

TRAINING REGULATIONS

AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III



AGRICULTURE, FORESTRY AND FISHERY SECTOR

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Luzon Expressway (SLEX), Taguig City, Metro Manila

*Technical Education and Skills Development Act of 1994
(Republic Act No. 7796)*

Section 22, “Establishment and Administration of the National Trade Skills Standards” of the RA 7796 known as the TESDA Act mandates TESDA to establish national occupational skill standards. The Authority shall develop and implement a certification and accreditation program in which private industry group and trade associations are accredited to conduct approved trade tests, and the local government units to promote such trade testing activities in their respective areas in accordance with the guidelines to be set by the Authority.

The Training Regulations (TR) serves as basis for:

1. Development of curriculum and assessment tools
2. Registration and delivery of training programs; and
3. Establishment of competency assessment and certification arrangements.

Each TR has four sections:

- Section 1 **Definition of Qualification** - describes the qualification and defines the competencies that comprise the qualification.
- Section 2 **The Competency Standards** format was revised to include the Required Knowledge and Required Skills per element. These fields explicitly state the required knowledge and skills for competent performance of a unit of competency in an informed and effective manner. These also emphasize the application of knowledge and skills to situations where understanding is converted into a workplace outcome.
- Section 3 **Training Arrangements** – contain the information and requirements which serve as bases for training providers in designing and delivering competency-based curriculum for the qualification. The revisions to Section 3 entail identifying the Learning Activities leading to achievement of the identified Learning Outcome.
- Section 4 **Assessment and Certification Arrangements** - describe the policies governing assessment and certification procedures for the qualification.

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TRAINING REGULATIONS FOR AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III

Section 1 AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III QUALIFICATION

The **AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III** Qualification consists of competencies that a person must achieve to diagnose and repair electrical systems, engine system, axle system, hydraulic system and transmission system of 4 – wheel drive tractor. It includes competencies on practicing safety measures and waste management. This may be performed by a team of technical personnel or with one or more assistants working with the lead technical personnel.

This Qualification is packaged from the competency map of the Agri-Fishery Sector as shown in Annex A.

The units of competency comprising this qualification includes the following:

Code	BASIC COMPETENCIES
400311319	Lead workplace communication
400311320	Lead small teams
400311321	Apply critical thinking and problem-solving techniques in the workplace
400311322	Work in a diverse environment
400311323	Propose methods of applying learning and innovation in the organization
400311324	Use information systematically
400311325	Evaluate occupational safety and health work practices
400311326	Evaluate environmental work practices
400311327	Facilitate entrepreneurial skills for micro-small-medium enterprises (MSMEs)

Code	COMMON COMPETENCIES
AFF321201	Apply safety measures in farm operations
AFF321202	Use farm servicing tools and equipment
AFF321203	Perform estimation and calculations
AFF321205	Process farm wastes
SOC 413206	Maintain service records
AFF 723201	Conduct Diagnosis
AFF 723202	Perform Shop Maintenance

Code	CORE COMPETENCIES
AFF 723303	Diagnose and Repair Electrical Systems of 4-Wheel Tractor
AFF 723304	Diagnose and Repair Engine System of 4-Wheel Tractor
AFF 723305	Diagnose and Repair Axle System of 4-Wheel Tractor
AFF 723306	Diagnose and Repair Hydraulic System of 4-Wheel Tractor
AFF 723307	Diagnose and Repair Transmission System of 4-Wheel Tractor

A person who has achieved this Qualification is competent to be:

- 4-Wheel Tractor Mechanic
- Senior Mechanic
- 4-Wheel Tractor Servicing Personnel

SECTION 2

COMPETENCY STANDARDS

These guidelines are set to provide the Technical Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for **AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III**.

BASIC COMPETENCIES

UNIT OF COMPETENCY : LEAD WORKPLACE COMMUNICATION

UNIT CODE : 400311319

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to lead in the effective dissemination and discussion of ideas, information, and issues in the workplace. This includes preparation of written communication materials.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Communicate information about workplace processes	1.1 Relevant communication method is selected based on workplace procedures 1.2 Multiple operations involving several topics/areas are communicated following enterprise requirements 1.3 Questioning is applied to gain extra information 1.4 Relevant sources of information are identified in accordance with workplace/ client requirements 1.5 Information is selected and organized following enterprise procedures 1.6 Verbal and written reporting is undertaken when required 1.7 Communication and negotiation skills are applied and maintained in all relevant situations	1.1. Organization requirements for written and electronic communication methods 1.2. Effective verbal communication methods 1.3. Business writing 1.4. Workplace etiquette	1.1 Organizing information 1.2 Conveying intended meaning 1.3 Participating in a variety of workplace discussions 1.4 Complying with organization requirements for the use of written and electronic communication methods 1.5 Effective business writing 1.6 Effective clarifying and probing skills 1.7 Effective questioning techniques (clarifying and probing)
2. Lead workplace discussions	2.1 Response to workplace issues are sought following enterprise procedures 2.2 Response to workplace	2.1 Organization requirements for written and electronic communication	2.1 Organizing information 2.2 Conveying intended meaning 2.3 Participating in

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>issues are provided immediately</p> <p>2.3 Constructive contributions are made to workplace discussions on such issues as production, quality and safety</p> <p>2.4 Goals/ objectives and action plans undertaken in the workplace are communicated promptly</p>	<p>methods</p> <p>2.2 Effective verbal communication methods</p> <p>2.3 Workplace etiquette</p>	<p>variety of workplace discussions</p> <p>2.4 Complying with organization requirements for the use of written and electronic communication methods</p> <p>2.5 Effective clarifying and probing skills</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate personnel 3.4 Communication problems and issues are raised as they arise 3.5 Identify barriers in communication to be addressed appropriately	3.1 Organization requirements for written and electronic communication methods 3.2 Effective verbal communication methods 3.3 Workplace etiquette 3.4 Communication problems and issues 3.5 Barriers in communication	3.1 Organizing information 3.2 Conveying intended meaning 3.3 Participating in a variety of workplace discussions 3.4 Complying with organization requirements for the use of written and electronic communication methods 3.5 Effective clarifying and probing skills 3.6 Identifying issues 3.7 Negotiation and communication skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Methods of communication	May include: 1.1. Non-verbal gestures 1.2. Verbal 1.3. Face-to-face 1.4. Two-way radio 1.5. Speaking to groups 1.6. Using telephone 1.7. Written 1.8. Internet
2. Workplace discussions	May include: 2.1. Coordination meetings 2.2. Toolbox discussion 2.3. Peer-to-peer discussion

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Dealt with a range of communication/information at one time 1.2 Demonstrated leadership skills in workplace communication 1.3 Made constructive contributions in workplace issues 1.4 Sought workplace issues effectively 1.5 Responded to workplace issues promptly 1.6 Presented information clearly and effectively written form 1.7 Used appropriate sources of information 1.8 Asked appropriate questions 1.9 Provided accurate information
2. Resource Implications	The following resources should be provided: 2.1 Variety of Information 2.2 Communication tools 2.3 Simulated workplace
3. Methods of Assessment	Competency in this unit may be assessed through: Case problem 3.1. Third-party report 3.2. Portfolio 3.3. Interview 3.4. Demonstration/Role-playing
4. Context for Assessment	4.1. Competency may be assessed in the workplace or in a simulated workplace environment

UNIT OF COMPETENCY: LEAD SMALL TEAMS

UNIT CODE : 400311320

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes to lead small teams including setting, maintaining and monitoring team and individual performance standards.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Provide team leadership	1.1 Work requirements are identified and presented to team members based on company policies and procedures 1.2 Reasons for instructions and requirements are communicated to team members based on company policies and procedures 1.3 Team members' and leaders' concerns are recognized, discussed and dealt with based on company practices	1.1 Facilitation of Team work 1.2 Company policies and procedures relating to work performance 1.3 Performance standards and expectations 1.4 Monitoring individual's and team's performance vis a vis client's and group's expectations	1.1 Communication skills required for leading teams 1.2 Group facilitation skills 1.3 Negotiating skills 1.4 Setting performance expectation
2. Assign responsibilities	2.1. Responsibilities are allocated having regard to the skills, knowledge and aptitude required to undertake the assigned task based on company policies. 2.2. Duties are allocated having regard to individual preference, domestic and personal considerations, whenever	2.1 Work plan and procedures 2.2 Work requirements and targets 2.2 Individual and group expectations and assignments 2.3 Ways to improve group leadership and membership	2.1 Communication skills 2.2 Management skills 2.3 Negotiating skills 2.4 Evaluation skills 2.5 Identifying team member's strengths and rooms for improvement

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	possible		
3. Set performance expectations for team members	3.1 Performance expectations are established based on client needs 3.2 Performance expectations are based on individual team members knowledge, skills and aptitude 3.3 Performance expectations are discussed and disseminated to individual team members	3.1 One's roles and responsibilities in the team 3.2 Feedback giving and receiving 3.3 Performance expectation	3.1 Communication skills 3.2 Accurate empathy 3.3 Congruence 3.4 Unconditional positive regard 3.5 Handling of Feedback
4. Supervise team performance	4.1 Performance is monitored based on defined performance criteria and/or assignment instruction 4.2 Team members are provided with feedback , positive support and advice on strategies to overcome any deficiencies based on company practices 4.3 Performance issues which cannot be rectified or addressed within the team are referred to appropriate personnel according to employer policy 4.4 Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on	4.1 Performance Coaching 4.2 Performance management 4.3 Performance Issues	4.1 Communication skills required for leading teams 4.2 Coaching skill

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>client/customer needs and satisfaction</p> <p>4.5 4.5 Team operations are monitored to ensure that employer/client needs and requirements are met</p> <p>4.6 Follow-up communication is provided on all issues affecting the team</p> <p>4.7 All relevant documentation is completed in accordance with company procedures</p>		

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work requirements	May include: 1.1. Client Profile 1.2. Assignment instructions
2. Team member's concerns	May include: 2.1. Roster/shift details
3. Monitor performance	May include: 3.1. Formal process 3.2. Informal process
4. Feedback	May include: 4.1. Formal process 4.2. Informal process
5. Performance issues	May include: 5.1. Work output 5.2. Work quality 5.3. Team participation 5.4. Compliance with workplace protocols 5.5. Safety 5.6. Customer service

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> 1.1. Maintained or improved individuals and/or team performance given a variety of possible scenario 1.2. Assessed and monitored team and individual performance against set criteria 1.3. Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf 1.4. Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed 1.5. Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> 2.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2. Materials relevant to the proposed activity or task
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> 3.1. Written Examination 3.2. Oral Questioning 3.3. Portfolio
<p>4. Context for Assessment</p>	<p>4.1 Competency may be assessed in actual workplace or at the designated TESDA Accredited Assessment Center.</p>

UNIT OF COMPETENCY: APPLY CRITICAL THINKING AND PROBLEM-SOLVING TECHNIQUES IN THE WORKPLACE

UNIT CODE : 400311321

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to solve problems in the workplace including the application of problem solving techniques and to determine and resolve the root cause/s of specific problems in the workplace.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Examine specific workplace challenges.	1.1 Variances are examined from normal operating parameters ; and product quality. 1.2 Extent, cause and nature of the specific problem are defined through observation, investigation and analytical techniques . 1.3 Problems are clearly stated and specified.	1.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 1.2 Competence to include the ability to apply and explain, enough for the identification of fundamental causes of specific workplace challenges. 1.3 Relevant equipment and operational processes. 1.4 Enterprise goals, targets and measures. 1.5 Enterprise quality OHS and environmental requirement. 1.6 Enterprise information systems and data collation 1.7 Industry codes and standards.	1.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 1.2 Identifying extent and causes of specific challenges in the workplace.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Analyze the causes of specific workplace challenges.	2.1 Possible causes of specific problems are identified based on experience and the use of problem solving tools / analytical techniques. 2.2 Possible cause statements are developed based on findings. 2.3 Fundamental causes are identified per results of investigation conducted.	2.1 Competence includes a thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations. 2.2 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations. 2.3 Relevant equipment and operational processes. 2.4 Enterprise goals, targets and measures. 2.5 Enterprise quality OSH and environmental requirement. 2.6 Enterprise information systems and data collation. 2.7 Industry codes and standards.	2.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 2.2 Identifying extent and causes of specific challenges in the workplace. 2.3 Providing clear-cut findings on the nature of each identified workplace challenges.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Formulate resolutions to specific workplace challenges.	3.1 All possible options are considered for resolution of the problem. 3.2 Strengths and weaknesses of possible options are considered. 3.3 Corrective actions are determined to resolve the problem and possible future causes. 3.4 Action plans are developed identifying measurable objectives, resource needs and timelines in accordance with safety and operating procedures	3.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 3.2 Relevant equipment and operational processes 3.3 Enterprise goals, targets and measures 3.4 Enterprise quality OSH and environmental requirement 3.5 Principles of decision making strategies and techniques 3.6 Enterprise information systems and data collation 3.7 Industry codes and standards	3.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 3.2 Identifying extent and causes of specific challenges in the workplace. 3.3 Providing clear-cut findings on the nature of each identified workplace challenges. 3.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
4. Implement action plans and communicate results.	4.1 Action plans are implemented and evaluated. 4.2 Results of plan implementation and recommendations are prepared. 4.2 Recommendations are presented to appropriate personnel. 4.3 Recommendations are followed-up, if required.	4.1 Competence to include the ability to apply and explain, sufficient for the identification of fundamental cause, determining the corrective action and provision of recommendations 4.2. Relevant equipment and operational processes 4.3 Enterprise goals, targets and measures 4.4 Enterprise quality, OSH and environmental requirement 4.5 Principles of decision making strategies and techniques 4.6 Enterprise information systems and data collation 4.7 Industry codes and standards	4.1 Using range of analytical techniques (e.g., planning, attention, simultaneous and successive processing of information) in examining specific challenges in the workplace. 4.2 Identifying extent and causes of specific challenges in the workplace. 4.3 Providing clear-cut findings on the nature of each identified workplace challenges. 4.4 Devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Parameters	May include: 1.1 Processes 1.2 Procedures 1.3 Systems
2. Analytical techniques	May include: 2.1. Brainstorming 2.2. Intuitions/Logic 2.3. Cause and effect diagrams 2.4. Pareto analysis 2.5. SWOT analysis 2.6. Gant chart, Pert CPM and graphs 2.7. Scattergrams
3. Problem	May include: 3.1. Routine, non – routine and complex workplace and quality problems 3.2. Equipment selection, availability and failure 3.3. Teamwork and work allocation problem 3.4. Safety and emergency situations and incidents 3.5. Risk assessment and management
4. Action plans	May include: 4.1. Priority requirements 4.2. Measurable objectives 4.3. Resource requirements 4.4. Timelines 4.5. Co-ordination and feedback requirements 4.6. Safety requirements 4.7. Risk assessment 4.8. Environmental requirements

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Examined specific workplace challenges. 1.2. Analyzed the causes of specific workplace challenges. 1.3. Formulated resolutions to specific workplace challenges. 1.4. Implemented action plans and communicated results on specific workplace challenges.
<p>2. Resource Implications</p>	<p>2.1. Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations. A bank of scenarios / case studies / what ifs will be required as well as bank of questions which will be used to probe the reason behind the observable action.</p>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1. Observation 3.2. Case Formulation 3.3. Life Narrative Inquiry 3.4. Standardized test <p>The unit will be assessed in a holistic manner as is practical and may be integrated with the assessment of other relevant units of competency. Assessment will occur over a range of situations, which will include disruptions to normal, smooth operation. Simulation may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual workplace and will include walk through of the relevant competency components.</p> <p>These assessment activities should include a range of problems, including new, unusual and improbable situations that may have happened.</p>
<p>4. Context for Assessment</p>	<p>In all workplace, it may be appropriate to assess this unit concurrently with relevant teamwork or operation units.</p>

UNIT OF COMPETENCY : WORK IN A DIVERSE ENVIRONMENT

UNIT CODE : 400311322

UNIT DESCRIPTOR : This unit covers the outcomes required to work effectively in a workplace characterized by diversity in terms of religions, beliefs, races, ethnicities and other differences.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop an individual's cultural awareness and sensitivity	1.1 Individual differences with clients, customers and fellow workers are recognized and respected in accordance with enterprise policies and core values. 1.2 Differences are responded to in a sensitive and considerate manner 1.3 Diversity is accommodated using appropriate verbal and non-verbal communication.	1.1 Understanding cultural diversity in the workplace 1.2 Norms of behavior for interacting and dialogue with specific groups (e. g., Muslims and other non-Christians, non-Catholics, tribes/ethnic groups, foreigners) 1.3 Different methods of verbal and non-verbal communication in a multicultural setting	1.1 Applying cross-cultural communication skills (i.e. different business customs, beliefs, communication strategies) 1.2 Showing affective skills – establishing rapport and empathy, understanding, etc. 1.3 Demonstrating openness and flexibility in communication 1.4 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Work effectively in an environment that acknowledges and values cultural diversity	2.1 Knowledge, skills and experiences of others are recognized and documented in relation to team objectives. 2.2 Fellow workers are encouraged to utilize and share their specific qualities, skills or backgrounds with other team members and clients to enhance work outcomes. 2.3 Relations with customers and clients are maintained to show that diversity is valued by the business.	2.1 Value of diversity in the economy and society in terms of Workforce development 2.2 Importance of inclusiveness in a diverse environment 2.3 Shared vision and understanding of and commitment to team, departmental, and organizational goals and objectives 2.4 Strategies for customer service excellence	2.1 Demonstrating cross-cultural communication skills and active listening 2.2 Recognizing diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices 2.3 Demonstrating collaboration skills 2.4 Exhibiting customer service excellence

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Identify common issues in a multicultural and diverse environment	<p>3.1 Diversity-related conflicts within the workplace are effectively addressed and resolved.</p> <p>3.2 Discriminatory behaviors towards customers/stakeholders are minimized and addressed accordingly.</p> <p>3.3 Change management policies are in place within the organization.</p>	<p>3.1 Value, and leverage of cultural diversity</p> <p>3.2 Inclusivity and conflict resolution</p> <p>3.3 Workplace harassment</p> <p>3.4 Change management and ways to overcome resistance to change</p> <p>3.5 Advanced strategies for customer service excellence</p>	<p>3.1 Addressing diversity-related conflicts in the workplace</p> <p>3.2 Eliminating discriminatory behavior towards customers and co-workers</p> <p>3.3 Utilizing change management policies in the workplace</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Diversity	This refers to diversity in both the workplace and the community and may include divergence in: <ul style="list-style-type: none"> 1.1 Religion 1.2 Ethnicity, race or nationality 1.3 Culture 1.4 Gender, age or personality 1.5 Educational background
2. Diversity-related conflicts	May include conflicts that result from: <ul style="list-style-type: none"> 2.1 Discriminatory behaviors 2.2 Differences of cultural practices 2.3 Differences of belief and value systems 2.4 Gender-based violence 2.5 Workplace bullying 2.6 Corporate jealousy 2.7 Language barriers 2.8 Individuals being differently-abled persons 2.9 Ageism (negative attitude and behavior towards old people)

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: <ul style="list-style-type: none"> 1.1 Adjusted language and behavior as required by interactions with diversity 1.2 Identified and respected individual differences in colleagues, clients and customers 1.3 Applied relevant regulations, standards and codes of practice
2. Resource Implications	The following resources should be provided: <ul style="list-style-type: none"> 2.1 Access to workplace and resources 2.2 Manuals and policies on Workplace Diversity
3. Methods of Assessment	Competency in this unit may be assessed through: <ul style="list-style-type: none"> 3.1 Demonstration or simulation with oral questioning 3.2 Group discussions and interactive activities 3.3 Case studies/problems involving workplace diversity issues 3.4 Third-party report 3.5 Written examination 3.6 Role Plays
4. Context for Assessment	Competency assessment may occur in workplace or any appropriately simulated environment

UNIT OF COMPETENCY : PROPOSE METHODS OF APPLYING LEARNING AND INNOVATION IN THE ORGANIZATION

UNIT CODE : 400311323

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to assess general obstacles in the application of learning and innovation in the organization and to propose practical methods of such in addressing organizational challenges.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Assess work procedures, processes and systems in terms of innovative practices.	1.1. Reasons for innovation are incorporated to work procedures. 1.2. Models of innovation are researched. 1.3. Gaps or barriers to innovation in one's work area are analyzed. 1.4. Staff who can support and foster innovation in the work procedure are identified.	1.1 Seven habits of highly effective people. 1.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004) 1.3 Five minds of the future concepts (Gardner, 2007). 1.4 Adaptation concepts in neuroscience (Merzenich, 2013). 1.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	1.1 Demonstrating collaboration and networking skills. 1.2 Applying basic research and evaluation skills 1.3 Generating insights on how to improve organizational procedures, processes and systems through innovation.

