is valid									
	3.3	Identify the importance of the documented instruction.									

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

Unit 003: Occupational Health, Safety & Environment

Unit Reference Number:	**AGR/AEM/L2/03**
Level:	**2**
Credit Value:	**2**
Guided Learning Hours:	**20**

Unit Purpose: This unit specifies the competencies required to demonstrate understanding of safe work practices. It involves learning about workplace safety, correct use of signs and symbols, first aid and fire-fighting procedures, identifying and reducing risks of hazards in the work environment.

Objectives: At the end of this unit, the learner should be able to:

1. Identify personal health and hygiene
2. Demonstrate Safe working Practices and Instructions
3. Identify Safety Hazards and risks
4. Demonstrate how to take appropriate actions during accident/injury
5. Demonstrate safe work habit and clean work environment
6. Apply prevention of hazards in the work place.

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

Assessment methods to be used include:

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

Unit 003: Occupational Health, Safety & Environment II

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO. 1: Identify personal health and hygiene	1.1	Wear clean, smart and appropriate personal protective equipment (wears).									
	1.2	Work safely at all times, complying with health, safety and environmental regulations and guidelines.									
	1.3	Get cuts, grazes and wounds treated by the appropriate personnel.									
	1.4	Report any form of illness promptly to the appropriate personnel.									
LO 2: Demonstrate Safe working Practices and Instructions	2.1	Identify safe work practice and instructions.									
	2.2	Identify safety signs and symbols.									
	2.3	Use signs and symbols correctly.									
	2.4	Carry out safe work practices and instructions.									
	2.5	Work in accordance with health and safety best practices.									
LO 3: Identify Safety Hazards and risks	3.1	Identify work environment hazards.									
	3.2	Identify various ways to avoid common workplace hazards									
	3.3	Identify methods to reduce the risk of work hazards.									
LO 4: Demonstrate how to take appropriate actions during accident/injury	4.1	Identify basic first aid equipment.									
	4.2	identify the benefits of first aid equipment									
	4.3	Maintain hygienic, safe and secure workplace.									
	4.4	Perform the use of safety equipment in a mobile application work environment.									
LO 5: Demonstrate safe work habit and clean work environment	5.1	Use safe access and exit routes in the work environment.									
	5.2	Have knowledge of safe work habit and clean work environment.									
	5.3	Dispose all wastes appropriately to designated waste facilities									
	6.1	Identify potential hazard(s)									

LO.6: Prevent hazards in the work place	6.2	Identify where information about health, safety and environment in the workplace can be obtained.									
	6.3	Identify the types of hazard in the workplace that may occur and how to deal with them.									
	6.4	Demonstrate hazards that can be dealt with personally and those that should be reported to the appropriate personnel.									
	6.5	Demonstrate how to warn other people about potential hazard(s) and why this is important.									

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

Unit 004: TEAM WORK

Unit reference number: AGR/AEM/L2/04
NSQ level: 2
Credit value: 1
Guided learning hours: 10

Unit Purpose:
This unit is developed to give the learner skills, knowledge and understanding required to develop team spirit and positive working relationship.

Objectives: At the end of this unit, the learner should be able to:
1. Comply with organizational policies
2. Identify responsibilities within the team
3. Have a good working relationship with colleagues

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

Assessment method will include:
1. Direct Observation (DO)
2. Oral questions (DO)
3. Question and Answer (QA)
4. Witness Testimony (WT)
5. Personal statement (PS)
6. Recognition of Prior Learning (RPL)

Unit 004: TEAM WORK

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Compliance with organizational policies	1.1	Work In line with organizational standard and structure.									
	1.2	Use organizational code of practice.									
	1.3	Apply organizational code of conduct.									
LO 2: Perform responsibilities within team	2.1	Recognize own role and responsibilities within the team.									
	2.2	Perform individual tasks in line with the team rules and regulations.									
	2.3	Participate effectively in teamwork.									
LO 3: Develop working relationship with colleagues	3.1	Identify the need for developing positive relationship with colleagues.									
	3.2	Recognize the importance of relating with other people in a way that makes them feel valued and respected.									
	3.3	Assist team members when required.									
	3.4	Report to the appropriate personnel when request/requesting for assistance falls outside area of responsibility.									
	3.5	Communicate information to colleagues about own work that might affect others.									

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

Unit 005: REPAIR OF PLANTING AND TRANSPLANTING EQUIPMENT

Unit Reference Number: AGR/AEM/L2/05
Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit provides for the maintenance of planting and transplanting equipment
Objectives:
At the end of this unit, the learner should be able to:

1. Identify equipment for planting and transplanting
2. Recognize appropriate methods for maintenance
3. Carryout maintenance of planting and transplanting equipment

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

Assessment methods to be used include:
1. Direct Observation (DO)
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony(WT)
6. Personal Statement(PS)

Unit 005: REPAIR OF PLANTING AND TRANSPLANTING EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify equipment for planting and transplanting	1.1	Identify types of planting and transplanting equipment; • Seed drills • Precision planter • Transplanters									
	1.2	Identify the different accessories attached to planting and transplanting equipment									
	1.3	Identify parts of planting and transplanting equipment									
LO 2: Recognize appropriate methods for maintenance	2.1	Identify maintenance strategy: • Daily (routine) • Preventive • Planned • Breakdown and • Shutdown.									
	2.2	Select appropriate maintenance strategy.									
	2.3	Identify protective wears in the workshop.									
	2.4	Identify the precautionary measures when planning for maintenance to avoid total breakdown									
	2.5	Recognize the benefits derived from a successful maintenance system.									
LO 3: Carryout maintenance of planting and transplanting equipment	3.1	Identify the challenges associated with the planting and transplanting equipment									
	3.2	Perform the maintenance of planting and transplanting equipment,e.g.: • Planter metering device, • Drive mechanism									
	3.3	Use tools and equipment for a particular job.									
	3.4	Apply safety and work ethics throughout all maintenance activities.									