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
<p>2. Generate practical action plans for improving work procedures, processes.</p>	<p>2.1 Ideas for innovative work procedure to foster innovation using individual and group techniques are conceptualized</p> <p>2.2 Range of ideas with other team members and colleagues are evaluated and discussed</p> <p>2.3 Work procedures and processes subject to change are selected based on workplace requirements (feasible and innovative).</p> <p>2.4 Practical action plans are proposed to facilitate simple changes in the work procedures, processes and systems.</p> <p>2.5 Critical inquiry is applied and used to facilitate discourse on adjustments in the simple work procedures, processes and systems.</p>	<p>2.1 Seven habits of highly effective people.</p> <p>2.2 Character strengths that foster innovation and learning (Christopher Peterson and Martin Seligman, 2004)</p> <p>2.3 Five minds of the future concepts (Gardner, 2007).</p> <p>2.4 Adaptation concepts in neuroscience (Merzenich, 2013).</p> <p>2.5 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).</p>	<p>2.1 Assessing readiness for change on simple work procedures, processes and systems.</p> <p>2.2 Generating insights on how to improve organizational procedures, processes and systems through innovation.</p> <p>2.3 Facilitating action plans on how to apply innovative procedures in the organization.</p>

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Evaluate the effectiveness of the proposed action plans.	3.1 Work structure is analyzed to identify the impact of the new work procedures 3.2 Co-workers/key personnel is consulted to know who will be involved with or affected by the work procedure 3.3 Work instruction operational plan of the new work procedure is developed and evaluated. 3.4 Feedback and suggestion are recorded. 3.5 Operational plan is updated. 3.6 Results and impact on the developed work instructions are reviewed 3.7 Results of the new work procedure are evaluated 3.8 Adjustments are recommended based on results gathered	3.1 Five minds of the future concepts (Gardner, 2007). 3.2 Adaptation concepts in neuroscience (Merzenich, 2013). 3.3 Transtheoretical model of behavior change (Prochaska, DiClemente, & Norcross, 1992).	3.1 Generating insights on how to improve organizational procedures, processes and systems through innovation. 3.2 Facilitating action plans on how to apply innovative procedures in the organization. 3.3 Communicating results of the evaluation of the proposed and implemented changes in the workplace procedures and systems. 3.4 Developing action plans for continuous improvement on the basic systems, processes and procedures in the organization.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Reasons	May include: 1.1 Strengths and weaknesses of the current systems, processes and procedures. 1.2 Opportunities and threats of the current systems, processes and procedures.
2. Models of innovation	May include: 2.1 Seven habits of highly effective people. 2.2 Five minds of the future concepts (Gardner, 2007). 2.3 Neuroplasticity and adaptation strategies.
3. Gaps or barriers	May include: 3.1 Machine 3.2 Manpower 3.3 Methods 3.4 Money
4. Critical Inquiry	May include: 4.1 Preparation. 4.2 Discussion. 4.3 Clarification of goals. 4.4 Negotiate towards a Win-Win outcome. 4.5 Agreement. 4.6 Implementation of a course of action. 4.7 Effective verbal communication. See our pages: Verbal Communication and Effective Speaking. 4.8 Listening. 4.9 Reducing misunderstandings is a key part of effective negotiation. 4.10 Rapport Building. 4.11 Problem Solving. 4.12 Decision Making. 4.13 Assertiveness. 4.14 Dealing with Difficult Situations.

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Established the reasons why innovative systems are required</p> <p>1.2 Established the goals of a new innovative system</p> <p>1.3 Analyzed current organizational systems to identify gaps and barriers to innovation.</p> <p>1.4 Assessed work procedures, processes and systems in terms of innovative practices.</p> <p>1.5 Generate practical action plans for improving work procedures, and processes.</p> <p>1.6 Reviewed the trial innovative work system and adjusted reflect evaluation feedback, knowledge management systems and future planning.</p> <p>1.7 Evaluated the effectiveness of the proposed action plans.</p>
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <p>2.1 Pens, papers and writing implements.</p> <p>2.2 Cartolina.</p> <p>2.3 Manila papers.</p>
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <p>3.1 Psychological and behavioral Interviews.</p> <p>3.2 Performance Evaluation.</p> <p>3.3 Life Narrative Inquiry.</p> <p>3.4 Review of portfolios of evidence and third-party workplace reports of on-the-job performance.</p> <p>3.5 Sensitivity analysis.</p> <p>3.6 Organizational analysis.</p> <p>3.7 Standardized assessment of character strengths and virtues applied.</p>
<p>4.Context for Assessment</p>	<p>4.1 Competency may be assessed individually in the actual workplace or simulation environment in TESDA accredited institutions.</p>

UNIT OF COMPETENCY : USE INFORMATION SYSTEMATICALLY

UNIT CODE : 400311324

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to use technical information systems, apply information technology (IT) systems and edit, format & check information.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Use technical information	1.1. Information are collated and organized into a suitable form for reference and use 1.2. Stored information are classified so that it can be quickly identified and retrieved when needed 1.3. Guidance are advised and offered to people who need to find and use information	1.1. Application in collating information 1.2. Procedures for inputting, maintaining and archiving information 1.3. Guidance to people who need to find and use information 1.4. Organize information 1.5. classify stored information for identification and retrieval 1.6. Operate the technical information system by using agreed procedures	1.1. Collating information 1.2. Operating appropriate and valid procedures for inputting, maintaining and archiving information 1.3. Advising and offering guidance to people who need to find and use information 1.4. Organizing information into a suitable form for reference and use 1.5. Classifying stored information for identification and retrieval 1.6. Operating the technical information system by using agreed procedures

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
2. Apply information technology (IT)	2.1. Technical information system is operated using agreed procedures 2.2. Appropriate and valid procedures are operated for inputting, maintaining and archiving information 2.3. Software required are utilized to execute the project activities 2.4. Information and data obtained are handled, edited, formatted and checked from a range of internal and external sources 2.5. Information are extracted, entered, and processed to produce the outputs required by customers 2.6. Own skills and understanding are shared to help others 2.7. Specified security measures are implemented to protect the confidentiality and integrity of project data held in IT systems	2.1. Attributes and limitations of available software tools 2.2. Procedures and work instructions for the use of IT 2.3. Operational requirements for IT systems 2.4. Sources and flow paths of data 2.5. Security systems and measures that can be used 2.6. Extract data and format reports 2.7. Methods of entering and processing information 2.8. WWW enabled applications	2.1. Identifying attributes and limitations of available software tools 2.2. Using procedures and work instructions for the use of IT 2.3. Describing operational requirements for IT systems 2.4. Identifying sources and flow paths of data 2.5. Determining security systems and measures that can be used 2.6. Extracting data and format reports 2.7. Describing methods of entering and processing information 2.8. Using WWW applications

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Edit, format and check information	3.1 Basic editing techniques are used 3.2 Accuracy of documents are checked 3.3 Editing and formatting tools and techniques are used for more complex documents 3.4 Proof reading techniques is used to check that documents look professional	3.1 Basic file-handling techniques 3.2 Techniques in checking documents 3.3 Techniques in editing and formatting 3.4 Proof reading techniques	3.1 Using basic file-handling techniques is used for the software 3.2 Using different techniques in checking documents 3.3 Applying editing and formatting techniques 3.4 Applying proof reading techniques

RANGE OF VARIABLES

VARIABLE	RANGE
1. Information	May include: 1.1. Property 1.2. Organizational 1.3. Technical reference
2. Technical information	May include: 2.1. paper based 2.2. electronic
3. Software	May include: 3.1. spreadsheets 3.2. databases 3.3. word processing 3.4. presentation
4. Sources	May include: 4.1. other IT systems 4.2. manually created 4.3. within own organization 4.4. outside own organization 4.5. geographically remote
5. Customers	May include: 5.1. colleagues 5.2. company and project management 5.3. clients
6. Security measures	May include: 6.1. access rights to input; 6.2. passwords; 6.3. access rights to outputs; 6.4. data consistency and back-up; 6.5. recovery plans

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Used technical information systems and information technology 1.2. Applied information technology (IT) systems 1.3. Edited, formatted and checked information
2. Resource Implications	The following resources <u>MUST</u> be provided: 2.1. Computers 2.2. Software and IT system
3. Methods of Assessment	Competency in this unit <u>MUST</u> be assessed through: 3.1. Direct Observation 3.2. Oral interview and written test
4. Context for Assessment	4.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY : EVALUATE OCCUPATIONAL SAFETY AND HEALTH WORK PRACTICES

UNIT CODE : 400311325

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to interpret Occupational Safety and Health practices, set OSH work targets, and evaluate effectiveness of Occupational Safety and Health work instructions.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret Occupational Safety and Health practices	1.1 OSH work practices issues are identified relevant to work requirements 1.2 OSH work standards and procedures are determined based on applicability to nature of work 1.3 Gaps in work practices are identified related to relevant OSH work standards	1.1. OSH work practices issues 1.2. OSH work standards 1.3. General OSH principles and legislations 1.4. Company/ workplace policies/ guidelines 1.5. Standards and safety requirements of work process and procedures	1.1. Communication skills 1.2. Interpersonal skills 1.3. Critical thinking skills 1.4. Observation skills
2. Set OSH work targets	2.1 Relevant work information are gathered necessary to determine OSH work targets 2.2 OSH Indicators based on gathered information are agreed upon to measure effectiveness of workplace OSH policies and procedures 2.3 Agreed OSH indicators are endorsed for approval from appropriate	2.1. OSH work targets 2.2. OSH Indicators 2.3. OSH work instructions 2.4. Safety and health requirements of tasks 2.5. Workplace guidelines on providing feedback on OSH and security concerns 2.6. OSH regulations Hazard control procedures	2.1. Communication skills 2.2. Collaborating skills 2.3. Critical thinking skills 2.4. Observation skills

	<p>personnel</p> <p>2.4 OSH work instructions are received in accordance with workplace policies and procedures*</p>	<p>2.7. OSH trainings relevant to work</p>	
<p>3. Evaluate effectiveness of Occupational Safety and Health work instructions</p>	<p>3.1 OSH Practices are observed based on workplace standards</p> <p>3.2 Observed OSH practices are measured against approved OSH metrics</p> <p>3.3 Findings regarding effectiveness are assessed and gaps identified are implemented based on OSH work standards</p>	<p>3.1. OSH Practices</p> <p>3.2. OSH metrics</p> <p>3.3. OSH Evaluation Techniques</p> <p>3.4. OSH work standards</p>	<p>3.1. Critical thinking skills</p> <p>3.2. Evaluating skills</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. OSH Work Practices Issues	May include: 1.1 Workers' experience/observance on presence of work hazards 1.2 Unsafe/unhealthy administrative arrangements (prolonged work hours, no break-time, constant overtime, scheduling of tasks) 1.3 Reasons for compliance/non-compliance to use of PPEs or other OSH procedures/policies/ guidelines
2. OSH Indicators	May include: 2.1 Increased of incidents of accidents, injuries 2.2 Increased occurrence of sickness or health complaints/symptoms 2.3 Common complaints of workers' related to OSH 2.4 High absenteeism for work-related reasons
3. OSH Work Instructions	May include: 3.1 Preventive and control measures, and targets 3.2 Eliminate the hazard (i.e., get rid of the dangerous machine 3.3 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off) 3.4 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) 3.5 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule) 3.6 Use engineering controls to reduce the risk (i.e. use safety guards to machine) 3.7 Use personal protective equipment 3.8 Safety, Health and Work Environment Evaluation 3.9 Periodic and/or special medical examinations of workers
4. OSH metrics	May include: 4.1 Statistics on incidence of accidence and injuries 4.2 Morbidity (Type and Number of Sickness) 4.3 Mortality (Cause and Number of Deaths) 4.4 Accident Rate

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ol style="list-style-type: none"> 1.1. Identify OSH work practices issues relevant to work requirements 1.2. Identify gaps in work practices related to relevant OSH work standards 1.3. Agree upon OSH Indicators based on gathered information to measure effectiveness of workplace OSH policies and procedures 1.4. Receive OSH work instructions in accordance with workplace policies and procedures 1.5. Compare Observed OSH practices with against approved OSH work instructions 1.6. Assess findings regarding effectiveness based on OSH work standards
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ol style="list-style-type: none"> 2.1 Facilities, materials, tools and equipment necessary for the activity
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ol style="list-style-type: none"> 3.1 Observation/Demonstration with oral questioning 3.2 Third party report 3.3 Written exam
<p>4. Context for Assessment</p>	<ol style="list-style-type: none"> 4.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : EVALUATE ENVIRONMENTAL WORK PRACTICES

UNIT CODE : 400311326

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude to interpret environmental Issues, establish targets to evaluate environmental practices and evaluate effectiveness of environmental practices

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Interpret environmental practices, policies and procedures	1.1 Environmental work practices issues are identified relevant to work requirements 1.2 Environmental Standards and Procedures nature of work are determined based on Applicability to nature of work 1.3 Gaps in work practices related to Environmental Standards and Procedures are identified	1.1 Environmental Issues 1.2 Environmental Work Procedures 1.3 Environmental Laws 1.4 Environmental Hazardous and Non-Hazardous Materials 1.5 Environmental required license, registration or certification	1.1. Analyzing Environmental Issues and Concerns 1.2. Critical thinking 1.3. Problem Solving 1.4. Observation Skills
2. Establish targets to evaluate environmental practices	2.1 Relevant information are gathered necessary to determine environmental work targets 2.2 Environmental Indicators based on gathered information are set to measure environmental work targets 2.3 Indicators are verified with appropriate personnel	2.1 Environmental Indicators 2.2 Relevant Environment Personnel or expert 2.3 Relevant Environmental Trainings and Seminars	2.1 Investigative Skills 2.2 Critical thinking 2.3 Problem Solving 2.4 Observation Skills

ELEMENTS	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
3. Evaluate effectiveness of environmental practices	3.1. Work environmental practices are recorded based on workplace standards 3.2. Recorded work environmental practices are compared against planned indicators 3.3. Findings regarding effectiveness are assessed and gaps identified are implemented based on environment work standards and procedures 3.4. Results of environmental assessment are conveyed to appropriate personnel	3.1 Environmental Practices 3.2 Environmental Standards and Procedures	3.1 Documentation and Record Keeping Skills 3.2 Critical thinking 3.3 Problem Solving 3.4 Observation Skills

RANGE OF VARIABLES

VARIABLE	RANGE
1. Environmental Practices Issues	May include: <ul style="list-style-type: none"> 1.1 Water Quality 1.2 National and Local Government Issues 1.3 Safety 1.4 Endangered Species 1.5 Noise 1.6 Air Quality 1.7 Historic 1.8 Waste 1.9 Cultural
2. Environmental Indicators	May include: <ul style="list-style-type: none"> 2.1 Noise level 2.2 Lighting (Lumens) 2.3 Air Quality - Toxicity 2.4 Thermal Comfort 2.5 Vibration 2.6 Radiation 2.7 Quantity of the Resources 2.8 Volume

EVIDENCE GUIDE

<p>1. Critical aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Identified environmental issues relevant to work requirements 1.2. Identified gaps in work practices related to Environmental Standards and Procedures 1.3. Gathered relevant information necessary to determine environmental work targets 1.4. Set environmental indicators based on gathered information to measure environmental work targets 1.5. Recorded work environmental practices are recorded based on workplace standards 1.6. Conveyed results of environmental assessment to appropriate personnel
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Workplace/Assessment location 2.2 Legislation, policies, procedures, protocols and local ordinances relating to environmental protection 2.3 Case studies/scenarios relating to environmental protection
<p>3. Methods of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Written/ Oral Examination 3.2 Interview/Third Party Reports 3.3 Portfolio (citations/awards from GOs and NGOs, certificate of training – local and abroad) 3.4 Simulations and role-plays
<p>4. Context for Assessment</p>	<p>4.1 Competency may be assessed in actual workplace or at the designated TESDA center.</p>

UNIT OF COMPETENCY : FACILITATE ENTREPRENEURIAL SKILLS FOR MICRO-SMALL-MEDIUM ENTERPRISES (MSMEs)