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

Unit 006: REPAIR OF CROP PROTECTION EQUIPMENT

Unit Reference Number: AGR/AEM/L2/06
Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit provides knowledge for the operation of Crop Protection Equipment (such as hand sprayers, boom sprayers and crop dusters)

Objectives: At the end of this unit, the learner should be able to:
1. Identify sprayers and its working principles
2. Apply safety precautions in carrying out maintenance of sprayers
3. Perform maintenance of crop protection equipment
4. Select appropriate method for the repairs of hand sprayer, boom sprayers and crop dusters.
5. Carryout repairs of hand sprayer, boom sprayers and crop dusters

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

Assessment methods to be used include:
1. Direct Observation(DO)
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Assignment (ASS)

Unit 006: REPAIR OF CROP PROTECTION EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify sprayers and its working principles	1.1	Identify the working principles of common types of hand-sprayers, Knapsack sprayer, boom sprayers and crop dusters.									
	1.2	Identify the maintenance requirements of these spraying equipment									
	1.3	Identify the different types of sprayers e.g.: • Boom sprayer • Knapsack sprayer • Electro dyne sprayer and • ULV's and • Air sprayers • Crop dusters									
LO 2: Apply safety precautions in carrying out maintenance of sprayers	2.1	Identify common types of chemicals used in crop protection practices. E.g. pesticides									
	2.2	Classify the types of agro-chemicals based on time of application: • Pre- emergence • Emergence • Post-emergence									
	2.3	Identify environmental effects during crop protection operation									
	2.4	Identify the protective devices to be used; • Nose mask • Apron • Face shield • Boots • Gloves									
	2.5	Wear protective clothing before spraying									
	2.6	Ensure equipment are properly wash and dry after usage.									
	2.7	Store the equipment in safe place after use.									
LO 3: Perform maintenance of crop protection equipment.	3.1	Identify type of maintenance to be carried out									
	3.2	Identify the maintenance requirements of crop protection equipment									
	3.3	Dismantle crop protection equipment									

	3.4	Carryout maintenance of the defective parts e.g clocked nozzles, blocked filters, faulty pumps									
	3.5	Re-assemble crop protection equipment									
	3.6	Test run the crop protection equipment									
LO 4: Select an appropriate method for repairs of hand sprayers, Knapsack, boom sprayers and crop dusters	4.1	Identify the importance of sprayer repairs									
	4.2	Apply safety precautions in sprayer repairs									
	4.3	Use tools and equipment to carry out sprayer repair.									
	4.4	Apply safety in handling tools for sprayers repair									
LO 5: Carryout repairs of hand sprayers, knapsack, boom sprayers and crop dusters	5.1	Select appropriate sprayer strategy for repairs									
	5.2	Identify faults to be repaired									
	5.3	Carry out repairs of the sprayer equipment									
	5.4	Identify protective wears in the workshop.									
	5.5	Identify the types of protective wears.									
	5.6	Apply the safety rules in the workshop									

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

Unit 007: REPAIR OF HARVESTING AND THRESHING EQUIPMENT

Unit Reference Number: AGR/AEM/L2/07
Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit provides knowledge for repair of different types of harvesters and threshers

Objectives:
At the end of this unit, the learner should be able to:

1. Identify working principles for harvesting forage and crop and grass
2. Identify adjustment and maintenance procedure of harvesters and threshers
3. Recognize appropriate method for repairs of harvesting machine
4. Carryout Repairs of harvesting machine
5. Carryout maintenance of Threshing machine

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

Assessment methods to be used include:

1. Direct Observation DO
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Professional Discussion (PD)

Unit 007: REPAIR HARVESTING AND THRESHING EQUIPMENT

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Identify the working principles of harvesting/threshing equipment	1.1	Identify types of harvesting and threshing equipment used for harvesting forage, grain and cutting grass									
	1.2	Identify the working principles for: • Harvesting forage • Grain • Cutting grass									
	1.3	Identify the challenges associated with the working principles of harvesting forage, Grain and grass.									
	1.4	Compare the different processes of harvesting: • Forage • Grain • Grass									
LO 2: Identify adjustment and maintenance procedure of harvesters/threshers.	2.1	Distinguish between the operations of a harvester and threshers.									
	2.2	Carry out adjustments of harvesters and threshers; cylinder concave clearance, fan air intake, volume adjustment									
	2.3	Identify adjustment and maintenance procedures of harvesters and threshers.									
LO 3: Recognize appropriate method for repairs of harvesting/threshing machine	3.1	Identify the importance of repairs of harvesting/threshing machine									
	3.2	Identify the appropriate tool for repairs of harvesting/threshing machine									
	3.3	Identify the required repairs and carry out the repairs									
	3.4	Use tools and equipment in line with manufacturer's specification.									
	3.5	Apply safety and work ethics throughout the repair activities.									
LO 4: Carryout Repairs of harvesting/threshing machine	4.1	Perform repairs of harvesting/threshing machine.									
	4.2	Apply safety in storing and securing tools.									
	4.3	Store the parts and tools appropriately									
	4.4	Perform all repairs activities following manufacturers' instructions, your									

		workplace procedures and Health, Safety and Environment legal requirements									
LO 5: Carry out maintenance on Harvesting/Threshing machine.	5.1	Perform repairs of harvesting/threshing machine.									
	5.2	Apply safety in storing and securing harvesting/threshing tools.									
	5.3	Store the parts and tools appropriately									
	5.4	Perform all repair activities following manufacturers' instructions, your workplace procedures and Health, Safety and Environment legal requirements									

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

Unit 008: REPAIR OF CROP PROCESSING AND STORAGE EQUIPMENT

Unit Reference Number: AGR/AEM/L2/008
Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit provides for the repair of crop processing and storage equipment

Objectives: At the end of this unit, the learner should be able to:
1. Identify crop processing and storage equipment
2. Identify faulty crop processing and storage equipment
3. Carryout repair and maintenance of crop processing and storage

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which crop processing and storage equipment is carried out.

Assessment methods to be used include:
1. Direct Observation (DO)
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Personal Statement (PS)

Unit 008: REPAIR OF CROP PROCESSING AND STORAGE EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify crop processing and storage equipment	1.1	Identify types of crop processing and storage equipment e.g.,: • Crop Processing: threshers, hammer mills, dryers, washing machine; • Storage: rhumbus, Silos									
	1.2	Identify the functions of crop processing and storage equipment									
	1.3	Identify the working principles of the equipment mentioned above									
Identify faulty crop processing and storage equipment	2.1	Select repairs and maintenance methods of crop processing and storage equipment according to daily (routine) maintenance and preventative maintenance									
	2.2	Identify parts needed to carry out the repairs and maintenance									
	2.3	Procure parts required for repairs and maintenance									
	3.2	State the functions of each of the repairs and maintenance method.									
	3.3	Identify the precautions and planning techniques for shutdown maintenance.									
LO 3: Carryout repair and maintenance of crop processing and storage equipment	3.1	Identify the faults in crop processing and storage equipment									
	3.2	Select appropriate tools for the repair and maintenance of crop processing and storage equipment.									
	3.3	Perform repair and maintenance of the crop processing and storage equipment									
	3.4	Identify protective wears for the repair and maintenance of crop processing and storage equipment.									
	3.5	Test run crop processing and storage equipment									

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

Unit 009: PERIODICAL MAINTENANCE OF FARM TRACTORS

Unit Reference Number: AGR/AEM/L2/009
Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit is about carrying out minor repair and periodical maintenance of Farm Tractors

Objectives: At the end of this unit, the learner should be able to:

1. Identify maintenance of farm tractors
2. Identify preventive maintenance of farm tractors
3. Identify routine maintenance
4. Carry out periodic maintenance

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

Assessment methods to be used include:

1. Direct Observation (DO)
2. Oral questions
3. Question and Answer (QA)
4. Work Products (WP).
5. Witness Testimony

Unit 009: PERIODIC MAINTENANCE OF FARM TRACTORS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify types of maintenance of farm tractors.	1.1	Identify types of maintenance to be carried out on farm tractors. e.g.: • Routine maintenance • Preventive maintenance									
	1.2	Differentiate between preventive and routine maintenance of farm tractors.									
	1.3	Identify operators manuals on maintenance									
LO 2: Identify the different preventive maintenance of Tractors	2.1	Identify preventive maintenance, e.g. • Weekly • Daily.									
	2.2	Identify parts of tractors that require preventive maintenance									
	2.3	Identify tools used in preventive maintenance									
LO 3: Identify the different routine maintenance	3.1	Identity routine maintenance, e.g: • 50hrs • 150hrs • 250hrs • 500hrs									
	3.2	Identify tractor parts that require routine maintenance									
	3.3	Identify tools used in routine maintenance									
LO 4: Carry out periodic maintenance	4.1	Identify types of maintenance to be carried out e.g. see 3.1 above									
	4.2	Select tools use for specific maintenance									
	4.3	Perform the maintenance required.									
	4.4	Test run the tractors									
	4.5	Record the maintenance in service book									

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

Unit 010: WORKSHOP ORGANISATION AND MANAGEMENT

Unit reference number: AGR/AIM/L2/010
NSQ level: 2
Credit value: 3
Guided learning hours: 30

Unit Purpose:
This unit is to provide learner with the knowledge and skills to competently carryout effective work planning and administration in a tractor workshop.

Objectives: At the end of this unit, the learner should be able to:

1. Identify workshop Records
2. Identify Workshop Job Related Records
3. Carryout Procurement activities

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

Assessment method will include
1. Direct Observation (DO)/ oral questions
2. Question and Answer (QA)
3. Practical assessment
4. Witness Testimony (WT)
5. Personal statement (PS)
6. Work product

Unit 010: WORKSHOP ORGANISATION AND MANAGEMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1 Identify Workshop Records	1.1	Identify various records used in a workshop: • Receipts • Invoices • Inventory									
	1.2	Identify procedures for preparing various records used in the workshop.									
	1.3	Apply procedures for safe and proper financial records keeping.									
LO 2: Identify Workshop job Related Records	2.1	Identify reasons for keeping job related records.									
	2.2	Identify various job related records used in the workshop: • job cards • requisition forms • purchase order forms • workshop delivery forms, etc.									
	2.3	Identify procedures for preparing various job related records used in the workshop.									
	2.4	Identify procedures for safe and proper job related records keeping.									
LO 3: Identify Procurement activities	3.1	Observe equipment and material movement.									
	3.2	Identify workshop procurement procedures for materials, tools in workshop.									
	3.3	Follow procedures for procuring materials, tools and equipment using: • Manuals and reference materials • Requests and approvals • Order placements • Reception of goods and items • Payments • Storage									

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

Unit 011: TRACTOR WHEEL BALANCING AND ALIGNMENT OPERATIONS

Unit reference number: AGR/AEM/L2/012
NSQ level: 2
Credit value: 4
Guided learning hours: 40

Unit Purpose:
This unit is designed to provide the learner with the skills of wheel balancing and alignment to meet the required rotational specification.

Objectives: At the end of this unit, the learner should be able to:

1. Understand Wheel balancing operations
2. Identify Wheel balancing tools and equipment
3. Carry out Pre-balancing checks
4. Perform Wheel balancing procedures
5. Perform post balancing checks
6. Understand Wheel Alignment Operations
7. Identify Wheel Alignment Tools and Equipment
8. Carryout Alignment Pre-Checks
9. Perform Wheel Alignment Procedures
10. Carryout Alignment Post Checks

Unit assessment requirements/evidence requirements
This assessment can be carried out in an agricultural mechanization workplace or similar environment in which wheel balancing operations are carried out , where weights and counter-weights are available.

Assessment method will include
1. Direct Observation (DO) / oral questions
2. Question and Answer (QA)
3. Practical assessment
4. Witness Testimony (WT)
5. Personal statement (PS)
6. Work product
7. Recognition of Prior Learning

Unit 011: TRACTOR WHEEL BALANCING AND ALIGNMENTS OPERATIONS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Understand Wheel balancing operations											
	1.1	Differentiate between wheel alignment and balancing.									
	1.2	Define the following wheel balancing terms: • Dynamic unbalance • Static unbalance • Toe-in & Toe-out									
	1.3	State the effects of: • Under inflation of tyres • Over inflation of tyres									
LO 2: Identify Wheel balancing tools and equipment											
	2.1	Identify various wheel alignment tools/equipment correctly.									
	2.2	Ensure that measuring and adjustment tools and equipment are safe and in good working condition.									
	2.3	Store tools and equipment according to manufacturer's specification.									
LO 3: Carry out Pre-balancing checks											
	3.1	List the step-by-step procedures for pre-balancing checks									
	3.2	Conduct wheel balancing pre checks operations.									
	3.3	Apply Health, Safety and Environment requirements									
LO 4: Perform Wheel balancing procedures											
	4.1	Use suitable personal protective equipment									
	4.2	Conduct wheel balancing pre-checks operations.									
	4.3	Identify the various valves on the tyre, e.g.: • Rim size • Width • Tyre classification etc.									
	4.4	Ensure final adjustment and settings									
	4.5	Complete all four wheel balancing operations within the agreed timescale.									