UNIT CODE : 400311327

UNIT DESCRIPTOR : This unit covers the outcomes required to build, operate and grow a micro/small-scale enterprise.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Develop and maintain micro-small-medium enterprise (MSMEs) skills in the organization	1.1 Appropriate business strategies are determined and set for the enterprise based on current and emerging business environment. 1.2 Business operations are monitored and controlled following established procedures. 1.3 Quality assurance measures are implemented consistently. 1.4 Good relations are maintained with staff/workers. 1.5 Policies and procedures on occupational safety and health and environmental concerns are constantly observed.	1.1 Business models and strategies 1.2 Types and categories of businesses 1.3 Business operation 1.4 Basic Bookkeeping 1.5 Business internal controls 1.6 Basic quality control and assurance concepts 1.7 Government and regulatory processes	1.1 Basic bookkeeping/ accounting skills 1.2 Communication skills 1.3 Building relations with customer and employees 1.4 Building competitive advantage of the enterprise
2. Establish and Maintain client-base/market	2.1 Good customer relations are maintained 2.2 New customers and markets are identified, explored and reached out to. 2.3 Promotions/Incentives are offered to loyal customers 2.4 Additional products and services are evaluated and tried where feasible. 2.5 Promotional/advertising initiatives are carried out where necessary and feasible.	2.1 Public relations concepts 2.2 Basic product promotion strategies 2.3 Basic market and feasibility studies 2.4 Basic business ethics	2.1 Building customer relations 2.2 Individual marketing skills 2.3 Using basic advertising (posters/ tarpaulins, flyers, social media, etc.)
3. Apply budgeting and financial	3.1 Enterprise is built up and sustained through judicious control of cash	3.1 Cash flow management	3.1 Setting business priorities and strategies

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
management skills	flows. 3.2 Profitability of enterprise is ensured through appropriate <i>internal controls</i> . 3.3 Unnecessary or lower-priority expenses and purchases are avoided.	3.1 Basic financial management 3.2 Basic financial accounting 3.3 Business internal controls	3.2 Interpreting basic financial statements 3.3 Preparing business plans

RANGE OF VARIABLES

VARIABLE	RANGE
1. Business strategies	May include: 1.1. Developing/Maintaining niche market 1.2. Use of organic/healthy ingredients 1.3. Environment-friendly and sustainable practices 1.4. Offering both affordable and high-quality products and services 1.5. Promotion and marketing strategies (e. g., on-line marketing)
2. Business operations	May include: 2.1 Purchasing 2.2 Accounting/Administrative work 2.3 Production/Operations/Sales
3. Internal controls	May include: 3.1 Accounting systems 3.2 Financial statements/reports 3.3 Cash management
4. Promotional/Advertising initiatives	May include: 4.1 Use of tarpaulins, brochures, and/or flyers 4.2 Sales, discounts and easy payment terms 4.3 Use of social media/Internet 4.4 "Service with a smile" 4.5 Extra attention to regular customers

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate : 1.1 Demonstrated basic entrepreneurial skills 1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3 Demonstrated ability to manage/operate a micro/small-scale business
2. Resource Implications	The following resources should be provided: 2.1 Simulated or actual workplace 2.2 Tools, materials and supplies needed to demonstrate the required tasks 2.3 References and manuals
3. Methods of Assessment	Competency in this unit may be assessed through : 3.1 Written examination 3.2 Demonstration/observation with oral questioning 3.3 Portfolio assessment with interview 3.4 Case problems
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group

COMMON COMPETENCIES

UNIT OF COMPETENCY : APPLY SAFETY MEASURES IN FARM OPERATIONS

UNIT CODE : AFF321201

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to perform safety measures effectively and efficiently. It includes identifying areas, tools, materials, time and place in performing safety measures.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Determine areas of concern for safety measures	1.1 Work tasks are identified in line with farm operations 1.2 Place for safety measures are determined in line with farm operations 1.3 Time for safety measures are determined in line with farm operations 1.4 Appropriate tools, materials and outfits are prepared in line with job requirements	1.1 Different work tasks in farm operations 1.2 Place and time for implementation of safety measures 1.3 Different hazards in the workplace 1.4 Types of tools, materials and outfits 1.5 Preparation of tools, materials and outfits	1.1 Identifying work tasks in farm operations 1.2 Determining place and time for implementation of safety measures 1.3 Reading labels, manuals and other basic safety information 1.4 Identifying effective/functiona l tools, materials and outfit 1.5 Preparing tools, materials and outfits 1.6 Discarding defective tools, and materials
2. Apply appropriate safety measures	2.1 Tools and materials are used according to specifications and procedures 2.2 Outfits are worn according to farm requirements 2.3 Effectivity/shelf life/expiration of materials are strictly observed 2.4 Emergency procedures are known and followed to ensure a safe work requirement 2.5 Hazards in the workplace are	2.1 Uses and functions of tools 2.2 Outfits and how to wear it. 2.3 Expiration/shelf life of materials 2.4 Proper disposal of expired materials 2.5 Environmental rules and regulations 2.6 Emergency procedures 2.7 Hazards identification and reporting 2.8 Communication	2.1 Using tools and materials in the workplace 2.2 Wearing of outfits 2.3 Observing expiration/ shelf life of materials 2.4 Disposing of expired materials 2.5 Following emergency procedures 2.6 Identifying and reporting of hazards in workplace area.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	identified and reported in line with farm guidelines	skills 2.9 OSHS	
3. Safe keep /dispose tools, materials and outfit	3.1 Used tools and outfit are cleaned after use and stored in designated areas 3.2 Unused materials are properly labeled and stored according to manufacturers recommendation and farm requirements 3.3 Waste materials are disposed according to manufacturers, government and farm requirements	3.1 Procedures of cleaning used tools and outfits 3.2 Label and storage unused materials 3.3 Disposal of wastes materials 3.4 Manufacturers recommendation on keeping materials 3.5 Environmental rules and regulations	3.1 Cleaning used tools and outfit 3.2 Labelling and storing unused materials 3.3 Disposing waste materials

RANGE OF VARIABLES

VARIABLE	RANGE
1. Work tasks	Work task may be selected from any of the subsectors: 1.1 Crop Production 1.2 Post-harvest 1.3 Agri-marketing 1.4 Farm Equipment
2. Place	May include: 2.1 Stock room/storage areas/warehouse 2.2 Field/farm/orchard
3. Time	May include: 3.1 Fertilizer and pesticides application 3.2 Feed mixing and feeding 3.3 Harvesting and hauling
4. Tools, materials and outfits	May include: 4.1 Tools 4.1.1 Wrenches 4.1.2 Screw driver 4.1.3 Pliers 4.2 Outfit 4.2.1 Masks 4.2.2 Gloves 4.2.3 Boots 4.2.4 Overall coats 4.2.5 Hat 4.2.6 Eye goggles
5. Emergency procedures	May include: 5.1 Location of first aid kit 5.2 Evacuation 5.3 Agencies contract 5.4 Farm emergency procedures
6. Hazards	May include: 6.1 Chemical 6.2 Electrical 6.3 Falls

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Determined areas of concern for safety measures 1.2 Applied appropriate safety measures according to industry requirements 1.3 Prepared tools, materials and outfit needed 1.4 Performed proper disposal of used materials 1.5 Cleaned and stored tools, materials and outfit in designated facilities
2. Resource Implications	The following resources should be provided: 2.1 Farm location 2.2 Tools, equipment and outfits appropriate in applying safety measures
3. Method of Assessment	Competency in this unit must be assessed through: 3.1 Practical demonstration 3.2 Third Party Report
4. Context of Assessment	4.1. Competency maybe assessed in actual workplace or at the designated TESDA Accredited Assessment Center.

UNIT OF COMPETENCY : USE AND MAINTAIN FARM SERVICING TOOLS AND EQUIPMENT

UNIT CODE : AFF321202

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to use and maintain servicing tools. It includes selection, operation and preventive maintenance of farm tools and equipment.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Select and use servicing tools	1.1 Identified appropriate servicing tools according to requirement/use 1.2 Servicing tools are checked for faults and defective tools reported in accordance with farm procedures 1.3 Appropriate servicing tools are safely used according to job requirements and manufacturers conditions	1.1 Servicing tools and their uses 1.2 Defects of servicing tools 1.3 Reporting procedures 1.4 Appropriate usage of servicing tools 1.5 Handling of servicing tools 1.6 OSHS	1.1 Identifying appropriate servicing tools 1.2 Checking servicing tools 1.3 Using appropriately servicing tools 1.4 Apply safety practices
2. Select and operate testing equipment and accessories	2.1 Identify appropriate testing equipment and accessories 2.2 Instructional manual of the servicing tools and equipment are carefully read prior to operation 2.3 Pre-operation check-up is conducted in line with manufacturers manual 2.4 Faults in testing equipment and accessories are identified and reported in line with farm procedures 2.5 Testing equipment and accessories used according to its function	2.1 Testing equipment and accessories 2.2 Instructional Manual 2.3 Pre-operation check-up procedures 2.4 Different faults of testing equipment and accessories 2.5 Reporting procedures 2.6 Appropriate usage of test equipment and accessories 2.7 Handling of test equipment and accessories 2.8 OSHS	2.1 Identifying appropriate testing equipment 2.2 Reading instructional manual 2.3 Conducting pre-operation check-up 2.4 Identifying faults in testing equipment and accessories 2.5 Using testing equipment and accessories 2.6 Applying safety practices

	2.6 Followed safety procedures		
3. Perform preventive maintenance	<p>3.1 Servicing tools are cleaned immediately after use in line with farm procedures</p> <p>3.2 Routine check-up and maintenance of testing equipment and accessories are performed according to manufacturer's specification.</p> <p>3.3 Servicing tools, testing equipment and accessories are inventoried based on work requirements</p> <p>3.4 Servicing tools are stored in designated areas in line with manufacturer's specifications.</p>	<p>3.1 Cleaning procedures</p> <p>3.2 Farm procedures</p> <p>3.3 Check -up and maintenance procedures</p> <p>3.4 Inventory procedures</p> <p>3.5 Storage procedures</p> <p>3.6 Waste Management</p> <p>3.7 5S of Good Housekeeping</p> <p>3.8 OSHS</p>	<p>3.1 Cleaning servicing tools</p> <p>3.2 Performing routine check - up and maintenance</p> <p>3.3 Conducting inventory of servicing tools, testing equipment and accessories</p> <p>3.4 Storing servicing tools</p> <p>3.5 Applying safety practices</p>

RANGE OF VARIABLES

VARIABLE	RANGE
1. Testing equipment and accessories	Testing equipment and accessories includes: <ul style="list-style-type: none"> 1.1 Load tester 1.2 Engine analyzer 1.3 Stability analyzer 1.4 Wheel balancer 1.5 Hydraulic lift 1.6 Compressors 1.7 Power sprayer 1.8 Frame engine hoist
2. Servicing tools	Servicing tools includes: <ul style="list-style-type: none"> 2.1 Wrenches set 2.2 Screw drivers set 2.3 Hammers 2.4 Pliers 2.5 Testers 2.6 Special tools 2.7 Chisels 2.8 Gauges 2.9 Hydraulic jack 2.10 Sockets and drivers 2.11 Pullers
3. Pre-operation check-up	Pre-operation check-up may include: <ul style="list-style-type: none"> 3.1 Tires assembly (pressure & bolt tightness) 3.2 Level of brake fluid 3.3 Level of Fuel 3.4 Level of Water 3.5 Level of Lubricants 3.6 Battery

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Selected and used servicing tools 1.2 Selected and operated testing equipment and accessories 1.3 Performed preventive maintenance
2. Resource Implications	The following resources should be provided: 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit PPE
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Written Report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

UNIT OF COMPETENCY : **PERFORM ESTIMATION AND BASIC CALCULATION**

UNIT CODE : **AFF321203**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to perform basic workplace calculations.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Perform estimation	1.1 Job requirements are identified from written or oral communications 1.2 Quantities of materials and resources required to complete a work task are estimated 1.3 The time needed to complete a work activity is estimated 1.4 Accurate estimate for work completion are made 1.5 Estimate of materials and resources are reported to appropriate person	1.1 Job requirements/ labor needs 1.2 Calculation of quantities of materials and resources required 1.3 Calculation of time for job completion 1.4 Preparation of estimate report 1.5 Basic mathematical operations 1.6 Percentage and ratios 1.7 Unit Conversion	1.1 Identifying job requirements/ labor 1.2 Estimating quantities of materials and resources required 1.3 Estimating time for job completion 1.4 Performing basic calculation 1.5 Compute percentage 1.6 Convert English to Metric systems of measurement 1.7 Preparing estimate report
2. Perform basic workplace calculation	2.1 System and units of measurement to be followed are ascertained 2.2 Calculation needed to complete work tasks are performed using the four basic mathematical operation 2.3 Calculate whole fraction, percentage and mixed when are used to complete the instructions 2.4 Number computed is checked following work requirements	2.1 Four basic mathematical operation 2.2 System and units of measurement 2.3 Fraction, percentage and ratio 2.4 Material take-off 2.5 Materials costing	2.1 Compute bill of materials 2.2 Compute project cost

RANGE OF VARIABLES

VARIABLE	RANGE
1. Four basic mathematical operation	May include: 1.1 Addition 1.2 Subtraction 1.3 Multiplication 1.4 Division
2. System of measurement	May include: 2.1 English 2.2 Metric
3. Units of measurement	May include: 3.1 Area 3.2 Volume 3.3 Weight 3.4 Length

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Performed estimation 1.2 Performed basic workplace calculation 1.3 Applied corrective measures as maybe necessary
2. Resource Implications	The following resources should be provided: 2.6 Actual or simulated workplace 2.7 Tools materials and equipment needed to perform the required tasks 2.8 References and manuals 2.9 PPE 2.10 First Aid Kit PPE
3. Method of Assessment	Competency in this unit may be assessed through: 3.5 Demonstration/Observation with Oral Questioning 3.6 Portfolio with Interview 3.7 Written Test 3.8 Written Report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

UNIT OF COMPETENCY : PROCESS FARM WASTES

UNIT CODE : AFF321205

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to process farm wastes. It comprises functions such as collecting farm wastes, conducting waste identification and segregation, treating and processing farm wastes and performing housekeeping duties

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Collect wastes	1.1 Tools, materials and PPEs are prepared for collection of farm wastes. 1.2 Wastes are collected following OSHS and waste collection requirements and plan. 1.3 Appropriate personal protective equipment (PPE) are worn as prescribed by Occupational Safety and Health Standards (OSHS).	1.1 Tool, materials and equipment 1.2 PPEs 1.3 OSHS 1.4 Waste collection requirements and plan	1.1 Preparing tools, materials and PPEs 1.2 Collecting wastes 1.3 Wearing of PPEs 1.4 Applying safety practices

<p>2 Identify and segregate wastes</p>	<p>2.1 Wastes are identified by categories according to industry standards and environmental legislation.</p> <p>2.2 Wastes are segregated according to organizational requirements and relevant legislation.</p> <p>2.3 Sorted waste is placed into labelled container to avoid littering and prevent cross-contamination.</p> <p>2.4 Information on waste is obtained by asking authority to ensure correct identification.</p>	<p>2.1 Categories of wastes</p> <p>2.2 Wastes segregation procedures</p> <p>2.3 Environmental legislations</p>	<p>2.1 Identifying wastes</p> <p>2.2 Segregating wastes</p> <p>2.3 Sorting wastes</p> <p>2.4 Obtaining information on wastes</p>
<p>3 Handle farm wastes</p>	<p>3.1 Dangerous and hazardous wastes are handled according to organizational requirements and relevant legislation following OSHS procedures.</p> <p>3.2 Handling of farm wastes is done following environmental legislation and codes.</p> <p>3.3 Principles of 3Rs (reduce, reuse and recycle) are applied accordingly.</p> <p>3.4 Wastes are disposed of according to environmental legislation and codes.</p>	<p>3.1 Dangerous and hazardous wastes</p> <p>3.2 OSHS</p> <p>3.3 Organizational requirements</p> <p>3.4 Handling of farm wastes</p> <p>3.5 Environmental legislations and codes</p> <p>3.6 Principles of 3Rs</p> <p>3.7 Procedures of waste disposal</p>	<p>3.1 Handling dangerous and hazardous wastes</p> <p>3.2 Applying safety practices</p> <p>3.3 Handling of farm wastes</p> <p>3.4 Applying principles of 3Rs</p> <p>3.5 Disposing of wastes</p>

<p>4. Perform housekeeping</p>	<p>4.1 Appropriate warning signs and labels are displayed in conspicuous places around the workplace.</p> <p>4.2 Work area is cleaned according to 5S principles.</p> <p>4.3 Tools are checked, cleaned and stowed according to established industry procedures and following user's manual.</p> <p>4.4 Materials are stored following industry standard procedures and manufacturer's specifications.</p> <p>4.5 PPE is checked for damage prior to ensuring that clean and undamaged equipment is stored.</p> <p>4.6 Storage facility is checked to ensure no contamination in the area according to organizational requirements and legislation and codes.</p> <p>4.7 Record keeping is done according to industry requirements.</p>	<p>4.1 Warning signs and labels</p> <p>4.2 5S of Good Housekeeping</p> <p>4.3 Procedures of cleaning, checking and storing of materials</p> <p>4.4 PPEs</p> <p>4.5 Organizational requirements and legislation and codes.</p> <p>4.6 Record keeping procedures</p>	<p>1.1 Displaying warning signs and labels</p> <p>1.2 Cleaning work area</p> <p>1.3 Checking, cleaning and stowing tools</p> <p>1.4 Storing materials</p> <p>1.5 Checking storage facility</p> <p>1.6 Conducting record keeping</p>
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RANGE OF VARIABLES

VARIABLE	SCOPE
1. Tools,materials, PPEs	Tools and materials include: 1.1. Tools <ul style="list-style-type: none"> • Wheel borrow • Broomstick • Sprayer or pressurized pump 1.2. Materials <ul style="list-style-type: none"> • Sacks • Containers • Disinfectants • Detergents • First-aid kit • Chemical spill kit 1.3. Personal Protective Equipment <ul style="list-style-type: none"> • Goggles • Disposal gloves • Face mask • Rubber boots • Overall
2. Wastes	May include: 2.1. Oil 2.2. Batteries 2.3. Consumable parts <ul style="list-style-type: none"> - Filters - Seals 2.4. Containers 2.5. Defective parts
3. Dangerous and hazardous wastes	3.1 Used oil 3.2 Battery solution 3.3 Coolants 3.4 Battery 3.5 Pesticides
4. Categories	4.1 Re-usable 4.2 Recyclable 4.3 Solid 4.4 Liquid
5. Handling of wastes	5.1 Reduce 5.2 Re-use 5.3 Recycle
6. Record	6.1. Record of wastes generated and disposed 6.2. Record of incidence of accidents 6.3. Record of chemical spillage 6.4. Inventory of tools and materials