LO 5: Perform post balancing checks											
	5.1	Identify the purpose of post-balancing checks.									
	5.2	List the step-by-step procedures for post-balancing checks.									
	5.3	Carry out post wheel balancing checks to ensure conformity to specifications.									
LO 6: Understand Wheel Alignment Operations	6.1	Explain wheel alignment									
	6.2	State the purpose of the steering and suspension system.									
	6.3	State reasons for tyre wear.									
	6.4	State the function of the following alignment terms: • Castor • Camber • King Pin Inclination • Steering Angle Inclination • Toe-in & Toe-out.									
LO 7: Identify Wheel Alignment Tools and Equipment	7.1	Identify various wheel alignment tools/equipment correctly.									
	7.2	Ensure that measuring and adjustment tools and equipment are safe and in good working condition.									
	7.3	Store tools and equipment according to manufacturer's specification.									
LO 8: Carryout Alignment Pre-Checks	8.1	Identify the purpose of pre-alignment checks									
	8.2	List the step-by-step procedures for pre-alignment checks									
	8.3	Conduct all wheel alignment pre checks and wheel alignment operations following the correct technical data the manufacturer's instructions									

		your workplace procedure Health, Safety and Environment requirements.									
LO 9: Perform Wheel Alignment Procedures	9.1	Use suitable personal protective equipment and motor vehicle coverings throughout all wheel alignment operations.									
	9.2	Conduct all wheel alignment pre checks and four wheel alignment operations following the correct technical data the manufacturer's instructions Workplace procedure Health, Safety and environment requirements.									
	9.3	Perform adjustment and settings within the recommended tolerance levels.									
	9.4	Carry out wheel alignment operations within the agreed timescale.									
LO 10: Carryout Alignment Post Checks	10.1	State the reasons for carrying out post-alignment checks.									
	10.2	List the step-by-step procedures for post-alignment checks.									
	10.3	Perform post wheel alignment checks.									

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

NATIONAL SKILLS QUALIFICATION

AGRICULTURAL EQUIPMENT MECHANICS

LEVEL 3

FEBRUARY, 2025

NATIONAL SKILLS QUALIFICATION
AGRICULTURAL EQUIPMENT MECHANICS
LEVEL 3

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification is designed to produce a trainee who should be able to exhibit skills and knowledge necessary to fix tractors, harvesters, and other farm equipment. The candidate should be able to demonstrate skills and competences required at identifying and diagnosing machine problems, farm and field associated problems, and develop strategies and solutions to remedy them.

QUALIFICATION OBJECTIVES

To achieve this qualification, the learner should be able to:

- Apply Common Hand Tools for Workshop Practice
- Communicate effectively and have interpersonal relationship skills
- Perform occupational health and safety / Ergonomics at work place
- Work in a team
- Repair and carry out maintenance of equipment for land clearing, development and reclamation.
- Repair and carry out maintenance of equipment for fertilizer and organic manure application.
- Repair and carry out maintenance of harvesting equipment.
- Repair and carry out maintenance of farm waste handling equipment.
- Handle the repair of power train
- Build good customer relation

MANDATORY UNITS

S/No	Reference Number	NOS Title	Credit Value	Guided Learning Hours
1	AGR/AEM/L3/01	Application of Common Hand Tools for Workshop Practice	4	40
2	AGR/AEM/L3/02	Communication and Interpersonal Skills	2	20
3	AGR/AEM/L3/03	Occupational Health, Safety & Environment	2	20
4	AGR/AEM/L3/04	Teamwork	1	10
Total			09	90

OPTIONAL UNITS

S/No	Reference Number	NOS Title	Credit Value	Guided Learning Hours
5	AGR/AEM/L3/05	Repair of Land clearing, development and reclamation equipment	4	40
6	AGR/AEM/L3/06	Repair of Fertilizer and organic manure application equipment	4	40
7	AGR/AEM/L3/07	Repair of Harvesting Equipment	5	50
8	AGR/AEM/L3/08	Repair of Farm waste handling equipment	5	50
9	AGR/AIM/L3/09	Repair Power Train	8	80
10	AGR/AIM/L3/010	Customer Relation	3	30
Total			29	290

NOTE: This is a 36-credit unit qualification. To achieve this qualification; Learners are required to achieve all credits in the mandatory units and at least five (5) from the optional units. Each Credit is equivalent to 10 Guided Learning Hours (GLH). The Total Learning Hours will therefore consist of the GLH plus the independent learning hours of the candidate, which is generally 50% – 150% of the GLH. The actual Total Learning Hours for each Credit will then be a minimum of 15 hours.

Unit 01: APPLICATION OF COMMON HAND TOOLS FOR WORKSHOP PRACTICE

Unit Reference Number: AGR/AEM/L3/01
Level: 3
Credit Value: 4
Guided Learning Hours: 40

Unit Purpose:
This unit is about application of hand tools in the workshop and the farm.

Objectives: At the end of this unit, the learner should be able to:

1. Identify hand tools used for specific jobs/repairs in the workshop
2. Select appropriate hand tool for a particular job/repair in the workshop.
3. Carryout basic jobs/ repairs with the identified hand tools.
4. Maintain hand tools using appropriate techniques.
5. Store hand tools in accordance with manufacturers/standard operating procedures
6. Apply safety measures of handling tools.

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

Assessment methods to be used include:

1. Direct Observation DO
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Personal Statement(PS)
6. Witness Testimony(WT)

Unit 01: APPLICATION OF COMMON HAND TOOLS FOR WORKSHOP PRACTICE

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify hand tools used for specific jobs/repairs in the workshop.	1.1	Identify the different types of hand tools commonly used in the workshop e.g.: • Wrench • Spanners • Hammers • Mallets • Screwdrivers • Pliers e.t.c.									
	1.2	Identify the functions of different hand tools listed above.									
	1.3	Apply the safety procedure when using the stated hand tools.									
LO 2: Select appropriate hand tool for a particular job/repair in the workshop.	2.1	Identify the right tools for the right job e.g.,: • Cutting and Scraping • Finishing • Loosening									
	2.2	Identify the physical features of the hand tools									
	2.3	Identify how they would be handled									
LO 3: Carryout basic jobs/ repairs with the identified hand tools.	3.1	Undertake the following in the workshop for metallic and non-metallic materials: • Cutting • Scraping; and • Finishing.									
	3.2	Identify safety procedure in using the tools									
	3.3	Identify the protective devices needed when using the tools, e.g., PPEs									
LO 4: Maintain hand tools using appropriate techniques.	4.1	Carry out tools maintenance requirements using the following: • Lubrication • Cleaning and decontamination • Tightening and adjustment • Replacement of consumable components • Repair/replacement of worn, malfunctioning or damaged components/parts • Sharpening.									
	4.2	Carry out the maintenance of different hand tools									

	4.3	Apply safety procedure in using the hand tools									
LO 5: Store hand tools in accordance with manufacturers/standard operating procedures.	5.1	Identify requirements for storage of tools.									
	5.2	Identify different storage systems of tools.									
	5.3	Identify the factors considered for short and long term storage of tools.									
	5.4	Mention reasons for rendering tools ineffective while in storage.									
LO 6: Apply safety measures in handling tools.	6.1	Identify the safety measures required in handling hand tools in the workshop, e.g.: • Selection, use and maintenance of personal protective equipment (PPE) • Selection of appropriate tools for the task • Correct use, maintenance and storage of tools, equipment and machinery • Correct handling, application, transport and storage of hazardous and non-hazardous materials • Correct manual handling (lifting and transferring) • follow instructions in workplace and standard operating procedures • Housekeeping/clean-up procedures with due consideration to the environment.									
	6.2	Identify the use of a range of PPE (Footwear, head protection, gloves, protective clothing, respirator, face mask/shield, hearing protection and eye protection).									
	6.3	Apply safety procedures									

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

Unit 002: COMMUNICATION AND INTERPERSONAL SKILLS

Unit Reference Number: AGR/AEM/L3/02
Level: 3
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose: This unit specifies the competencies required to demonstrate good communication and interpersonal skills. It involves the ability to read and understand documented instructions and the ability to know how to communicate respectfully when in a bad mood or under pressure.

Objectives:

At the end of this unit, the learner should be able to:

1. Classify the model of communication process.
2. Classify Instructional media.
3. Carry out Non-complex communication system in a work environment
4. Understand factors constituting barriers to effective communication.
5. Know signs and symbols.
6. Use communication methods in a work environment
7. Understand operational manuals.
8. Understand how to document routine tasks.

Unit assessment requirements/ evidence requirements:

This assessment can only be carried out in a real agricultural implements workplace environment. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)
2. Oral questions
3. Question and Answer (QA).
4. Professional Discussion (PD).
5. Reflective Journal (RJ).
6. Personal statement (PS)
7. Project
8. Work product

Unit 002: COMMUNICATION AND INTERPERSONAL SKILLS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Classify the model of communication process.	1.1	Describe forms of communication process.									
	1.2	List examples of communication models.									
	1.3	Classify communication models into types, with relevant examples.									
LO 2: Classify Instructional media.	2.1	Classify instructions into categories.									
	2.2	State importance of instructional media at work environments.									
	2.3	Explain the difference between print and non-print media.									
	2.4	List examples of non-print media.									
LO 3: Carry out Non-complex communication system in a work environment	3.1	Identify and explain symbols and signs appropriately.									
	3.2	Use a simple verbal means to pass on necessary information.									
	3.3	Use non-verbal means to pass on necessary information e.g. body language.									
LO 4: Understand factors constituting barriers to effective communication.	3.1	List the importance of mixed-up messages in communication.									
	3.2	List, with examples, barriers to workshop/ workplace communication.									
	3.3	Explain how physical instructions can impede communication process.									
LO 5: Identify signs and symbols.	5.1	Identify signs and symbols in: • Work place/ workshop. • In Agricultural implements. • On the field. • Operational manuals. • Caution/ warning signs, etc.									
	5.2	Interpret the signs and symbols identified in 5.1.									
	5.3	Identify the importance of signs and symbols in the operation of farm and field implements.									

LO 6: Use of communication methods in a work environment	6.1	Communicate effectively with manager for conducting pre-operational check-ups.									
	6.2	Communicate with accompanied field staff and co-drivers about machine settings, attachment kits, etc.,									
	6.3	Communicate to field owner to capture his requests.									
	6.4	Communicate clearly and effectively on trouble-shooting.									
	6.5	Communicate clearly and effectively on solutions to trouble-shooting problems.									
LO 7: Understand operational manuals.	7.1	Interpret machine spare parts specifications.									
	7.2	Interpret machine operational manuals.									
	7.3	Detect technical information in spare parts specifications.									
	7.4	Detect technical issues in operational manuals.									
LO 8: Understand how to document routine tasks.	8.1	Undertake documentation of daily pre-operational checks and tasks.									
	8.2	Perform daily documentation of trouble-shooting problems and their solutions.									
	8.3	Explain the importance of documentation of tasks and trouble-shooting issues.									

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

Unit 003: OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT

Unit Reference Number: AGR/AEM/L3/03
Level: 3
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose: This unit specifies the competencies required to demonstrate understanding of safe work practices. It involves learning about workplace safety, correct use of signs and symbols, identifying and reducing risks of hazards in the work environment.

Objectives: At the end of this unit, the learner should be able to:

1. Know Personal health and hygiene
2. Demonstrate Safe working Practices and Instructions
3. Identify Safety Hazards and risks
4. Identify how to take appropriate actions during accident/injury
5. Demonstrate safe work habit and clean work environment
6. Prevent hazards in the workplace

Unit assessment requirements/ evidence requirements:
This assessment can be carried out in a real agricultural implements workplace or such similar environments. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation (DO)/oral questions
2. Question and Answer (QA).
3. Professional Discussion (PD).
4. Reflective Journal (RJ).
5. Witness Testimony (WT)
6. Personal statement (PS)
7. Work product(WP)

Unit 003: OCCUPATIONAL HEALTH, SAFETY & ENVIRONMENT

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Know Personal health and hygiene	1.1	Wear clean, smart and appropriate personal protective equipment (wears).									
	1.2	Work safely at all times, complying with health, safety and environmental regulations and guidelines.									
	1.3	Get cuts, grazes and wounds treated by the appropriate personnel.									
	1.4	Report any form of illness promptly to the appropriate personnel.									
LO 2: Demonstrate Safe working Practices and Instructions	2.1	Identify safe work practice and instructions.									
	2.2	Identify safety signs and symbols.									
	2.3	Use signs and symbols correctly.									
	2.4	Carry out safe work practices and instructions.									
	2.5	Work in accordance with health and safety best practices.									
LO 3: Identify Safety Hazards and risks	3.1	Identify work environment hazards.									
	3.2	Identify various ways to avoid common workplace hazards									
	3.3	Identify methods to reduce the risk of work hazards.									
LO 4: Identify how to take appropriate actions during accident/injury	4.1	Identify basic first aid equipment.									
	4.2	Identify the benefits of first aid equipment									
	4.3	Identify how to maintain hygienic, safe and secure workplace.									
	4.4	Identify the uses of safety equipment in a mobile application work environment.									

LO 5: Demonstrate safe work habit and clean work environment	5.1	Use safe access and exit routes in the work environment.									
	5.2	Demonstrate safe work habit and clean work environment.									
	5.3	Dispose all wastes appropriately to designated waste facilities									
LO.6: Prevent hazards in the workplace	6.1	Identify any potential hazards/hazards and deal with these correctly.									
	6.2	Identify where information about health, safety and environment in the workplace can be obtained.									
	6.3	Describe the types of hazard in the workplace that may occur and how to deal with them.									
	6.4	Identify hazards that can be dealt with personally and those that should be reported to the appropriate personnel.									
	6.5	Demonstrate how to warn other people about potential hazards/hazards and why this is important.									
	6.6	Recognise the importance of following the fire safety laws and why it should never be approached unless it is safe to do so.									
	6.7	Describe the organizational security procedures and why these are important.									
	6.8	Identify the importance of reporting all incidents to the appropriate personnel.									