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Collected farm waste 1.2 Identified and segregated farm waste 1.3 Processed farm waste 1.4 Performed housekeeping
2. Resource Implications	The following resources should be provided: 2.11 Actual or simulated workplace 2.12 Tools materials and equipment needed to perform the required tasks 2.13 References and manuals 2.14 PPE 2.15 First Aid Kit PPE
3. Method of Assessment	Competency in this unit may be assessed through: 3.9 Demonstration/Observation with Oral Questioning 3.10 Portfolio with Interview 3.11 Written Test 3.12 Written Report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

UNIT OF COMPETENCY : MAINTAIN SERVICE RECORD

UNIT CODE : SOC 413206

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitude required to carry-out inventory activities, maintain production record and prepare financial records.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Carry out inventory activities	1.1 Inventory inputs are determined according enterprise requirements. 1.2 Defective tools and equipment are determined according to operation manuals 1.3 Facilities are inspected according to according standard codes and laws.	1.1 Inventory inputs 1.2 Inventory procedures 1.3 Defective tools and equipment 1.4 Inspection procedures	1.1 Determining inventory inputs 1.2 Determining defective tools and equipment 1.3 Inspecting facilities
2 Update record	2.1 Servicing plan are prepared according to enterprise requirements. 2.2 Schedule for servicing activities are prepared based from enterprise requirements and plan. 2.3 Service report are prepared in accordance with enterprise reporting procedures	2.1 Servicing Plan 2.2 Servicing Plan Procedures 2.3 Reporting procedures	2.1 Preparing servicing plan 2.2 Preparing schedule for servicing activities 2.3 Preparing service report

<p>3 Prepare financial records</p>	<p>3.1 Servicing cost are computed using established computation procedures.</p> <p>3.2 Revenue is computed using established computation procedures.</p>	<p>3.1 Computation procedures</p> <p>3.2 Revenue and servicing cost</p> <p>3.3 Financial records</p>	<p>3.1 Computing servicing cost</p> <p>3.2 Computing revenue</p>
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RANGE OF VARIABLES

VARIABLE	SCOPE
1. Inventory inputs	Inventory inputs may include: 1.1 Tools 1.2 Machinery 1.3 Equipment
2. Servicing activities	Servicing activities may include: 2.1 Maintenance 2.2 Check-up 2.3 Repair
3. Service report	Service report may include: 3.1 Client information 3.2 Machinery details (e.g. serial number, model) 3.3 Machinery damages 3.4 Causes of damage 3.5 Servicing details
4. Servicing cost	Servicing cost may include: 4.1 Labor 4.2 Input Parts 4.3 Rentals 4.4 Miscellaneous

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1. Determined inventory inputs according enterprise requirements 1.2. Determined defective tools and equipments according to operation manuals. 1.3. Inspected facilities according to standard codes and laws. 1.4. Prepared production plan and report according to enterprise requirements and reporting procedures.
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.16 Actual or simulated workplace 2.17 Tools materials and equipment needed to perform the required tasks 2.18 References and manuals 2.19 PPE 2.20 First Aid Kit PPE
<p>3. Method of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.13 Demonstration/Observation with Oral Questioning 3.14 Portfolio with Interview 3.15 Written Test 3.16 Written Report
<p>4. Context of Assessment</p>	<p>4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.</p>

Unit of Competency : CONDUCT DIAGNOSIS

Unit Code : AFF723201

Unit descriptor : This competency unit covers the knowledge, skills and attitude to conduct initial assessment, provide technical report to client and prepare and present job estimate.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Conduct initial assessment	1.1 Effective <i>communication</i> skills are applied to interview the operator of the unit. 1.2 The problem and/or complaint of the customer is assessed based on workplace procedures 1.3 Analytical observation is done to determine the cause of problem and/or complaint of the customer. 1.4 Test run of unit is done to gain full extent of damage to the unit.	1.1 Operation of 4-Wheel Tractor 1.2 4-Wheel Tractor Troubleshooting 1.3 Analytical skills using senses 1.4 Problem or complaint from customers 1.5 Communications skills 1.5.1 Listening to customer 1.5.2 Speaking with suppliers, customer and co-workers	1.1 Basic troubleshooting principles 1.1.1 Common problems 1.2 4-wheel tractor systems 1.3 Nomenclature on faults and failures 1.4 Receiving, Inspection and checklist procedure 1.5 Unit conversions 1.6 Four fundamental mathematical operations (addition, subtraction, multiplication and division) 1.7 Resourcefulness 1.8 Diligence 1.9 Time consciousness 1.10 Cost consciousness 1.11 Personal integrity
2 Provide assessment report to client	2.1 Nature / scope of work to be done is identified. 2.2 Extent of service to be rendered is determined. 2.3 Assessment checklist is submitted to customer.	2.1 Troubleshooting 2.2 Basic mathematics operations 2.3 Communications skills 2.3.1 Giving feedback to clients 2.3.2 Accomplishing forms	2.1 Basic troubleshooting principles 2.2 Agricultural machinery systems 2.3 Nomenclature of agricultural machinery parts 2.4 Nomenclature on faults and failures 2.5 Procedures in accomplishing job order forms

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
			2.6 Receiving, Inspection and checklist procedure 2.7 Unit conversions 2.8 Four fundamental mathematical operations (addition, subtraction, multiplication and division) 2.9 Resourcefulness 2.10 Diligence 2.11 Time consciousness 2.12 Cost consciousness 2.13 Personal integrity
3 Prepare and present job estimate	3.1 <i>Items</i> to be used for repairs are listed following job order 3.2 Cost of parts, supplies, materials are obtained from <i>suppliers</i> 3.3 Total cost of required repair service is calculated in line with SOP 3.4 Estimate is presented to customer in line with SOP 3.5 Approval is requested from customer	3.1 Estimating repair/service work to be done 3.2 Basic mathematics operations 3.3 Communication skills Preparing job estimate Negotiate with clients Practicing customer relations	3.1 Receiving, Inspection and checklist procedure 3.2 Unit conversions 3.3 Cost analysis 3.4 Customer relations 3.5 Four fundamental mathematical operations (addition, subtraction, multiplication and division) 3.6 Resourcefulness 3.7 Diligence 3.8 Time consciousness 3.9 Cost consciousness 3.10 Personal integrity

RANGE OF VARIABLES

1. The problem and /or complaint of the customer	May include: 1.1 Engine failure 1.2 Excessive vibration 1.3 Abnormal noise and smoke 1.4 Difficulty in maneuvering 1.5 Difficulty in gear shifting 1.6 Faulty electrical system 1.7 Hydraulic failure 1.8 Leaks 1.9 Engine overheating
2. Service	May include: 2.1 Labor 2.2 Parts 2.3 Materials 2.4 Consumable items
3. Suppliers	May include: 3.1 Distributors 3.2 Managers 3.3 Purchasing Officers 3.4 Proprietors
4. Total Cost	May include: 4.1 Parts 4.2 Materials 4.3 Supplies 4.4 Labor 4.5 Administrative
5. Items	May include: 5.1 Type and quantity of parts 5.2 Supplies and materials 5.3 labor required to perform work

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Conducted initial assessment, 1.2 Provided technical report to client 1.3 Prepared and presented job estimate
2. Resource Implications	The following resources should be provided: 2.1 Appropriate tools such as calculator, paper, pen, and other measuring instruments relevant to activity. 2.2 Parts Catalogs 2.3 Service Manuals 2.4 Operation Manuals 2.5 Machinery, tools, and accessories
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Written test 3.2 Oral questioning 3.3 Interview 3.4 Demonstration
4. Context of Assessment	4.1 Competency maybe assessed individually in the actual workplace or simulated situation in accredited institution.

UNIT OF COMPETENCY : PERFORM SHOP MAINTENANCE

UNIT CODE : AFF723202

UNIT DESCRIPTOR : This unit covers knowledge, skills and attitude to maintain work area, tools and equipment, store tools and shop equipment, dispose waste and used liquid, and prepare proper inventory.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
1. Maintain work area, tools and equipment	1.1 Cleanliness and orderliness of work area is maintained in accordance with company/office procedures. 1.2 Tools and equipment are cleaned in accordance with manufacturer's instruction manual . 1.3 Work area is arranged according to job requirements. 1.4 Tools, supplies and equipment are checked. 1.5 Wet surfaces in work area is wiped and dried	1.1 Workshop procedures. 1.2 Proper use and maintenance of tools and equipment 1.3 Personal Safety procedures 1.4 Handling of Hazardous materials 1.5 Different cleaning agents and lubricants. 1.6 Occupational Health and safety 1.7 Attitudes: <ul style="list-style-type: none"> • Perseverance • Honesty • Patience Attention to detail 	1.1 Handling cleaning agent and grease / lubricants 1.2 Maintaining tools and equipment. 1.3 Inspecting tools and equipment
2. Store tools and shop equipment	2.1 Tools and equipment are stored in their respective shelves/location. 2.2 Tools and equipment are arranged in accordance with company/office procedures. 2.3 Corresponding	2.1 Labeling procedures 2.2 Storing Procedures 2.3 Personal Safety procedures 2.4 Handling of Hazardous materials 2.5 Occupational Health	2.1 Handling and storage of tools / equipment / supplies and materials. 2.2 Labeling tools, equipment and work area

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms</i> are elaborated in the Range of Variables	REQUIRED KNOWLEDGE	REQUIRED SKILLS
	<p>visible labels are posted in work area.</p> <p>2.4 Tools and equipment are labeled based on procedure.</p>	<p>and safety</p> <p>2.6 Attitudes Perseverance Honesty Patience Attention to detail</p>	
3. Dispose wastes/used liquids	<p>3.1 Containers for used liquids are visibly labeled.</p> <p>3.2 Wastes/used liquids are disposed as per workshop Standard Operating Procedure (SOP)</p> <p>3.3 Waste are segregated according to 3R's</p> <p>3.4 Safety measures are practiced following OSHS</p>	<p>3.1 3R and environmental rules and regulations</p> <p>3.2 Different types of wastes</p> <p>3.3 Handling of Hazardous materials</p> <p>3.4 OSHS</p> <p>3.5 Attitudes: Perseverance Honesty Patience Attention to detail</p>	<p>3.1 Disposing of wastes and fluids</p> <p>3.2 Practicing OSHS and 3R's</p>
4. Prepare inventory reports	<p>4.1 Tools are safely secured and logged in the records</p> <p>4.2 Complete inventory of tools/equipment is maintained.</p> <p>4.3 Damaged and defective tools, equipment and are segregated.</p> <p>4.4 Repair recommendations are submitted to immediate supervisor.</p> <p>4.5 Inventory reports are prepared.</p>	<p>4.1 Inventory procedures</p> <p>4.2 Different damages and defects of tools and equipment</p> <p>4.3 Report preparation</p> <p>4.4 Procedures in accomplishing work</p>	<p>4.1 Processing of damage and accident reports</p> <p>4.2 Monitor inventory of tools and equipment</p> <p>4.3 Preparing report</p> <p>4.4 Accomplishing forms</p> <p>4.5 Communications skills</p> <p>4.6 Mathematical skills</p>

RANGE OF VARIABLES

1. Manufacturer instruction manual	Manufacturer instruction manual may include: 1.1 Tools/equipment manufacturer specifications 1.2 Company operating procedure. 1.3 Product manufacturer specifications
2. Work Area	Work area includes: 2.1 Area used for servicing or repairing equipment. 2.2 Workshop 2.3 On-site / on-field where service / repair is done.
3. Tools	Tools may include: 3.1 Wrenches 3.2 Hammer 3.3 Pliers 3.4 Pullers
4. Supplies	Supplies may include: 4.1 Fuel/Oil 4.2 Cleaning Fluids 4.3 Adhesive Fluids
5. Equipment	Equipment may include: 5.1 Compressors 5.2 Drills 5.3 Hydraulic Press 5.4 Lifter
6. Liquids	Liquids may include: 6.1 Oil 6.2 Fuel 6.3 Solvents 6.4 Water Solutions
7. Damaged and defective tools and equipment	Damaged and defective tools and equipment may include: 7.1 Worn out 7.2 Bent 7.3 Rusted 7.4 Chipped 7.5 Misaligned 7.6 Broken

EVIDENCE GUIDE

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Cleaned the work area 1.2 Maintained tools, equipment and facilities 1.3 Disposed of waste materials as prescribed.
2. Resource Implications	The following resources should be provided: 2.1 Work Area 2.2 Tools and Equipment 2.3 Materials needed for the job
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration of practical skills 3.2 Written examination 3.3 Interview 3.4 Portfolio 3.5 Third-party report
4. Context of Assessment	4.1 Assessment of skills must take place after a period of supervised practice and repetitive experience.

CORE COMPETENCIES

Unit of Competency : DIAGNOSE AND REPAIR ELECTRICAL SYSTEMS OF 4-WHEEL TRACTOR

Unit Code : AFF723303

Unit descriptor : This unit covers knowledge, skills and attitude to service battery, check and replace alternator, service electrical circuits, service starting system components and conduct electrical system test for 4-wheel tractor.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
1. Service battery	<p>1.1 Servicing requirement are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>1.2 Servicing activities for batteries are implemented based on manufacturer's specification.</p> <p>1.3 Battery is tested based on manufacturer's specification.</p> <p>1.4 Safety measures are practiced in proper handling of battery based on OSHS Rule 1080, Rule 1090 and Rule 1150</p> <p>1.5 Waste management in battery disposal is practiced according to environmental regulations.</p> <p>1.6 Waste management is practiced according to environmental laws.</p> <p>1.7 Waste</p>	<p>1.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>1.2 Electrical Systems principles and operations</p> <p>1.3 Servicing activities</p> <p>1.4 Handling of battery and battery fluids</p> <p>1.5 Occupational Health and Safety procedures for handling automotive battery</p> <p>1.6 Wearing of PPE as required by Rule 1080 of OSHS</p> <p>1.7 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage <p>1.8 Testing of battery</p> <p>1.9 Uses of tools for battery testing and replacement</p> <p>1.10 Use of tools for removal and replacement of battery.</p> <p>1.11 Battery disposal</p> <p>1.12 Environmental rules and regulations on battery disposal</p> <p>1.13 RA 6969-Toxic</p>	<p>1.1 Reviewing service requirement based on SDS and GHS</p> <p>1.2 Implementing servicing activities</p> <p>1.3 Testing battery</p> <p>1.4 Handling battery</p> <p>1.5 Handling battery electrolyte</p> <p>1.6 Wearing PPE</p> <p>1.7 Disposing of battery and other wastes</p> <p>1.8 Using testing devices and instruments</p> <p>1.9 Using tools for removal and replacement of battery</p> <p>1.10 Applying OSHS in section 4 - first aid and section 6 – accidental release measures and section 7 – handling and storage</p>

	management is practiced according to Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990.	<p>Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>1.14 Attitude</p> <ul style="list-style-type: none"> • Patient • Honest • Persevere • Time-conscious • Cost-conscious • Quality-conscious • Attention to Details 	
2. Check and replace alternator	<p>2.1 Alternator is tested following manufacturer's specification.</p> <p>2.2 Replacement of alternator is carried-out based on service manual.</p> <p>2.3 Repair of alternator is recommended based on industry practices.</p> <p>2.4 Safety measures are practiced based on ASAE s. 318.15 and OSHS Rule 1150</p>	<p>2.1 Electrical Systems principles and operations</p> <p>2.2 Testing of wiring coherence procedure</p> <p>2.3 Replacement and repair of alternator</p> <p>2.4 Soldering procedures of metal and electrical components</p> <p>2.5 Occupational Health and Safety procedures for handling 12V DC electrical system.</p> <p>2.6 ASAE s. 318.15 – Safety for Agricultural Field Equipment</p> <p>2.7 OSHS - Rule 1150 – Materials Handling and Storage</p> <p>2.8 Computations of current</p> <p>2.9 Use of tools and devices.</p>	<p>2.1 Handling alternator current</p> <p>2.2 Wearing goggles and gloves.</p> <p>2.3 Using multimeter, load tester,</p> <p>2.4 Using tools for removal and replacement of alternator.</p> <p>2.5 Soldering metal and electrical components.</p> <p>2.6 Applying OSHS in section 4 - first aid and section 6 – accidental release measures and section 7 – handling and storage</p>
3. Service Electrical Circuit	<p>3.1 Electrical lines are tested based on industry specification</p> <p>3.2 Repair of short circuits is supervised according to industry specification.</p> <p>3.3 Removal and replacement of consumable electrical parts is guided based on manufacturer's specifications.</p> <p>3.4 Electrical safety</p>	<p>3.1 Types of electrical connection.</p> <p>3.2 Schematic and wiring diagrams</p> <p>3.3 Principles on electrical circuits</p> <p>3.4 Testing of wiring coherence procedure</p> <p>3.5 Electrical Systems principles and operations</p> <p>3.6 Causes of Short circuits</p> <p>3.7 Repair procedures of short circuits</p> <p>3.8 Occupational Health and Safety procedures for handling 12V DC</p>	<p>3.1 Handling electrical current</p> <p>3.2 Wearing PPE.</p> <p>3.3 Use multi-tester, voltmeter, volt ammeter.</p> <p>3.4 Using tools for removal and replacement of electrical parts.</p> <p>3.5 Interpreting schematic and wiring diagram</p> <p>3.6 Wearing of PPE</p> <p>3.7 Use of multi-tester, voltmeter, volt ammeter</p> <p>3.8 Interpreting</p>

	indicators are inspected following the operations manual.	electrical system. 3.9 Wearing of PPEs as required by Rule 1080 of OSHS 3.10 RA 9003-Ecological Solid Waste Management Act of 2000	schematic and wiring diagram 3.9 Soldering of metal and electrical components. 3.10 Reading of indicators
4. Service starting system components	4.1 Starting system components are checked and inspected based on manufacturer's specification 4.2 Problems on starting components are identified based on service manual and toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990. 4.3 Replace and repair of starting system component are carried-out/ supervised based on manufacturer's specifications. 4.4 Safety measures in handling agricultural equipment are practiced based on ASAE s. 318.15 and OSHS Rule 1080 and Rule 1150	4.1 Starting system components 4.2 Removal/ Replacement of starter motor. 4.3 Wearing of PPE as required by Rule 1080 of OSHS 4.4 Use of multi-tester, voltmeter, load tester, volt ammeter. 4.5 Use of tools for removal and replacement of starting motor. 4.6 Soldering of metal and electrical components. 4.7 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 4.8 ASAE s. 318.15 - Safety for Agricultural Field Equipment 4.9 OSHS -Rule 1150 - Materials Handling and Storage -Rule 1080 – Personal Protective Equipment and Devices	4.1 System component parts 4.2 Basic Electrical theory and principle 4.3 Testing of wiring coherence procedure 4.4 Occupational Health and Safety procedures for handling electricity
5. Complete work processes	5.1 Tests are carried out on part and system to ensure normal functioning after repair/ service. 5.2 Final inspection is made based on workplace procedure 5.3 Tractor is turned-over to client for final acceptance following workplace	5.1 OSHS - Rule 1150 - Rule 1090 5.2 Final inspection procedure 5.3 Vehicle turn-over procedure 5.4 Accomplishment of workplace documents 5.5 Occupational Health and Safety procedures for handling agricultural equipment 5.6 Wearing of PPEs as required by Rule 1080	5.1 Conducting final tests and inspections 5.2 Performing tractor turn-over 5.3 Restoring work area 5.4 Managing wastes 5.5 Checking and storing tools and equipment 5.6 Accomplishing workplace documents

	<p>procedure</p> <p>5.4 Work area is restored following 5S of good housekeeping.</p> <p>5.5 Waste management is practiced according to environmental laws.</p> <p>5.6 Tools and equipment are checked and stored according to workplace procedures</p> <p>5.7 Workplace documents are accomplished according to workplace procedures</p>	<p>of OSHS</p> <p>5.7 5S of good housekeeping</p> <p>5.8 Environmental-conservation procedures - 3R</p> <p>5.9 RA 9003-Ecological Solid Waste Management Act of 2000</p> <p>5.10 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p>	
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RANGE OF VARIABLES

1. Servicing Activities	Servicing activities may include: 1.1 Remove and replace 1.2 Charge 1.3 Filled with distilled water
2. Battery	Battery may include: 2.1 Maintenance Free Type 2.2 Dry Cell Type 2.3 Electrolytic Type
3. Short Circuit	Short circuit may include: 3.1 Cut wire 3.2 Burned 3.3 Melted 3.4 Faulty electrical installation
4. Electrical Parts	Electrical Parts may include: 4.1 Fuses 4.2 Relays 4.3 Terminals 4.4 Connectors 4.5 Bulbs/Lamps 4.6 Flasher units 4.7 Switches 4.8 Engine Stop Solenoid 4.9 Sensors
5. Electrical safety indicators	Electrical safety indicators may include: 5.1 Fuel sensor 5.2 Oil sensor 5.3 Temperature sensor 5.4 Pressure sensor
6. Starting system components	Starting system components may include: 6.1 Starter motor 6.2 Magnetic switch 6.3 Ignition switch 6.4 Glow plugs 6.5 Safety levers
7. Problems on starting system components	Problems on starting system components may include: 7.1 Broken starter motor 7.2 Unfunctioning sensor 7.3 Engaged safety levers 7.4 Dead battery 7.5 Undercharged battery
8. Environmental Laws	May include: 8.1 RA 9003-Ecological Solid Waste Management Act of 2000 8.2 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

EVIDENCE GUIDE

<p>Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Serviced battery <ul style="list-style-type: none"> 1.1.1 Implemented servicing activities for batteries 1.1.2 Applied safety measures following OSHS Rule 1150 1.1.3 Managed waste in battery disposal, in accordance to environmental laws and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 1.2 Check and replace alternator <ul style="list-style-type: none"> 1.2.1 Applied safety measures following ASAE s. 318.15 and OSHS Rule 1150 1.2.2 carried-out replacement of alternator 1.3 Service electrical circuit <ul style="list-style-type: none"> 1.3.1 Tested electrical lines 1.3.2 Supervised repair of short circuits 1.3.3 Guided removal and replacement of consumable electrical parts 1.3.4 Inspected electrical safety indicators 1.4 Serviced starting system components <ul style="list-style-type: none"> 1.4.1 Identified problems on starting components 1.4.2 Carried-out/ supervised replace and repair of starting system component 1.4.3 Practiced safety measures in handling agricultural equipment following ASAE s. 318.15 and OSHS Rule 1150 1.5 Completed work processes <ul style="list-style-type: none"> 1.5.1 Carried out tests 1.5.2 Turned-over tractor to client 1.5.3 Checked and stored tools and equipment 1.5.4 Practiced waste management
<p>Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit PPE
<p>Method of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Written Report
<p>Context of Assessment</p>	<p>4.1 Competency may be assessed in actual workplace or at the designated TESDA accredited Assessment Center.</p>

UNIT OF COMPETENCY : **DIAGNOSE AND REPAIR ENGINE SYSTEM OF 4-WHEEL TRACTOR**

UNIT OF CODE : **AFF723304**

UNIT DESCRIPTOR : This unit covers knowledge, skills and attitude to service engine's fuel system, service cooling system, service body and power train system for 4-wheel tractor which includes service engine's lubrication system and testing.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
1. Service engine fuel system	1.1 Handling requirement of fuel are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS). 1.2 Engine fuel system is tested based on manufacturer's specification. 1.3 Removal and replacement of the Injection pump unit is supervised based on manufacturers specification. 1.4 Fuel system is cleaned following industry specification. 1.5 Removal and replacement of fuel filters and strainers are directed following manufacturer's manual and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 1.6 Safety practices are applied following OSHS Rule 1080, Rule 1090, Rule 1150 and RA 6969	1.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 1.2 Fuel system troubleshooting 1.3 Use of tools and special tools 1.4 Clearance measurements 1.5 Proper adjustments of clearances based on manufacturer's specification 1.6 Proper assembling and disassembling of fuel system components 1.7 Types and principles of combustion systems 1.8 Calibration test procedures. 1.9 Precaution in handling of fuels and tools Rule1080 of OSHS 1.10 OSHS -Rule 1090 – Hazardous Material -Rule 1150 – Materials Handling and Storage -Rule 1080 – Personal Protective Equipment and	1.1 Reviewing handling requirement for fuel based on SDS and GHS 1.2 Testing of engine fuel system 1.3 Supervising removal and replacement of the Injection pump unit 1.4 Cleaning Fuel system 1.5 Directing removal and replacement of fuel filters and strainers 1.6 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage 1.7 Applying safety practices following OSHS

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
		Devices 1.1 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 (waste oil)	
2. Service cooling system	2.1 Servicing requirement of coolant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 2.2 Cooling system is tested based on manufacturers specification. 2.3 Radiator is repaired following service repair manual and environmental laws . 2.4 Replacement of air filter is supervised as per service repair manual. 2.5 Adjustment and replacement of radiator fan and belt is carried-out following service repair manual. 2.6 Oil replenishment and replacement are managed based on manufacturer's manual and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990. 2.7 Replenishment and replacement of coolant is overseen according to manufacturer's manual 2.8 Safety measures are practiced according to OSHS Rule 1080,	2.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 2.2 Handling of basic and special tools based on service manual 2.3 Handling of hazardous liquids based on OSHS Rule 1090 2.4 Proper assembling and disassembling of cooling system components 2.5 Replacement and replenishment of coolant and oil 2.6 Principles and operation of radiator 2.7 Principles and operations of water pump 2.8 Radiator fluids 2.9 Precaution in handling coolant and special tools 2.10 Wearing of PPEs as required by Rule 1080 of OSHS 2.11 OSHS - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices 2.12 RA 6969-Toxic	2.1 Reviewing service requirement of coolant based on SDS and GHS 2.2 Testing cooling system 2.3 Repairing radiator 2.4 Supervising replacement of air filter 2.5 Carrying-out adjustment and replacement of radiator fan and belt 2.6 Managing oil replenishment and replacement 2.7 Overseeing replenishment and replacement of coolant 2.8 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage 2.9 Applying safety practices following OSHS

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	Rule 1090 and Rule 1150	Substances and Hazardous and Nuclear Wastes Control Act of 1990 2.13 RA 9003- Ecological Solid Waste Management Act of 2000	
3. Service body and power train system of engines	<p>3.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>3.2 Body and power train system of engines is tested based on manufacturer's specification.</p> <p>3.3 Piston and piston ring are removed and replaced following service repair manual and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990.</p> <p>3.4 Valves are adjusted as per manufacturers specification</p> <p>3.5 Timing gears are set according to manufacturer's specification.</p> <p>3.6 Drive train is adjusted according to manufacturer's specification.</p> <p>3.7 Supervision duties is performed following workplace requirement</p> <p>3.8 Safety practices are applied following OSHS Rule 1080,</p>	<p>3.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>3.2 Body and power train system troubleshooting</p> <p>3.3 Clearance measurements</p> <p>3.4 Use of special tools</p> <p>3.5 Tightening torque for engines based on manufacturer's specifications</p> <p>3.6 Basic Components of engine's body and power train system</p> <p>3.7 Principles of operation and maintenance of engines</p> <p>3.8 RA 8749-Clean Air Act of 1999</p> <p>3.9 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>3.10 Wearing of PPEs as required by Rule1080 of OSHS</p> <p>3.11 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment 	<p>3.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS</p> <p>3.2 Testing body and power train system of engines</p> <p>3.3 Removing and replacing piston and piston ring</p> <p>3.4 Adjusting valves</p> <p>3.5 Setting timing gears</p> <p>3.6 Adjusting drive train</p> <p>3.7 Performing supervision duties</p> <p>3.8 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage</p> <p>3.9 Applying safety practices following OSHS</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
4. Service engine lubrication system	<p>Rule 1150 and 1090</p> <p>4.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>4.2 Oil levels are checked based on manufacturers specification</p> <p>4.3 Oil filters are replaced following service repair manual and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>4.4 Oil pump is inspected and repaired as per service repair manual and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990.</p> <p>4.5 Supervision duties is performed following</p> <p>4.6 Safety practices are applied following OSHS Rule 1080, Rule 1090 and Rule 1150</p>	<p>and Devices</p> <p>4.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>4.2 Handling of lubricants</p> <p>4.3 Identification of lubricants</p> <p>4.4 Types and Classification of lubricants</p> <p>4.5 Lubricating system theories and principles.</p> <p>4.6 Precaution in handling lubricants and special tools</p> <p>4.7 Wearing of PPEs as required by Rule1080 of OSHS</p> <p>4.8 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices <p>4.9 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p>	<p>4.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS</p> <p>4.2 Checking oil levels</p> <p>4.3 Replacing oil filters</p> <p>4.4 Inspecting and repairing oil pump</p> <p>4.5 Performing supervision duties</p> <p>4.6 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage</p> <p>4.7 Applying safety practices following OSHS</p>
5. Complete work processes	<p>5.1 Tests are carried out on part or system to ensure normal functioning after service*</p> <p>5.2 Final inspection is made based on workplace procedure*</p> <p>5.3 Tractor is turned-over to client for acceptance following</p>	<p>5.2 OSHS</p> <ul style="list-style-type: none"> - Rule 1150 - Rule 1090 <p>5.2 Final inspection procedure</p> <p>5.3 Vehicle turn-over procedure</p> <p>5.4 Accomplishment of workplace documents</p> <p>5.5 Occupational Health and Safety</p>	<p>5.1 Conducting final tests and inspections</p> <p>5.2 Performing tractor turn-over</p> <p>5.3 Restoring work area</p> <p>5.4 Managing wastes</p> <p>5.5 Checking and storing tools and equipment</p> <p>5.6 Accomplishing workplace documents</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>workplace procedure</p> <p>5.4 Work area is restored following 5S of good housekeeping.</p> <p>5.5 Waste management is practiced according to environmental laws.</p> <p>5.6 Tools and equipment are checked and stored according to workplace procedures</p> <p>5.7 Workplace documents are accomplished according to workplace procedures</p>	<p>procedures of handling agricultural equipment</p> <p>5.6 Wearing of PPEs as required by Rule 1080 of OSHS</p> <p>5.7 5S of Good Housekeeping</p> <p>5.8 Environmental-conservation procedures - 3R</p> <p>5.9 RA 9003-Ecological Solid Waste Management Act of 2000</p> <p>5.10 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p>	

RANGE OF VARIABLES

<p>1. Fuel System</p>	<p>Fuel system includes:</p> <ul style="list-style-type: none"> 1.1 Fuel injection Pump 1.2 Fuel Filters 1.3 Fuel Line 1.4 Fuel Tank 1.5 Strainers 1.6 Fuel feed pump (mechanical/electric) 1.7 Injection nozzle 1.8 Shut off valve
<p>2. Cooling System</p>	<p>Cooling system includes:</p> <ul style="list-style-type: none"> 2.1 Radiator 2.2 Radiator fan and belt 2.3 Water Pump 2.4 Thermostat 2.5 Air Filter 2.6 Cooling Fan 2.7 Radiator cap 2.8 Water jacket 2.9 Cooling reservoir 2.10 Radiator hose
<p>3. Body and Power Train system of Engines</p>	<p>Body and Power Train system of Engines includes:</p> <ul style="list-style-type: none"> 3.1 Cylinder head 3.2 Cylinder block 3.3 Crankshaft 3.4 Piston and Piston ring 3.5 Connecting rod 3.6 Camshaft 3.7 Rocker arm assembly 3.8 Intake and exhaust valves 3.9 Timing gear 3.10 Flywheel
<p>4. Drive Train</p>	<p>Includes:</p> <ul style="list-style-type: none"> 4.1 Gears 4.2 Main Drive Shaft
<p>5. Environmental Laws</p>	<p>May include:</p> <ul style="list-style-type: none"> 5.1 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 5.2 RA 9003-Ecological Solid Waste Management Act of 2000

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Service engine fuel system</p> <ul style="list-style-type: none"> 1.1.1 Reviewed handling requirement of fuel based on SDS and GHS 1.1.2 Supervised removal and replacement of the Injection pump unit 1.1.3 Directed removal and replacement of fuel filters and strainers 1.1.4 Applied safety practices following OSHS Rule 1090, Rule 1150 and RA 6969 <p>1.2 Service cooling system</p> <ul style="list-style-type: none"> 1.2.1 Reviewed handling requirement of coolant based on SDS and GHS 1.2.2 Repaired Radiator 1.2.3 Supervised replacement of air filter 1.2.4 Managed oil replenishment and replacement 1.2.5 Overseen replenishment and replacement of coolant 1.2.6 Applied safety practices following OSHS Rule 1090 <p>1.3 Service body and power train system of engines</p> <ul style="list-style-type: none"> 1.3.1 Reviewed handling requirement of coolant based on SDS and GHS 1.3.2 Removed and replaced Piston and piston ring 1.3.4 Adjusted valves 1.3.4 Set Timing gears according to manufacturer's specification. 1.3.5 Adjusted drive train 1.3.6 Applied safety practices <p>1.4 Service engine Lubrication System</p> <ul style="list-style-type: none"> 1.4.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.4.2 Checked oil levels 1.4.4 Replaced oil filters 1.4.4 Inspected and repaired oil pump 1.4.5 Applied safety practices following OSHS Rule 1090 and Rule 1150 <p>1.5 Complete work processes</p> <ul style="list-style-type: none"> 1.5.1 Carried out Tests on part or system 1.5.2 Turned-over Tractor to-client 1.5.3 Restored Work area following 5S of good housekeeping. 1.5.4 Practiced waste management
<p>2 Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit PPE
<p>3 Method of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Third-party report
<p>4 Context of Assessment</p>	<p>5.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.</p>

UNIT OF COMPETENCY : DIAGNOSE AND REPAIR AXLE SYSTEM OF 4-WHEEL TRACTOR

UNIT CODE : AFF723305

UNIT DESCRIPTOR : This unit covers knowledge, skills and attitude to service front and rear axles, service brake system, service steering system, service differential system and conduct brake, steering and axle system test of 4 Wheel Tractor.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
1. Service front and rear axles	1.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 1.2 Axle system is inspected as per manufacturer's specifications. 1.3 Axle system is serviced as per manufacturer's specifications. 1.4 Gear and hydraulic oil is checked according to manufacturer's manual and environmental laws . 1.5 Greasing is applied and maintained following manufacturer's manual. 1.6 Replenishment and replacement of Gear and hydraulic oil are conducted following manufacturer's manual 1.7 Supervision duties is performed following workplace requirement	1.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 1.2 Interpretation of service manual 1.3 Inspection and adjustment of axle system 1.4 Removal, replacement and repair procedure 1.5 Construction and operation of differential and front axle 1.6 Measuring and testing procedure 1.7 Maintenance using grease 1.8 Equipment and personal safety requirements 1.9 Vehicle/plant safety requirements 1.10 5S of Good Housekeeping 1.11 Environmental-conservation procedures - 3R 1.12 Axle	1.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS 1.2 Accessing, interpreting and applying technical information 1.3 Using relevant tools and equipment 1.4 Identifying faults in differential and front axle 1.5 Testing and adjusting differential & front axle, wheel hub 1.6 Applying manual handling methods 1.7 Applying personal safety procedures 1.8 Using of grease gun 1.9 Performing supervision duties 1.10 Applying SDS Section 4 -

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	1.8 Safety practices are applied following OSHS Rule 1080, Rule 1150 and Rule 1090	lubricants/fluids and their application 1.13 Equipment safety requirements 1.14 Farm Tractor safety requirements 1.15 Handling of special tools and equipment 1.16 Relevant manufacturer/enterprise policies 1.17 Personal safety procedure 1.18 RA 9003- Ecological Solid Waste Management Act of 2000 1.19 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 1.20 Wearing of PPEs as required by Rule1080 of OSHS 1.21 OSHS - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices 1.22 Attitudes • Patience • Honesty • Perseverance • Attention to Details	First aid, Section 6 – Accidental release measures and Section 7 – handling and storage 1.11 Applying safety practices following OSHS

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
2. Service brake system	2.1 Handling requirement of brake fluid are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 2.2 Brake system components are inspected according to manufacturer's manual and environmental laws . 2.3 Brake system components are adjusted and replaced manufacturer's manual and environmental laws . 2.4 Supervision duties is performed following workplace requirement 2.5 Safety measures are implemented according to OSHS Rule 1080, Rule 1090 and Rule 1150	2.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 2.2 Specified thickness 2.3 Component wear analysis 2.4 Use measuring instruments and torque wrench 2.5 Different brake system 2.6 Hydraulic brake 2.7 Mechanical brake 2.8 Wearing of PPEs as required by Rule1080 of OSHS 2.9 OSHS <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices 2.10 RA 9003- Ecological Solid Waste Management Act of 2000 2.11 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990	2.1 Reviewing handling requirement for brake fluid based on SDS and GHS 2.2 Inspecting brake system component 2.3 Adjusting and replacing brake system component 2.4 Using measuring instruments caliper and torque wrench 2.5 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage 2.6 Applying safety practices following OSHS
3. Service steering system	3.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally	3.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 3.2 Hard steering system components 3.3 Oil viscosity	3.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS 3.2 Checking steering system