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

Unit 004: **TEAM WORK**

Unit reference number: **AGR/AEM/L3/04**

NSQ level: **3**

Credit value: **1**

Guided learning hours: ` **10**

Unit Purpose:
The purpose of this unit is to impart to the learner, skills, knowledge and understanding required to develop team spirit and positive working relationship.

Objectives: At the end of this unit, the learner should be able to:
1. Comply with organizational policies
2. Carryout Responsibilities within the team
3. Build good Working relationship with colleagues

Unit assessment requirements/ evidence requirements:
This assessment can be carried out in a real agricultural implements workplace or similar work environments. Simulation is not allowed in this unit and level.

Assessment method will include:
1. Direct Observation (DO)
2. Oral questions (DO)
3. Question and Answer (QA)
4. Witness Testimony (WT)
5. Personal statement (PS)
6. Work product (WP)
7. Recognition of Prior Learning (RPL)
8. Professional Discussion (PD)

Unit 004: TEAM WORK

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Comply with organizational policies	1.1	Work in line with organizational standard and structure.									
	1.2	Use organizational code of practice.									
	1.3	Identify organizational code of conduct.									
LO 2: Carryout responsibilities within the team											
	2.1	Recognize own role and responsibilities within the team.									
	2.2	Perform individual tasks in line with the team rules and regulations.									
	2.3	Participate effectively in teamwork.									
LO 3: Demonstrate working relationship with colleagues											
	3.1	Identify the need for developing positive relationship with colleagues.									
	3.2	Recognize the importance of relating with other people in a way that makes them feel valued and respected.									
	3.3	Assist team members when required.									
	3.4	Report to the appropriate personnel when request/requesting for assistance fall outside area of responsibility.									
	3.5	Communicate information to colleagues about own work that might affect others.									

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

Unit 005: REPAIR / MAINTENANCE OF LAND CLEARING, DEVELOPMENT AND RECLAMATION EQUIPMENT

Unit Reference Number: **AGR/AEM/L3/05**
Level: **3**
Credit Value: **4**
Guided Learning Hours: **40**

Unit Purpose:
This unit is designed to provide skills necessary for the repairs and maintenance of equipment for land clearing, development and reclamation.

Objectives: At the end of this unit, the learner should be able to:

1. Identify Land Clearing, development and Reclamation Equipment
2. Identify safety precaution required in the maintenance of land clearing and development equipment
3. Carryout Maintenance of land clearing equipment
4. Carryout repair of land clearing equipment

Unit assessment requirements/ evidence requirements:
This assessment can be carried out in a real agricultural implements' workplace or such similar environments. Simulation is not allowed in this unit and level.

Assessment methods to be used include:

1. Direct Observation DO
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Professional Discussion (PD)
7. Personal Statement (PS)

Unit 005: REPAIR/MAINTENANCE LAND CLEARING, DEVELOPMENT AND RECLAMATION EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify Land Clearing, development and Reclamation Equipment	1.1	Identify Land Clearing, development and Reclamation Equipment, e.g. : • Chain saw • Bulldozers • Graders									
	1.2	Identify functions of the equipment above									
	1.3	Describe equipment use for Land Clearing, development and Reclamation									
LO 2: Identify safety precaution required in maintenance of land clearing development equipment	2.1	Identify safety precautions required in maintenance of land clearing, development and reclamation equipment.									
	2.2	Identify the procedures involved in maintenance of land clearing, development and reclamation equipment									
	2.3	Use the appropriate Personal Protective Equipment (PPE) when carrying out maintenance of land clearing, development and reclamation equipment									
LO 3: Carryout Maintenance of land clearing equipment	3.1	List Land development practices									
	3.2	Identify the equipment to be used in land clearing development and reclamation									
	3.3	Carryout maintenance of land clearing, development and reclamation equipment									
	3.4	Identify the functions and adaptability of land clearing equipment									
LO 4: Carryout repair of land clearing equipment	4.1	Diagnose faults in various land clearing equipment.									
	4.2	Repair faults diagnosed in 4.1 above, e.g.: • Engines • Blades • Chainsaw etc.									
	4.3	Test run the repaired equipment for confirmation of achievement of result or otherwise.									

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

Unit 006: REPAIR OF FERTILIZER AND ORGANIC MANURE APPLICATION EQUIPMENT

Unit Reference Number:	**AGR/AEM/L3/06**
Level:	**3**
Credit Value:	**4**
Guided Learning Hours:	**40**

Unit Purpose:
This unit provides for the repair/maintenance of fertilizer and organic manure application equipment.

Objectives: At the end of this unit, the learner should be able to:

1. Identify fertilizer and organic manure application equipment
2. Maintain fertilizer and organic manure application equipment
3. Select appropriate method for repair/maintaining fertilizer application equipment.
4. Select appropriate method for repair and maintaining Organic manure application equipment.
5. Carryout repair and maintenance of fertilizer application equipment
6. Carryout maintenance of manure application equipment

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

Assessment methods to be used include:

1. Direct Observation DO
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Professional Discussion (PD)
7. Personal Statement (PS)

Unit 006: FERTILIZER AND ORGANIC MANURE APPLICATION EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify Fertilizer and organic manure application equipment	1.1	Identify Fertilizer and organic manure application equipment, e.g. • Broadcasters • Spreaders									
	1.2	Identify functions of the equipment above									
	1.3	Describe equipment use for Fertilizer and organic manure application Equipment									
LO 2: Maintain fertilizer and organic manure application equipment	2.1	Classify maintenance of fertilizer and organic manure application equipment according to: • Daily (routine) maintenance • Preventative maintenance									
	2.2	Identify parts required to carry out the maintenance									
	2.3	Procure the parts identified in 2.2									
LO 3: Select appropriate method for repair/maintaining fertilizer application equipment.	3.1	Identify maintenance strategies e.g.: • Daily • Preventive • Planned Breakdown • Shutdown • Running and • Contract.									
	3.2	Explain each type of maintenance system.									
	3.3	Identify the functions of each of the maintenance system.									
	3.4	Describe the precautions and planning techniques for shutdown maintenance.									
	3.5	Identify the advantages or benefits derived from a successful maintenance system.									
	3.6	Identify the importance of maintenance									
	3.7	Apply safety precautions in maintenance									
	3.8	Maintain fertilizer application equipment									
LO 4: Select appropriate method for repair and maintaining Organic manure application equipment.	4.1	Describe maintenance strategies e.g.: • Daily • Preventive • Planned Breakdown • Shutdown • Running and • Contract.									
	4.2	Identify the characteristics of each type of maintenance system.									
	4.3	Identify the functions of each of the maintenance system.									

	4.4	Identify the advantages or benefits derived from a successful maintenance system.									
	4.5	Identify the importance of maintenance									
	4.6	Apply safety precautions in maintenance									
	4.7	Maintain organic manure application equipment									
LO 5: Carryout repair and maintenance of fertilizer application equipment	5.1	Identify maintenance strategy: • Daily (routine) • Preventive • Planned • Breakdown and • Shutdown.									
	5.2	Select appropriate maintenance strategy									
	5.3	Identify protective wears in the workshop.									
	5.4	Identify the types of protective wears									
	5.5	Apply the safety rules in the workshop									
	5.6	Identify the precautionary measures when planning for maintenance to avoid total breakdown									
	5.7	Identify advantages and benefits derived from a successful maintenance system.									
	5.8	Identify the importance of maintenance									
	5.9	Maintain fertilizer application equipment									
LO 6: Carryout repair and maintenance of manure application equipment	6.1	Identify maintenance strategy : • Daily (routine) • Preventive • Planned • Breakdown and • Shutdown.									
	6.2	Select appropriate maintenance strategy									
	6.3	Identify protective wears in the workshop.									
	6.4	Identify the types of protective wears									
	6.5	Apply the safety rules in the workshop									
	6.6	Identify the precautionary measures when planning for maintenance to avoid total breakdown									
	6.7	Identify advantages and benefits derived from a successful maintenance system.									
	6.8	Identify the importance of maintenance									
	6.9	Maintain manure application equipment									

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

Unit 007: REPAIR OF HARVESTING EQUIPMENT

Unit Reference Number:	**AGR/AEM/L3/07**
Level:	**3**
Credit Value:	**5**
Guided Learning Hours:	**50**

Unit Purpose:
This unit provides for the maintenance of Harvesting Equipment (such as mower, forage harvester, pick-up bailers and combine harvesters)

Objectives: At the end of this unit, the learner should be able to:

1. Maintain common types of mower, forage harvester, pick-up bailers and combine harvesters
2. Select appropriate method for maintaining these harvesters
3. Identify common faults types of mower, forage harvester, pick-up bailers and combine harvesters

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

Assessment methods to be used include:

1. Direct Observation (DO)
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5 Witness Testimony (WT)
6 Professional Discussion (PD)
7 Personal Statement (PS)

Unit 007: REAPIR OF HARVESTING EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Maintain common harvesting equipment	1.1	Identify repairs needed in mower, forage harvester, pick-up bailers and combine harvesters									
	1.2	Identify parts needed to be repaired									
	1.3	Procure the parts identified for repair									
	1.4	Select appropriate tools needed for repairs									
	1.5	Carryout the repair of the harvesting equipment									
	1.6	Test run the harvester									
LO 2: Select appropriate method for maintaining harvesters	2.1	Identify types of maintenance to be carried out on the harvesters									
	2.2	Identify the characteristics of each type of maintenance system.									
	2.3	Identify the functions of each of the maintenance system.									
	2.4	Identify the benefits derived from a successful maintenance system.									
	2.5	Identify the importance of maintenance									
	2.6	Follow safety rules and precautions in maintaining harvesting equipment									
LO 3: Identify common types of faults in harvesting equipment	3.1	Identify faults in common faults in harvesting equipment									
	3.2	Procure the parts identified									
	3.3	Perform Repair of faults identified									

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

Unit 008: REPAIR/MAINTENANCE OF FARM WASTE HANDLING EQUIPMENT

Unit Reference Number: **AGR/AEM/L3/08**
Level: **3**
Credit Value: **5**
Guided Learning Hours: **50**

Unit Purpose:
This unit is about Maintenance of farm waste handling equipment.

Objectives: At the end of this unit, the learner should be able to:
1. Identify farm waste handling equipment.
2. Maintain farm waste handling equipment.
3. Carryout maintenance of farm waste handling equipment
4. Carryout repair of farm waste handling equipment.

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

Assessment methods to be used include:
1. Direct Observation DO
2. Oral questions
3. Question and Answer (QA).
4. Work Products (WP).
5. Witness Testimony (WT)
6. Professional Discussion (PD)
7. Personal Statement (PS)

Unit 008: REPAIR/MAINTENANCE OF FARM WASTE HANDLING EQUIPMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Identify farm waste handling equipment.	1.1	Identify farm waste handling equipment: • Compost Baggers • Dung Scrapers • Bale Wrappers, and • Silage Choppers etc.									
	1.2	Identify the uses of farm waste handling equipment: • (Compost Baggers • Dung Scrapers • Bale Wrappers, and • Silage Choppers etc.									
	1.3	Identify the function of parts of various farm wastes handling equipment.									
LO 2: Maintain farm waste handling equipment.	2.1	Classify maintenance of farm waste handling equipment according to: • Daily (routine) maintenance • Preventative maintenance									
	2.2	Identify the functions of each of the maintenance equipment.									
	2.3	Describe the precautions and planning techniques for shutdown maintenance									
LO 3: Carryout maintenance of farm waste handling equipment	3.1	Select appropriate maintenance strategy									
	3.2	Identify protective wears needed.									
	3.3	Identify the types of protective wears.									
	3.4	Identify the safety rules in maintenance of farm waste handling equipment									
	3.5	Describe the precautionary measures when planning for maintenance to avoid total breakdown									
	3.6	Identify the advantages and benefits derived from a successful maintenance system.									
LO 4:	4.1	Examine farm waste handling equipment e.g.:									

Carryout repair of farm waste handling equipment.		• Compost Baggers • Dung Scrapers • Bale Wrappers, and • Silage Choppers etc.									
	4.2	Carryout repair of parts identified with faults									
	4.3	Test run repaired parts and equipment to confirm successful repair action									

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

Unit 09: REPAIR OF POWER TRAIN

Unit reference number: AGR/AEM/L3/09
NSQ level: 3
Credit value: 8
Guided learning hours: 80

Unit Purpose:
This unit is about identifying and rectifying faults occurring within the powertrain and rolling chassis, inspecting and assessing the conditions and overhauling of the transmission system.