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>Harmonized Standard (GHS)</p> <p>3.1 Steering system components are checked according to manufacturer's manual and environmental laws.</p> <p>3.2 Steering system components are replaced and adjusted according to manufacturer's manual and environmental laws.</p> <p>3.3 Oil replenishment and replacement are conducted following manufacturer's manual and environmental laws.</p> <p>3.4 Supervision duties is performed following workplace requirement</p> <p>3.5 Safety gear is worn according to OSHS Rule 1080, Rule 1090 and Rule 1150</p>	<p>3.4 Oil replenishment and replacement procedures</p> <p>3.5 Wearing of PPEs as required by Rule 1080 of OSHS</p> <p>3.6 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices <p>3.7 Environmental-conservation procedures</p> <ul style="list-style-type: none"> - 3R <p>3.8 RA 9003-Ecological Solid Waste Management Act of 2000</p> <p>3.9 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p>	<p>component</p> <p>3.3 Replacing and adjusting steering system component</p> <p>3.4 Conducting oil replenishment and performing supervision duties</p> <p>3.5 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage</p> <p>3.6 Applying safety practices following OSHS</p>
4. Service differential system	<p>4.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>4.2 Hydraulic and gear oil is checked and replaced following manufacturer's</p>	<p>4.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>4.2 Manual handling techniques</p> <p>4.3 Personal safety procedures</p> <p>4.4 S of Good Housekeeping</p> <p>4.5 Environmental-conservation procedures</p>	<p>4.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS</p> <p>4.2 Accessing, interpreting and applying technical information</p> <p>4.3 Using relevant tools and equipment</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>manual and environmental laws</p> <p>4.3 Pinion ring gear assembly is replaced following manufacturer's manual and environmental laws.</p> <p>4.4 Greasing is applied and maintained following manufacturer's manual</p> <p>4.5 Supervision duties is performed following workplace requirement</p> <p>4.6 Safety practices is applied following OSHS Rule 1080, Rule 1090 and Rule 1150</p>	<p>- 3Rs</p> <p>4.6 RA 9003- Ecological Solid Waste Management Act of 2000</p> <p>4.7 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>4.8 Wearing of PPEs as required by Rule 1080 of OSHS</p> <p>4.9 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices <p>4.10 Attitudes</p> <ul style="list-style-type: none"> • Patience • Honesty • Perseverance • Attention to Details 	<p>4.4 Applying personal safety procedure</p> <p>4.5 Applying manual handling methods</p> <p>4.6 Repairing, removing and replacing differential mounting</p> <p>4.7 Using grease gun</p> <p>4.8 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage</p> <p>4.9 Applying safety practices following OSHS</p>
5. Complete work processes	<p>5.1 Final inspection is made based on workplace procedure</p> <p>5.2 Tractor is turned-over to client for acceptance following workplace procedure</p> <p>5.3 Work area is restored following 5S of good housekeeping.</p> <p>5.4 Waste management</p>	<p>5.1 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1080 – Personal Protective Equipment and Devices - Rule 1150 – Materials Handling and Storage <p>5.2 Occupational Health and Safety procedures for</p>	<p>5.1 Conducting final inspection</p> <p>5.2 Turning-over tractor</p> <p>5.3 Restoring working area</p> <p>5.4 Managing waste</p> <p>5.5 Checking and storing tools and equipment</p> <p>5.6 Accomplish workplace documentation</p> <p>5.7 Carrying -out test on part or</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>is practiced according to <i>environmental laws.</i></p> <p>5.5 <i>Tools and equipment</i> are checked and stored according to workplace procedures</p> <p>5.6 <i>Workplace documents</i> are accomplished according to workplace procedures</p> <p>5.7 Tests are carried out on part or system to ensure normal functioning after repair/ service.</p>	<p>handling agricultural equipment</p> <p>5.3 Wearing of PPEs as required by Rule 1080 of OSHS</p> <p>5.4 5S of good housekeeping</p> <p>5.5 Waste management - 3Rs</p> <p>5.6 Final inspection procedure</p> <p>5.7 Vehicle turn-over procedure</p> <p>5.8 Accomplishment of workplace documents</p> <p>5.9 RA 9003- Ecological Solid Waste Management Act of 2000</p> <p>5.10 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p>	<p>system</p>

RANGE OF VARIABLES

1. Axle system	<p>Axle system may include:</p> <ul style="list-style-type: none"> 1.1 Front axle bracket 1.2 Front axle support 1.3 Front axle differential 1.4 Bevel gear case 1.5 Wheel hub 1.6 Rear axle bracket 1.7 Rear axle support 1.8 Rear axle differential 1.9 Oil seal 1.10 Cross joints
2. Brake system components	<p>Brake system components may include:</p> <ul style="list-style-type: none"> 2.1 Brake housing <ul style="list-style-type: none"> 2.2.1. Brake discs 2.2.2. Brake plate
3. Inspection of brake system	<p>Inspection of brake system may include:</p> <ul style="list-style-type: none"> 3.1 brake fluid testing 3.2 component wear analysis 3.3 inspection of brake clearance
4. Steering system components	<p>Steering system components may include:</p> <ul style="list-style-type: none"> 4.1 Steering wheel 4.2 Steering cylinder 4.3 Steering lines 4.4 Steering reservoir 4.5 Oil sealer 4.6 Relief valve 4.7 Steering oil pump
5. Checking of steering system components	<p>Checking of steering system components may include:</p> <ul style="list-style-type: none"> 5.1 Pressure of oil 5.2 Leakages checking on steering lines 5.3 Checking steering wheel play 5.4 Oil viscosity 5.5 Component wear analysis
6. Transfer case system	<p>Transfer case system may include:</p> <ul style="list-style-type: none"> 6.1 Drive system 6.2 Oil seal 6.3 Bearing 6.4 Pins
7. Environmental Laws	<p>May include:</p> <ul style="list-style-type: none"> 7.1 RA 9003-Ecological Solid Waste Management Act of 2000 7.2 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Serviced front and rear axles <ul style="list-style-type: none"> 1.1.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.1.2 Serviced axle system 1.1.3 Checked Gear and hydraulic oil 1.1.4 Conducted replenishment and replacement of Gear and hydraulic oil 1.1.5 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.2 Service brake system <ul style="list-style-type: none"> 1.2.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.2.2 Inspected brake system components 1.2.3 Adjusted and replaced brake system components 1.2.4 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.3 Service steering system <ul style="list-style-type: none"> 1.3.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.3.2 Replaced and adjusted Steering system components 1.3.3 Conducted oil replenishment and replacement 1.3.4 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.4 Service differential system <ul style="list-style-type: none"> 1.4.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.4.2 Replaced Pinion ring gear assembly 1.4.3 Applied and maintained Greasing 1.4.4 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.5 Complete work processes <ul style="list-style-type: none"> 1.5.1 Made Final inspection 1.5.2 Turned-over tractor to client 1.5.3 Restored Work area following 5S of good housekeeping. 1.5.4 Practiced waste management 1.5.5 Checked and stored Tools and equipment
<p>2 Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit PPE
<p>3 Method of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Third-party report
<p>4 Context of Assessment</p>	<p>4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.</p>

UNIT OF COMPETENCY : DIAGNOSE AND REPAIR HYDRAULIC SYSTEM OF 4-WHEEL TRACTOR

UNIT CODE : AFF723306

UNIT DESCRIPTOR : This unit covers knowledge, skills and attitude to service hydraulic pump, service hydraulic distributor, service hydraulic lift arms, service hydraulic pressure lines, blocks and reservoir and conduct hydraulic system test of agricultural machinery.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
1. Service hydraulic pump	1.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 1.2 Pressure test is done to confirm with manufacturer's specifications. 1.3 Variance in pressure is cross-checked in accordance with manufacturer's specification 1.4 Seals are checked and replaced according to manufacturer's specifications and Ecological Solid Waste Management Act of 2000 1.5 Gear oil pump is replaced following manufacturer's manual and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990	1.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 1.2 Principles of hydraulics 1.3 Removal, replacement and repair procedures 1.4 Construction and operation of hydraulic pump 1.5 Measuring and testing procedures 1.6 Oil type and specifications 1.7 Equipment safety requirements 1.8 Personal safety procedures 1.9 5S of Good Housekeeping 1.10 RA 9003- Ecological Solid Waste Management Act of 2000 1.11 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 1.12 Wearing of PPEs as required by Rule1080 of OSHS	1.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS 1.2 Conducting pressure test 1.3 Cross – checking variance in pressure 1.4 Checking and replacing seals 1.5 Replacing gear oil pump 1.6 performing supervision 1.7 Using special tools to conduct pressure tests 1.8 Using metering tools 1.9 Troubleshooting on hydraulics 1.10 Conducting measuring and recording 1.11 Using special tools for removal and assembly 1.12 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>1.6 Supervision duties is performed following workplace requirement</p> <p>1.7 Safety practices is applied following OSHS Rule 1080, Rule 1090 and Rule 1150</p>	<p>1.13 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices <p>1.14 Attitudes</p> <ul style="list-style-type: none"> • Patience • Honesty • Perseverance • Attention to Details 	<p>1.13 Applying safety practices following OSHS</p>
<p>2. Service Hydraulic Distributor</p>	<p>2.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>2.2 Pressure tests is conducted in accordance with manufacturer's specification.</p> <p>2.3 Seals are checked and replaced based manufacturer's specification and Ecological Solid Waste Management Act of 2000</p> <p>2.4 Position and draft control sensitivity are adjusted in accordance with manufacturer's specification.</p> <p>2.5 Hydraulic flow rate is adjusted in accordance with manufacturer's specification.</p>	<p>2.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>2.2 Principles of hydraulics.</p> <p>2.3 Removal, replacement and repair procedures</p> <p>2.4 Construction and operation of hydraulic pump.</p> <p>2.5 Measuring and testing procedures</p> <p>2.6 Oil type and specifications.</p> <p>2.7 Equipment safety requirements</p> <p>2.8 Personal safety procedures</p> <p>2.9 5S of Good Housekeeping</p> <p>2.10 RA 9003- Ecological Solid Waste Management Act of 2000</p> <p>2.11 Wearing of PPEs as required by Rule 1080 of OSHS</p>	<p>2.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS</p> <p>2.2 Using special tools to conduct pressure tests.</p> <p>2.3 Conducting pressure test</p> <p>2.4 Checking and replacing seals</p> <p>2.5 Adjusting position and draft control sensitivity</p> <p>2.6 Adjusting hydraulic flow rate</p> <p>2.7 Performing supervision</p> <p>2.8 Using metering tools.</p> <p>2.9 Troubleshooting on hydraulics.</p> <p>2.10 Measuring and recording</p> <p>2.11 Using special tools needed to removal and assembly</p> <p>2.12 Applying SDS Section 4 - First</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>2.6 Supervision duties is performed following workplace requirement</p> <p>2.7 Safety practices is applied following OSHS Rule 1090 and Rule 1150</p>	<p>2.12 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices <p>2.13 Attitudes</p> <ul style="list-style-type: none"> • Patience • Honesty • Perseverance • Attention to Details 	<p>aid, Section 6 – Accidental release measures and Section 7 – handling and storage</p> <p>2.13 Applying safety practices following OSHS</p>
<p>3. Service Hydraulic Lift Arms</p>	<p>3.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>3.2 Mechanical lift arm clearances are checked according to manufacturer's specification.</p> <p>3.3 Bearings and springs are checked and replaced according to manufacturer's specification and Ecological Solid Waste Management Act of 2000</p> <p>3.4 Position and Draft control are calibrated according to manufacturer's specification.</p> <p>3.5 Hydraulic lift arms are adjusted according to manufacturer's</p>	<p>3.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>3.2 Principles of hydraulics.</p> <p>3.3 Removal, replacement and repair procedures</p> <p>3.4 Construction and operation of hydraulic Lift Arms.</p> <p>3.5 Measuring and testing procedures</p> <p>3.6 Oil type and specifications.</p> <p>3.7 Equipment safety requirements</p> <p>3.8 Personal safety procedures</p> <p>3.9 5S of Good Housekeeping</p> <p>3.10 RA 9003- Ecological Solid Waste Management Act of 2000</p> <p>3.11 Wearing of PPEs as required by Rule 1080 of OSHS</p>	<p>3.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS</p> <p>3.2 Checking of mechanical lift arm and lift arm oil cylinder</p> <p>3.3 Checking and replacing bearings and springs</p> <p>3.4 Calibrating position and or draft control</p> <p>3.5 Adjusting hydraulic lift arms</p> <p>3.6 Repairing mechanical control levers</p> <p>3.7 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage</p> <p>3.8 Applying safety practices following</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>specification.</p> <p>3.6 Mechanical control levers are repaired according to manufacturer's specification and Ecological Solid Waste Management Act of 2000</p> <p>3.7 Safety practices is applied following OSHS Rule 1080, Rule 1090 and Rule 1150</p>	<p>3.12 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices <p>3.13 Attitudes</p> <ul style="list-style-type: none"> • Patience • Honesty • Perseverance • Attention to Details 	<p>OSHS</p>
<p>4. Service Hydraulic pressure lines blocks and reservoir</p>	<p>4.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>4.2 Hydraulic pressure lines, blocks and reservoir are checked and replaced following manufacturer's specification and Ecological Solid Waste Management Act of 2000</p> <p>4.3 Hydraulic blocks are cleaned according to manufacturer's specification.</p> <p>4.4 Pressure test is conducted on hydraulic blocks according to manufacturer's specification.</p> <p>4.5 Refitting job is</p>	<p>4.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>4.2 Principles of hydraulics</p> <p>4.3 Removal, replacement and repair procedures</p> <p>4.4 Construction and operation of hydraulic pump.</p> <p>4.5 Measuring and testing procedures</p> <p>4.6 Oil type and specifications.</p> <p>4.7 Equipment safety requirements</p> <p>4.8 5S of Good Housekeeping</p> <p>4.9 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>4.10 Wearing of PPEs as required by Rule 1080 of OSHS</p>	<p>4.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS</p> <p>4.2 Checking and repairing hydraulic pressure lines</p> <p>4.3 Cleaning of hydraulic blocks</p> <p>4.4 Performing pressure test</p> <p>4.5 Performing replenishing and replacement of hydraulic oil</p> <p>4.6 Performing supervision</p> <p>4.7 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage</p> <p>4.8 Applying safety practices following OSHS</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>outsourced following job requirements.</p> <p>4.6 Replenishing and replacement of Hydraulic oil is performed following manufacturer's manual and Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>4.7 Supervision duties is performed following workplace requirement</p> <p>4.8 Safety practices is applied following OSHS Rule 1080, Rule 1090 and Rule 1150</p>	<p>4.11 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices <p>4.12 Attitudes</p> <ul style="list-style-type: none"> • Patience • Honesty • Perseverance • Attention to Details 	
5. Complete work processes	<p>5.1 Final inspection is made based on workplace procedure</p> <p>5.2 Tractor is turned-over to client for acceptance following workplace procedure</p> <p>5.3 Work area is restored following 5S of good housekeeping.</p> <p>5.4 Waste management is practiced according to environmental laws.</p> <p>5.5 Tools and equipment are checked and stored according to workplace procedures</p> <p>5.6 Workplace</p>	<p>5.1 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1080 – Personal Protective Equipment and Devices - Rule 1150 – Materials Handling and Storage <p>5.2 Occupational Health and Safety procedures for handling agricultural equipment</p> <p>5.3 Wearing of PPEs as required by Rule 1080 of OSHS</p> <p>5.4 Wearing of PPEs</p> <ul style="list-style-type: none"> - 3Rs <p>5.5 5S of good</p>	<p>5.1 Conducting final inspection</p> <p>5.2 Turning -over tractor</p> <p>5.3 Restoring working area</p> <p>5.4 Managing waste</p> <p>5.5 Checking and restoring tools and equipment</p> <p>5.6 Accomplishing workplace documentations</p> <p>5.7 Carrying – out test</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p><i>documents</i> are accomplished according to workplace procedures</p> <p>5.7 Tests are carried out on part or system to ensure normal functioning after repair/ service.</p>	<p>housekeeping</p> <p>5.6 Waste management</p> <p>5.7 Final inspection procedure</p> <p>5.8 Vehicle turn-over procedure</p> <p>5.9 Accomplishment of workplace documents</p> <p>5.10 RA 9003- Ecological Solid Waste Management Act of 2000</p> <p>5.11 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p>	

RANGE OF VARIABLES

1. Seals	Seals includes: 1.1 Oil Seal 1.2 O-Rings 1.3 Packing Seals
2. Mechanical Lift Arm	Mechanical Lift Arm may include: 2.1 Lift Arm 2.2 Bushing 2.3 Lift Arm Pump 2.4 O-ring 2.5 Oil Seals
3. Checking hydraulic pressure	Checking hydraulic pressure may include: 3.1 Checking oil leaks 3.2 Checking pressure
4. Environmental Laws	Environmental Laws may include: 4.1 RA 9003-Ecological Solid Waste Management Act of 2000 4.2 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Serviced hydraulic pump <ul style="list-style-type: none"> 1.1.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.1.2 Done pressure test 1.1.3 Checked and replaced seals 1.1.4 Replaced gear oil pump 1.1.5 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.2 Service Hydraulic Distributor <ul style="list-style-type: none"> 1.2.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.2.2 Conducted pressure tests 1.2.3 Checked and replaced seals 1.2.4 Adjusted hydraulic flow rate 1.2.5 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.3 Service Hydraulic Lift Arms <ul style="list-style-type: none"> 1.3.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.3.2 Checked and replaced bearings and springs 1.3.3 Adjusted hydraulic lift arms 1.3.4 Repaired mechanical control levers 1.3.5 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.4 Service Hydraulic pressure lines blocks and reservoir <ul style="list-style-type: none"> 1.4.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.4.2 Checked-and replaced hydraulic pressure lines, blocks and reservoir 1.4.3 Conducted pressure test 1.4.4 Performed replenishing and replacement of Hydraulic oil 1.4.5 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 1.5 Complete work processes <ul style="list-style-type: none"> 1.1.1 Made final inspection 1.1.2 Turned-over tractor to client 1.1.3 Practiced waste management 1.1.4 Checked and stored tools and equipment
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE

	2.5 First Aid Kit PPE
3. Method of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Third-party report
4. Context of Assessment	4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.

Unit of Competency : DIAGNOSE AND REPAIR TRANSMISSION SYSTEM OF 4-WHEEL TRACTOR

Unit Code : AFF723307

Unit descriptor : This unit covers knowledge, skills and attitude to service clutch system, service drive train system and conduct transmission system tests of 4-wheel tractor.