Objectives: At the end of this unit, the learner should be able to:

1. Understand Engine Fundamentals & Operation
2. Identify Engine Components & Systems
3. Identify Engine Tools & Maintenance Procedures
4. Carry out Engine Inspection, Repair, and Performance Testing
5. Transmission & Chassis System Operations and Principles
6. Identify Chassis and Transmission Tools and Equipment
7. Carry out Transmission and Chassis system repair
8. Identify the Final Drive System
9. Identify Tools and Equipment for Final Drive Maintenance
10. Maintain and Repair of Final Drive

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

Assessment method will include

1. Direct Observation DO / oral questions
2. Question and Answer (QA)
3. Practical assessment
4. Witness Testimony (WT)
5. Personal statement (PS)
6. Work product (WP)
7. Recognition of Prior Learning (RPL)
8. Professional Discussion (PD)

Unit 09: REPAIR OF POWER TRAIN

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Understand Engine Fundamentals & Operation											
	1.1	Identify the purpose and function of an engine in agricultural implements.									
	1.2	Identify the major components of an internal combustion engine.									
	1.3	Describe the working principles of different engine types: • Diesel • petrol, etc.									
	1.4	Differentiate between two-stroke and four-stroke engines.									
LO 2: Identify Engine Components & Systems	2.1	Identify the key components of an engine system: • Cylinder • Piston • crankshaft etc.									
	2.2	Identify the function and working of fuel, lubrication, and cooling systems.									
	2.3	Identify different types of air intake and exhaust systems.									
LO 3: Identify Engine Tools & Maintenance Procedures	3.1	Identify tools and equipment used for engine repair and maintenance.									
	3.2	Differentiate between general and special service tools for engine repair.									
	3.3	Apply correct procedures for handling tools and equipment.									
	3.4	Demonstrate safety measures while working with engine components.									
LO 4: Carry out Engine Inspection, Repair, and Performance Testing	4.1	Perform engine diagnostics to identify faults and wear.									
	4.2	Demonstrate dismantling and assembling of an engine system									
	4.3	Apply procedures for repairing and replacing engine components.									
	4.4	Measure and evaluate wear on engine components: • Cylinder bore									

		• Piston rings • Valve seats, etc.									
	4.5	Conduct operational testing to ensure the engine meets manufacturer specifications									
LO 5: Transmission & Chassis System Operations and Principles	5.1	Describe the purpose of transmission systems.									
	5.2	Identify the components of the transmission system.									
	5.3	Identify the components of the chassis system.									
	5.4	Differentiate between transmission and chassis system.									
LO 6: Identify Chassis and Transmission Tools and Equipment											
	6.1	Identify chassis and transmission system tools and equipment.									
	6.2	Differentiate between Special Service Tools from other tools									
	6.3	Use the tools and equipment required, correctly and safely.									
	6.4	Observe manufacturers specification in storing and securing tools and equipment.									
LO 7: Carry out Transmission and Chassis system repair	7.1	Perform Transmission and Chassis system diagnostics to identify faults and wear.									
	7.2	Use suitable personal protective equipment when carrying out repairs.									
	7.2	Carry out all repair activities following: manufacturers' instructions Health, Safety and Environment requirements.									
	7.3	Use the tools and equipment required, correctly and safely throughout all repair activities									
	7.4	Adjust components and units correctly to ensure that they operate to meet system requirements.									
	7.5	Demonstrate procedures for dismantling and assembling a transmission system and its associated components.									
	7.6	Demonstrate procedures for repairing and/or replacing component parts of									

		a transmission system and its associated components.									
	7.7	Apply procedures for measuring and evaluating wear on component parts of the transmission system.									
	7.8	Demonstrate procedures for repairing and replacing automatic transmission system.									
	7.9	Demonstrate procedures for operational testing of automatic transmission system components.									
LO 8: Identify the Final Drive System	8.1	Describe the function and significance of the final drive in agricultural machinery.									
	8.2	Identify the key components of the final drive system.									
	8.3	Identify the working principles of different types of final drives, e.g.: • Planetary • Spur gear, and • Chain drive.									
	8.4	Differentiate between final drives used in tractors and other agricultural implements.									
LO 9: Identify Tools and Equipment for Final Drive Maintenance											
	9.1	Identify tools and equipment used for final drive system maintenance and repair.									
	9.2	Differentiate between standard and special service tools for final drive servicing.									
	9.3	Demonstrate proper handling and safety measures while using tools for final drive repair.									
	9.4	Follow manufacturers' specifications for storing and securing final drive tools and equipment.									
LO 10: Maintain and Repair of Final Drive	10.1	Use appropriate personal protective equipment (PPE) when working on final drive systems.									
	10.2	Follow manufacturer guidelines and safety protocols for servicing the final drive.									

	10.3	Demonstrate correct procedures for dismantling and assembling the final drive system.									
	10.4	Inspect final drive components for wear, damage, and misalignment.									
	10.5	Apply techniques for repairing or replacing worn-out or damaged final drive components.									
	10.6	Measure and evaluate wear on gears, bearings, and shafts in the final drive.									
	10.7	Adjust final drive components to ensure proper power transmission efficiency.									
	10.8	Perform operational testing to verify final drive functionality after repairs.									

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

Unit 010: CUSTOMER RELATIONS IN EQUIPMENT SERVICE & REPAIR WORKSHOP

Unit reference number: **AGR/AEM/L3/010**

NSQ level: **3**

Credit value: **3**

Guided learning hours: **30**

Unit Purpose:
This unit is designed to provide the learner with skills in information retrieval, keeping tracks of records and documents of customers, organization and staff and follow up services.

Objectives: At the end of this unit, the learner should be able to:
1. Know Customers contact/communication
2. Document Data and customer complaint
3. Follow Up Service

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

Assessment method will include:
1. Direct Observation DO/ oral questions
2. Question and Answer (QA)
3. Practical assessment
4. Witness Testimony (WT)
5. Personal statement (PS)
6. Work product
7. Recognition of Prior Learning (RPL)
8. Professional Discussion (PD)

Unit 010: CUSTOMER RELATIONS IN EQUIPMENT SERVICE & REPAIR WORKSHOP

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Know Customers contact/ communication											
	1.1	Gather relevant information from the customer to make an assessment of needs.									
	1.2	Analyze customer's complaints during conversation.									
	1.3	Document customer's requirement and observation made									
LO 2 : Document Data and customer complaint											
	2.1	Carryout accurate identification and clarification of customer needs									
	2.2	Certify that recording system are complete, accurate, in the required format and signed									
	2.3	Provide customers with accurate, current and relevant information on: • Suitable tractors and equipment inspection, • Repair/ replacement of parts • Potential causes of action • The consequences of the action • The estimated cost.									
LO 3 : Follow Up Service											
	4.1	Compile further customer approval where the contracted agreement is likely to be exceeded.									
	4.2	Describe how to get feedback from customers.									
	4.3	Carryout customer satisfaction survey.									
	4.4	Obtain customer feedback on completed jobs.									
	4.5	Analyze customer feedback.									

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

National Skills Qualifications FOR

AGRICULTURAL EQUIPMENT MECHANICS

LEVEL 1, 2 & 3

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