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
1. Service clutch system	1.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 1.2 Clutch clearances are adjusted based on manufacturer' specification. 1.3 Wear and tear of clutch disk and pressure plates is checked based on manufacturer' specification. 1.4 Release bearings are checked based on manufacturer's specification. 1.5 Removal and replacement of defective clutch parts are carried out following manufacturer's specification and Ecological Solid Waste Management	1.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS) 1.2 Clutch system principle and operation. 1.3 Handling of transmission oil. 1.4 Occupational Health and Safety procedures for handling agricultural equipment 1.5 Wearing of PPEs as required by Rule1080 of OSHS 1.6 OSHS <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage - Rule 1080 – Personal Protective Equipment and Devices 1.7 5S of Good Housekeeping 1.8 RA 9003-Ecological Solid Waste Management Act of 2000 1.9 Attitudes <ul style="list-style-type: none"> • Patience • Honesty • Perseverance • Attention to Details 	1.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS 1.2 Adjusting clutch clearances 1.3 Checking of wear and tear of clutch disc, pressure plates, and release bearings 1.4 Removing and replacing defective parts 1.5 Maintaining proper greasing 1.6 Adjusting clutch clearances and clutch pedal free play 1.7 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and Section 7 – handling and storage 1.8 Applying safety practices following OSHS

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>Act of 2000</p> <p>1.6 Clutch pedal free play is adjusted according to manufacturer's specification.</p> <p>1.7 Supervision duties is performed following workplace requirement</p> <p>1.8 Safety practices is applied following OSHS Rule 1080, Rule 1090 and Rule 1150</p>		
2. Service drive train system	<p>2.1 Handling requirement of oil and lubricant are reviewed based on Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>2.2 Tightness of torques of the drive train system bolts are checked following manufacturer's specification.</p> <p>2.3 Gear spacing clearances are checked according to manufacturer's specification.</p> <p>2.4 Gears are inspected and replaced based on manufacturer's manual and Toxic</p>	<p>2.1 Uses of Safety Data Sheet (SDS) and Globally Harmonized Standard (GHS)</p> <p>2.2 Drive train system principle and operation.</p> <p>2.3 Handling of transmission oil.</p> <p>2.4 Occupational Health and Safety procedures for handling agricultural equipment</p> <p>2.5 5S of Good Housekeeping</p> <p>2.6 RA 9003-Ecological Solid Waste Management Act of 2000</p> <p>2.7 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>2.8 Wearing of PPEs as required by Rule1080 of OSHS</p> <p>2.9 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1150 – Materials Handling and Storage 	<p>2.1 Reviewing handling requirement for oil and lubricant based on SDS and GHS</p> <p>2.2 Checking tightness of torques</p> <p>2.3 Checking gear spacing</p> <p>2.4 Inspecting and replacing gears</p> <p>2.5 Inspecting gear shafting and bearings</p> <p>2.6 Inspecting lock pins</p> <p>2.7 Adjusting shift forks and levers</p> <p>2.8 Removing and replacing damaged parts</p> <p>2.9 Performing supervision</p> <p>2.10 Applying SDS Section 4 - First aid, Section 6 – Accidental release measures and</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <p>2.5 Gear shafting and bearings are inspected for damages following manufacturer's specification.</p> <p>2.6 Lock pins are inspected for wear and tear.</p> <p>2.7 Shift forks and levers are adjusted to manufacturer's specification.</p> <p>2.8 Damaged parts are removed and replaced following manufacturer's specification and environmental laws.</p> <p>2.9 Supervision duties is performed following workplace requirement</p> <p>2.10 Safety practices is applied following OSHS Rule 1080, Rule 1090 and Rule 1150</p>	<p>- Rule 1080 – Personal Protective Equipment and Devices</p> <p>2.10 Attitudes</p> <ul style="list-style-type: none"> • Patience • Honesty • Perseverance • Attention to Details 	<p>Section 7 – handling and storage</p> <p>2.11 Applying safety practices following OSHS</p>
3. Complete work processes	<p>3.1 Final inspection is made based on workplace procedure</p> <p>3.2 Tractor is turned-over to immediate superior for quality control</p>	<p>3.1 OSHS</p> <ul style="list-style-type: none"> - Rule 1090 – Hazardous Material - Rule 1080 – Personal Protective Equipment and Devices - Rule 1150 – Materials Handling 	<p>3.1 Conducting final inspection</p> <p>3.2 Turning -over of tractor to client</p> <p>3.3 Restoring working area</p> <p>3.4 Managing wastes</p> <p>3.5 Checking and</p>

ELEMENT	PERFORMANCE CRITERIA <i>Italicized terms are elaborated in the Range Statement</i>	REQUIRED KNOWLEDGE AND ATTITUDE	REQUIRED SKILL
	<p>following workplace procedure</p> <p>3.3 Work area is restored following 5S of good housekeeping.</p> <p>3.4 Waste management is practiced according to environmental laws.</p> <p>3.5 Tools and equipment are checked and stored according to workplace procedures</p> <p>3.6 Workplace documents are accomplished according to workplace procedures</p> <p>3.7 Tests are carried out on part or system to ensure normal functioning after repair/ service.</p>	<p>and Storage</p> <p>3.2 Occupational Health and Safety procedures for handling agricultural equipment</p> <p>3.3 Wearing of PPEs as required by Rule 1080 of OSHS</p> <p>3.4 5S of Good Housekeeping</p> <p>3.5 Waste management - 3Rs</p> <p>3.6 Final inspection procedure</p> <p>3.7 Vehicle turn-over procedure</p> <p>3.8 Accomplishment of workplace documents</p> <p>3.9 RA 9003-Ecological Solid Waste Management Act of 2000</p> <p>3.10 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990</p>	<p>storing tools and equipment</p> <p>3.6 Accomplishing workplace documentations</p> <p>3.7 Carrying out test on part or system</p>

RANGE OF VARIABLES

<p>1. Clutch parts</p>	<p>Clutch parts includes:</p> <ul style="list-style-type: none"> 1.1 Clutch pedal 1.2 Pressure plate 1.3 Clutch disc 1.4 Flywheel 1.5 Release bearing 1.6 Diaphragm spring 1.7 Fingers
<p>2. Drive train system</p>	<p>System includes:</p> <ul style="list-style-type: none"> 2.1 Main gear shift system 2.2 Range shift system 2.3 Shuttle shift system 2.4 Power take off (PTO) shift system 2.5 Four-wheel drive system 2.6 Shift forks and levers
<p>3. Inspection of gears</p>	<p>Inspection of gears includes:</p> <ul style="list-style-type: none"> 3.1 Abnormal wear and tear 3.2 Cracks 3.3 Damage of gears
<p>4. Environmental Laws</p>	<p>Environmental Laws may include:</p> <ul style="list-style-type: none"> 4.1 RA 9003-Ecological Solid Waste Management Act of 2000 4.2 RA 6969-Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990

EVIDENCE GUIDE

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Service clutch system</p> <ul style="list-style-type: none"> 1.1.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.1.2 Adjusted clutch clearances 1.1.3 Carried out Removal and replacement of defective clutch parts 1.1.4 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 <p>1.2 Service drive train system</p> <ul style="list-style-type: none"> 1.2.1 Reviewed handling requirement of oil and lubricant based on SDS and GHS 1.2.2 Checked tightening torques of the drive train system bolts 1.2.3 Checked gear spacing clearance 1.2.4 Inspected gear shafting and bearings 1.2.5 Adjusted shift forks and levers 1.2.6 Removed and replaced damaged parts 1.2.7 Applied safety practices following OSHS Rule 1090, Rule 1080 and Rule 1150 <p>1.3 Complete work processes</p> <ul style="list-style-type: none"> 1.3.1 Made final inspection 1.3.2 Turned-over tractor to immediate superior 1.3.3 Restored work area following 5S of good housekeeping. 1.3.4 Practiced waste management following environmental laws 1.3.5 Checked and stored tools and equipment
<p>2. Resource Implications</p>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Actual or simulated workplace 2.2 Tools materials and equipment needed to perform the required tasks 2.3 References and manuals 2.4 PPE 2.5 First Aid Kit PPE
<p>3. Method of Assessment</p>	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Demonstration/Observation with Oral Questioning 3.2 Portfolio with Interview 3.3 Written Test 3.4 Third-party report
<p>4. Context of Assessment</p>	<p>4.1 Competency maybe assessed in actual workplace or at the designated TESDA accredited Assessment Center.</p>

SECTION 3. TRAINING ARRANGEMENTS

These guidelines are set to provide the Technical and Vocational Education and Training (TVET) providers with information and other important requirements to consider when designing training programs for **AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III**.

3.1 CURRICULUM DESIGN

Course Title: **AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR)**

NC Level: **NC III**

Nominal Training Duration:	40 hrs	– Basic Competencies
	151 hrs	– Common Competencies
	<u>480 hrs</u>	– Core Competencies
	671 hrs	
	<u>176 hrs</u>	- SIT
	847 hrs	– Total

Course Description:

This course is designed to provide the learner with knowledge, practical skills and attitude, applicable in performing work activities involve in diagnosing and repairing electrical system, engine system, axle system, hydraulic system and transmission system of 4 – wheel tractor. This include classroom learning activities and practical work in actual work site or simulation area.

Upon completion of the course, the learners are expected to demonstrate the above-mentioned competencies to be employed. To obtain this, all units prescribed for this qualification must be achieve

BASIC COMPETENCIES
40 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
1. Lead workplace communication	1.1 Communicate information about workplace processes	<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Effective verbal communication methods ○ Sources of information 	<ul style="list-style-type: none"> • Lecture 	<ul style="list-style-type: none"> • Written Test 	2 Hours
		<ul style="list-style-type: none"> • Practice organizing information 	<ul style="list-style-type: none"> • Demonstration 	<ul style="list-style-type: none"> • Observation 	
		<ul style="list-style-type: none"> • Identify organization requirements for written and electronic communication methods 	<ul style="list-style-type: none"> • Lecture 	<ul style="list-style-type: none"> • Written Test 	
		<ul style="list-style-type: none"> • Follow organization requirements for the use of written and electronic communication methods 	<ul style="list-style-type: none"> • Demonstration • Practical exercises 	<ul style="list-style-type: none"> • Observation 	
		<ul style="list-style-type: none"> • Perform exercises on understanding and conveying intended meaning scenario 	<ul style="list-style-type: none"> • Demonstration • Role Play 	<ul style="list-style-type: none"> • Observation 	
	1.2 Lead workplace discussions	<ul style="list-style-type: none"> • Describe: <ul style="list-style-type: none"> ○ Organizational policy on production, quality and safety ○ Goals/ objectives and action plan setting 	<ul style="list-style-type: none"> • Group discussion 	<ul style="list-style-type: none"> • Oral evaluation 	2 Hours
		<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Effective verbal communication methods 	<ul style="list-style-type: none"> • Lecture 	<ul style="list-style-type: none"> • Written Test 	
		<ul style="list-style-type: none"> • Prepare/set action plans based on organizational goals and objectives 	<ul style="list-style-type: none"> • Demonstration 	<ul style="list-style-type: none"> • Observation 	

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	1.3 Identify and communicate issues arising in the workplace	<ul style="list-style-type: none"> • Describe: <ul style="list-style-type: none"> ○ Organizational policy in dealing with issues and problems • Read <ul style="list-style-type: none"> ○ Effective verbal communication methods 	<ul style="list-style-type: none"> • Group discussion 	<ul style="list-style-type: none"> • Oral evaluation 	2 Hours
		<ul style="list-style-type: none"> • Read <ul style="list-style-type: none"> ○ Effective verbal communication methods 	<ul style="list-style-type: none"> • Lecture 	<ul style="list-style-type: none"> • Written Test 	
2. Lead small teams	2.1 Provide team leadership	<ul style="list-style-type: none"> • Discussion of Company policies and procedures • Read web pages on situational leadership • Role play on situational leadership 	<ul style="list-style-type: none"> • Group work • Role Play • Lecture/ Discussion • Individual Work 	<ul style="list-style-type: none"> • Role Play • Written Test 	1 hour
	2.2 Assign responsibilities	<ul style="list-style-type: none"> • Read web pages on performance management • Case study on allocating roles and responsibilities based on competencies of current staff 	<ul style="list-style-type: none"> • Individual Work • Case Study 	<ul style="list-style-type: none"> • Role Play • Written Test 	1 hour
	2.3 Set performance expectations for team members	<ul style="list-style-type: none"> • Role play to communicate performance expectations with staff • Discussion on performance issues 	<ul style="list-style-type: none"> • Lecture/ Discussion • Role Play 	<ul style="list-style-type: none"> • Role Play • Written Test 	1 hour

	2.4 Supervise team performance	<ul style="list-style-type: none"> • Discussion on performance monitoring • Role play on providing feedback on performance • Role play on performance coaching • Discussion on keeping the team informed of team performance • Case study on Team performance monitoring and feedback 	<ul style="list-style-type: none"> • Lecture/ Discussion • Role Play • Case Study 	<ul style="list-style-type: none"> • Role Play • Written Test 	1 hour
3. Apply critical thinking and problem-solving techniques in the workplace	3.1 Examine specific workplace strategies	<ul style="list-style-type: none"> • Show thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations • Show mastery of the current industry hardware and software products and services • Discuss process of identification of fundamental causes of specific workplace challenges • Show mastery of knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations <ul style="list-style-type: none"> - Relevant equipment and operational processes - Enterprise goals, targets and measures - Enterprise quality OHS and environmental requirement - Enterprise information systems and data collation - Industry codes and standards 	<ul style="list-style-type: none"> • Group discussion • Lecture • Demonstration • Role playing 	<ul style="list-style-type: none"> • Case Formulation • Life Narrative Inquiry (Interview) • Standardized test 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	3.1 Analyze the causes of specific workplace challenges	<ul style="list-style-type: none"> • Show thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations • Show mastery of the current industry hardware and software products and services • Discuss process of identification of fundamental causes of specific workplace challenges • Show mastery of knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations <ul style="list-style-type: none"> - Relevant equipment and operational processes - Enterprise goals, targets and measures - Enterprise quality OHS and environmental requirement - Enterprise information systems and data collation - Industry codes and standards • Identify extent and causes of specific challenges in the workplace • Use of range of analytical problem-solving techniques • Formulate clear-cut findings on the nature of each identified workplace challenges 	<ul style="list-style-type: none"> • Group discussion • Lecture • Demonstration • Role playing 	<ul style="list-style-type: none"> • Case Formulation • Life Narrative Inquiry (Interview) • Standardized test 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	3.2 Formulate resolutions to specific workplace challenges	<ul style="list-style-type: none"> • Show thorough knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations • Show mastery of the current industry hardware and software products and services • Discuss process of identification of fundamental causes of specific workplace challenges • Show mastery of knowledge and understanding of the process, normal operating parameters, and product quality to recognize non-standard situations <ul style="list-style-type: none"> - Relevant equipment and operational processes - Enterprise goals, targets and measures - Enterprise quality OHS and environmental requirement - Enterprise information systems and data collation - Industry codes and standards • Identify extent and causes of specific challenges in the workplace • Use of range of analytical problem-solving techniques • Formulate clear-cut findings on the nature of each identified workplace challenges 	<ul style="list-style-type: none"> • Group discussion • Lecture • Demonstration • Role playing 	<ul style="list-style-type: none"> • Case Formulation • Life Narrative Inquiry (Interview) • Standardized test 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		<ul style="list-style-type: none"> • Discuss strategies on devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges 			
	3.3 Implement action plans and communicate results	<ul style="list-style-type: none"> • Identify extent and causes of specific challenges in the workplace • Use of range of analytical problem-solving techniques • Formulate clear-cut findings on the nature of each identified workplace challenges • Discuss strategies on devising, communicating, implementing and evaluating strategies and techniques in addressing specific workplace challenges 	<ul style="list-style-type: none"> • Group discussion • Lecture • Demonstration • Role playing 	<ul style="list-style-type: none"> • Case Formulation • Life Narrative Inquiry (Interview) • Standardized test 	
4. Work in a Diverse Environment	4.1 Develop an individual's cultural awareness and sensitivity	<ul style="list-style-type: none"> • Show understanding of cultural diversity in the workplace • Recognize norms of behavior for interacting and dialogue with specific groups (e. g., Muslims and other non-Christians, non-Catholics, tribes/ethnic groups, foreigners) • Demonstrate different methods of verbal and non-verbal communication in a multicultural setting • Apply cross-cultural communication skills (i.e. different business customs, beliefs, communication) 	<ul style="list-style-type: none"> • Small Group Discussion • Interactive Lecture • Brainstorming • Demonstration • Role-playing 	<ul style="list-style-type: none"> • Demonstration or simulation with oral questioning • Group discussions and interactive activities • Case studies/problems involving workplace diversity issues • Written examination • Role Playing 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		strategies) <ul style="list-style-type: none"> • Show affective skills – establishing rapport and empathy, understanding, etc. • Demonstrate openness and flexibility in communication • Recognize diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices 			
	4.2 Work effectively in an environment that acknowledges and values cultural diversity	<ul style="list-style-type: none"> • Explain the value of diversity in the economy and society in terms of Workforce development • Discuss the importance of inclusiveness in a diverse environment • Discuss the importance of shared vision and understanding of and commitment to team, departmental, and organizational goals and objectives • Identify and exhibit strategies for customer service excellence • Demonstrate cross-cultural communication skills and active listening • Recognize diverse groups in the workplace and community as defined by divergent culture, religion, traditions and practices • Demonstrate collaboration skills 	<ul style="list-style-type: none"> • Small Group Discussion • Interactive Lecture • Brainstorming • Demonstration • Role-playing 	<ul style="list-style-type: none"> • Demonstration or simulation with oral questioning • Group discussions and interactive activities • Case studies/problems involving workplace diversity issues • Written examination • Role Playing 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	4.3 Identify common issues in a multicultural and diverse environment	<ul style="list-style-type: none"> • Explain the value, and leverage of cultural diversity • Discuss the inclusivity and conflict resolution • Describe the workplace harassment • Explain the change management and cite ways to overcome resistance to change • Demonstrate advanced strategies for customer service excellence • Address diversity-related conflicts in the workplace • Eliminate discriminatory behavior towards customers and co-workers • Utilize change management policies in the workplace 	<ul style="list-style-type: none"> • Small Group Discussion • Interactive Lecture • Brainstorming • Demonstration • Role-playing 	<ul style="list-style-type: none"> • Demonstration or simulation with oral questioning • Group discussions and interactive activities • Case studies/problems involving workplace diversity issues • Written examination • Role Playing 	
5. Propose methods of applying learning and innovation in the organization	5.1 Assess work procedures, processes and systems in terms of innovative practices	<ul style="list-style-type: none"> • Show mastery of the following practical concepts (e.g., 7 habits of highly effective people, character strengths that foster learning and innovation, five minds of the future, adaptation concepts and transtheoretical model of behavior change) • Demonstrate collaboration and networking skills • Show basic skills in research • Generate practical insights on how to improve organizational procedures, processes and systems 	<ul style="list-style-type: none"> • Interactive Lecture • Appreciative Inquiry • Demonstration • Group work 	<ul style="list-style-type: none"> • Psychological and behavioral Interviews • Performance Evaluation • Life Narrative Inquiry • Review of portfolios of evidence and third-party workplace reports of on-the-job performance. • Standardized 	

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
				assessment of character strengths and virtues applied	
	5.2 Generate practical action plans for improving work procedures, processes	<ul style="list-style-type: none"> • Show mastery of the following practical concepts (e.g., 7 habits of highly effective people, character strengths that foster learning and innovation, five minds of the future, adaptation concepts and transtheoretical model of behavior change) • Demonstrate collaboration and networking skills • Show basic skills in research • Generate practical insights on how to improve organizational procedures, processes and systems • Set up action plans on how to apply innovative procedures in the organization • Set up action plans on how to apply innovative procedures in the organization • Generate practical insights on how to improve organizational procedures, processes and systems 	<ul style="list-style-type: none"> • Interactive Lecture • Appreciative Inquiry • Demonstration • Group work 	<ul style="list-style-type: none"> • Psychological and behavioral Interviews • Performance Evaluation • Life Narrative Inquiry • Review of portfolios of evidence and third-party workplace reports of on-the-job performance. • Standardized assessment of character strengths and virtues applied 	1 hours
	5.3 Evaluate the effectiveness of the proposed action plans	<ul style="list-style-type: none"> • Show mastery of the following practical concepts (e.g., 7 habits of highly effective people, character strengths that foster learning and innovation, five minds of the future, 	<ul style="list-style-type: none"> • Interactive Lecture • Appreciative Inquiry • Demonstration 	<ul style="list-style-type: none"> • Psychological and behavioral Interviews • Performance Evaluation 	1 hour

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		adaptation concepts and transtheoretical model of behavior change) <ul style="list-style-type: none"> • Demonstrate collaboration and networking skills • Show basic skills in research • Generate practical insights on continuous improvement 	<ul style="list-style-type: none"> • Group work 	<ul style="list-style-type: none"> • Life Narrative Inquiry • Review of portfolios of evidence and third-party workplace reports of on-the-job performance. • Standardized assessment of character strengths and virtues applied 	
6. Use information systematically	6.1 Use technical information	<ul style="list-style-type: none"> • Lecture and discussion on: <ul style="list-style-type: none"> - Application in collating information - Procedures for inputting, maintaining and archiving information - Guidance to people who need to find and use information • Organizing information into a suitable form for reference and use • Classify stored information for identification and retrieval • Operate the technical information system by using agreed procedures 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Hands on • Demonstration 	<ul style="list-style-type: none"> • Oral evaluation • Written Test • Observation • Presentation 	4 Hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
	6.2 Apply information technology (IT)	<ul style="list-style-type: none"> • Lecture and discussion on: <ul style="list-style-type: none"> - Attributes and limitations of available software tool - Procedures and work instructions for the use of IT - Operational requirements for IT systems - Sources and flow paths of data - Security systems and measures that can be used - Methods of entering and processing information • Use procedures and work instructions for the use of IT • Extract data and format reports • Use WWW applications 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Self-paced handout/module • Hands on • Demonstration 	<ul style="list-style-type: none"> • Oral evaluation • Written Test • Observation • Presentation 	2 Hours
	6.3 Edit, format and check information	<ul style="list-style-type: none"> • Lecture and discussion on: <ul style="list-style-type: none"> - Basic file-handling techniques - Techniques in checking documents - Techniques in editing and formatting - Proof reading techniques • Use different techniques in checking documents • Edit and format information applying different techniques • Proof read information applying different techniques 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Self-paced handout/module • Hands on • Demonstration 	<ul style="list-style-type: none"> • Oral evaluation • Written Test • Observation • Presentation 	2 Hours
7. Evaluate Occupational Safety	7.1 Interpret Occupational Safety and Health	<ul style="list-style-type: none"> • Discuss the OSH standards, principles and legislations • Identify OSH work practices issues 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation 	2.5 hr

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
And Health Work Practices	practices	<ul style="list-style-type: none"> • Discuss standard safety requirements 		<ul style="list-style-type: none"> • Interviews / Questioning 	
	7.2 Set OSH work targets	<ul style="list-style-type: none"> • Discussion in actions plans that are necessary in achieving the OSH target 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1 hr
	7.3 Evaluate effectiveness of Occupational Safety and Health work instructions	<ul style="list-style-type: none"> • Practice evaluating safety data (Historical or Simulated) 	<ul style="list-style-type: none"> • Lecture • Group Discussion 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1.2 hr
8. Evaluate Environmental Work Practices	8.1 Interpret Environmental practices, policies and procedures	<ul style="list-style-type: none"> • Discussion Environmental Issues regarding <ul style="list-style-type: none"> - Water Quality - National and Local Government Issues - Safety - Endangered Species - Noise - Air Quality - Historic - Waste - Cultural • Updating of existing occupation practices 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Demonstration 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning 	1 hr
	8.2 Establish targets to evaluate environmental practices	<ul style="list-style-type: none"> • Discussion on <ul style="list-style-type: none"> - lower production costs and energy consumption - Environmentally Sound 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Demonstration 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / 	1 hr

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		Processes <ul style="list-style-type: none"> - Resource Efficient - Recycling and Waste Management <ul style="list-style-type: none"> • Simple case study regarding energy efficiency 		Questioning	
	8.3 Evaluate effectiveness of environmental practices	<ul style="list-style-type: none"> • Identifying effective environmental practices relevant to the industry/occupation - Implementation of energy efficiency 	<ul style="list-style-type: none"> • Lecture • Group Discussion • Demonstration • Case Study 	<ul style="list-style-type: none"> • Written Exam • Demonstration • Observation • Interviews / Questioning • Third Party Reports 	
9. Facilitate Entrepreneurial Skills For Micro-Small-Medium Enterprises (MSMEs)	9.1 Develop and maintain micro-small-medium enterprise (MSMEs) skills in the organization	<ul style="list-style-type: none"> • Discussions on business models and strategies • Discussion on Types and categories of businesses and business internal control • Discussion on Relevant National and local legislations affecting businesses • Prepare promotional materials • Practice basic bookkeeping 	<ul style="list-style-type: none"> • Lecture/ Discussion • Case Study • Demonstration 	<ul style="list-style-type: none"> • Written Test • Portfolio • Work Related Project 	2 hours
	9.2 Establish and Maintain client-base/market	<ul style="list-style-type: none"> • Role play on customer and employee relations • Discussion on Basic product promotion strategies • Preparation of Basic Feasibility study • Case studies on Basic Business 	<ul style="list-style-type: none"> • Role Play • Lecture Discussion • Case study 	<ul style="list-style-type: none"> • Case problem • Written Test 	2 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
		ethics <ul style="list-style-type: none"> • Prepare basic advertising materials 			
	9.3 Apply budgeting and financial management skills	<ul style="list-style-type: none"> • Discussion on: <ul style="list-style-type: none"> - Basic cost-benefit analysis - Basic financial management - Basic financial accounting - Business internal controls 	<ul style="list-style-type: none"> • Role Play • Lecture • Discussion • Group work 	<ul style="list-style-type: none"> • Written Test • Case problem 	1 hour

COMMON COMPETENCIES

151 hours

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
1. Apply safety measures in farm operations	1.1 Determine areas of concern for safety measures	<ul style="list-style-type: none"> • Identify work tasks in farm operations 	<ul style="list-style-type: none"> • Lecture • Discussion • Incomplete worksheet • Power point presentation • Video presentation 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss safety measures in a workplace during farm operations 	<ul style="list-style-type: none"> • Lecture • Discussion • Incomplete worksheet • Power point presentation • Video presentation 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
			<ul style="list-style-type: none"> • Role playing 		
		<ul style="list-style-type: none"> • Explain farm operations situations and period when to observe safety 	<ul style="list-style-type: none"> • Lecture • Discussion • Incomplete worksheet • Power point presentation • Video presentation • Role playing 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Identify appropriate tools, materials and outfits to be used 	<ul style="list-style-type: none"> • Lecture • Discussion • Incomplete worksheet • Power point presentation • Video presentation 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs
		<ul style="list-style-type: none"> • Prepare tools, materials and outfits for the farm operation 	<ul style="list-style-type: none"> • Lecture • Discussion • Power point presentation • Video presentation • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs
	1.2 Apply appropriate	<ul style="list-style-type: none"> • Enumerate uses and functions of tools and 	<ul style="list-style-type: none"> • Discussion • Power point 	<ul style="list-style-type: none"> • Written examination 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
	safety measures	materials	<ul style="list-style-type: none"> • presentation • Video presentation • Demonstration 	<ul style="list-style-type: none"> • Interview • Oral questioning • Demonstration 	
		<ul style="list-style-type: none"> • Explain procedures of wearing personal protective equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Discuss topics on effectivity, shelf life and expirations of materials to be used. 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Identify the emergency procedures 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	2 hrs
		<ul style="list-style-type: none"> • Identify hazards in a farm workplace 	<ul style="list-style-type: none"> • Discussion • Power point presentation 	<ul style="list-style-type: none"> • Written examination • Interview 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
			<ul style="list-style-type: none"> • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Oral questioning 	
		<ul style="list-style-type: none"> • Use tools and materials 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs
		<ul style="list-style-type: none"> • Wear personal protective equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	0.5 hr
		<ul style="list-style-type: none"> • Prepare report on hazards in the workplace 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Report on hazards in the 	<ul style="list-style-type: none"> • Discussion 	<ul style="list-style-type: none"> • Written 	0.5 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		workplace	<ul style="list-style-type: none"> • Power point presentation • Video presentation • Incomplete worksheet • Role playing 	examination <ul style="list-style-type: none"> • Interview • Oral questioning • Demonstration 	
	1.3 Safekeep/ dispose of tools, materials and outfit	<ul style="list-style-type: none"> • Explain cleaning and storing procedures of the used tools and outfit 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • State labelling and storing procedures for unused materials 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Explain proper wastes disposal 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Clean and store used tools and outfit 	<ul style="list-style-type: none"> • Discussion • Power point 	<ul style="list-style-type: none"> • Written examination 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
			<ul style="list-style-type: none"> presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Interview • Oral questioning • Demonstration 	
		<ul style="list-style-type: none"> • Label and store unused materials 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Dispose waste materials 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
2. Use and maintain farm servicing tools and equipment	2.1 Select and use servicing tools	<ul style="list-style-type: none"> Identify farm servicing tools 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet Demonstration 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr
		<ul style="list-style-type: none"> Describe faults and defective tools 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet Demonstration 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss use of tools and equipment relating to manufacturer's manual 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet Demonstration Hands-on 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Check farm tools for faults and defects 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Use tools and equipment relating to manufacturer's manual 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs
	2.2 Select and operate testing equipment and accessories	<ul style="list-style-type: none"> • Identify testing equipment and accessories 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Explain importance of reading instructional manual 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> Discuss pre-operation check and its importance 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet 	<ul style="list-style-type: none"> Written examination Interview Oral questioning 	1 hr
		<ul style="list-style-type: none"> Identify different types of faults in testing equipment and accessories 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet 	<ul style="list-style-type: none"> Written examination Interview Oral questioning 	1 hr
		<ul style="list-style-type: none"> Enumerate reporting procedures 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet Role playing 	<ul style="list-style-type: none"> Written examination Interview Oral questioning Demonstration 	1 hr
		<ul style="list-style-type: none"> Enumerate procedures in using testing equipment and accessories 	<ul style="list-style-type: none"> Discussion Power point presentation Video presentation Incomplete worksheet 	<ul style="list-style-type: none"> Written examination Interview Oral questioning 	1 hr
		<ul style="list-style-type: none"> Discuss safety procedures 	<ul style="list-style-type: none"> Discussion 	<ul style="list-style-type: none"> Written 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		for testing equipment and accessories	<ul style="list-style-type: none"> • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • examination • Interview • Oral questioning 	
		<ul style="list-style-type: none"> • Read manufacturer's manual 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Conduct pre-operation check-up 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Report identified faults 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
			<ul style="list-style-type: none"> • Hands-on 		
		<ul style="list-style-type: none"> • Operate testing equipment and accessories 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on • Field visit 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	8 hrs
		<ul style="list-style-type: none"> • Follow safety procedures 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
	2.3 Perform preventive maintenance	<ul style="list-style-type: none"> • Enumerate cleaning procedures for servicing tools and equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Discuss significance of routine check-up and maintenance 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Explain procedures in storing servicing tools and equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Clean servicing tools and equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Perform routine check –up and maintenance 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Store servicing tools and equipment 	<ul style="list-style-type: none"> • Discussion • Power point presentation • Video presentation • Incomplete worksheet • Demonstration • Hands-on 	<ul style="list-style-type: none"> • Written examination • Interview • Oral questioning • Demonstration 	1 hr
3. Perform estimation and basic calculation	3.1 Perform estimation	<ul style="list-style-type: none"> • Identify job requirements and work task/activity 	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Identify materials and resources of job requirements 	<ul style="list-style-type: none"> • Lecture • Discussion 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Estimate time to complete work task/activity 	<ul style="list-style-type: none"> • Lecture • Discussion • Demonstration • Video presentation 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> Estimate quantities of materials and resources 	<ul style="list-style-type: none"> Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	2 hrs
		<ul style="list-style-type: none"> Prepare and submit bill of materials 	<ul style="list-style-type: none"> Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Demonstration 	2 hrs
	3.2 Perform basic workplace calculation	<ul style="list-style-type: none"> Describe different types of calculation 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr
		<ul style="list-style-type: none"> Discuss different methods of calculation 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr
		<ul style="list-style-type: none"> Describe system and unit of measurement 	<ul style="list-style-type: none"> Lecture Discussion 	<ul style="list-style-type: none"> Written exam Oral questioning 	2 hrs
		<ul style="list-style-type: none"> Compute quantity of feeds, amount of fertilizer and amount of medicines using methods of calculation, system of measurement and units of measurement 	<ul style="list-style-type: none"> Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	3 hrs
4.Process farm waste	4.1 Collect wastes	<ul style="list-style-type: none"> Identify tools, materials and PPEs 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr
		<ul style="list-style-type: none"> Discuss waste collection requirements and OSHS 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Explain wearing of Personal Protective Equipment(PPEs) 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Collect wastes 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical • Demonstration 	2 hrs
	4.2 Identify and segregate wastes	<ul style="list-style-type: none"> • Identify categories of wastes 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Discuss process waste segregation 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Discuss sorting of waste and labelling of container 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Explain information on waste 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Conduct waste segregation 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	2 hrs
	4.3 Handle farm wastes	<ul style="list-style-type: none"> • Identify dangerous and hazardous wastes 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Describe handling of farm wastes 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss principles of 3Rs 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Explain waste disposal 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Handle farm waste 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
	4.4 Perform housekeeping	<ul style="list-style-type: none"> Identify displayed warning signs and labels in conspicuous places 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss cleaning of work area 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Explain checking and cleaning of tools 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss storing of materials 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Explain process of storing 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr
		<ul style="list-style-type: none"> Discuss checking of storage facilities 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Explain record keeping 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Perform housekeeping 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical • Demonstration 	2 hrs
5. Maintain service record	5.1 Carry out inventory activities	<ul style="list-style-type: none"> • Discuss inventory inputs 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning 	1 hr
		<ul style="list-style-type: none"> • Identify defects of tools and equipment 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Identify defective tools and equipment 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical • Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss inspection procedures 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical • Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
	5.2 Update record	<ul style="list-style-type: none"> • Discuss servicing plan 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • 	1 hr
		<ul style="list-style-type: none"> • Identify steps in preparing service plan 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Identify servicing activities 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss service report 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Explain procedures of reporting 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Update record 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
	5.3 Prepare financial records	<ul style="list-style-type: none"> Identify servicing cost and revenue 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Explain computation procedures 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Prepare financial records 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
6. Conduct diagnosis	6.1 Conduct initial assessment	<ul style="list-style-type: none"> Discuss effective communication skills 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss problem or complaint of customers 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr
		<ul style="list-style-type: none"> Explain analytical observation 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Discuss test run procedures 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Conduct diagnosis 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	4 hrs
	6.2 Provide assessment report to client	<ul style="list-style-type: none"> • Identify nature/scope of work 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss service to be rendered 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Explain assessment checklist 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Conduct and provide assessment report to client 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	2 hrs

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
	6.3 Prepare and present job estimate	<ul style="list-style-type: none"> Identify items to be used for repairs 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Identify cost of parts, supplies, and materials 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Identify suppliers 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss computation of estimated cost 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Prepare and present job estimate 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	4 hrs
7. Perform shop maintenance	Maintain work area, tools and equipment	<ul style="list-style-type: none"> Explain importance of cleanliness and orderliness of work area 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> Identify tools and equipment to be cleaned 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss manufacturer's instruction manual 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss process of checking tools, supplies and equipment 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Maintain work are, tools and equipment 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
	7.2 Store tools and shop equipment	<ul style="list-style-type: none"> Discuss storage procedure 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> Discuss labelling procedure 	<ul style="list-style-type: none"> Lecture Discussion Lecture Discussion Demonstration 	<ul style="list-style-type: none"> Written exam Oral questioning Practical Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Store tools and shop equipment 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
	7.4 Dispose wastes or used liquids	<ul style="list-style-type: none"> • Discuss labelling procedures 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss process of disposal 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Explain Standard Operating Procedures (SOP) 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss segregation procedures 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Explain OSHS 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr

Unit of Competency	Learning Outcome	Learning Activities	Methodology	Assessment Method	Nominal Duration
		<ul style="list-style-type: none"> • Dispose wastes or used liquids 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
	7.3 Prepare inventory reports	<ul style="list-style-type: none"> • Explain inventory procedures 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Identify damages and defects of tools and equipment 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Discuss segregation of damaged and defective tools and equipment 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	2 hrs
		<ul style="list-style-type: none"> • Discuss repair recommendation and inventory report 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr
		<ul style="list-style-type: none"> • Prepare inventory reports 	<ul style="list-style-type: none"> • Lecture • Discussion • Lecture • Discussion • Demonstration 	<ul style="list-style-type: none"> • Written exam • Oral questioning • Practical Demonstration 	1 hr

CORE COMPETENCIES
480 hours

Unit of Competency	Learning Outcomes	Learning Activities	Methodology	Assessment Approach	Nominal Duration
1. Diagnose and Repair Electrical Systems of 4-Wheel Tractor	1.1 Service battery	<ul style="list-style-type: none"> • Identify different kinds of batteries • Discuss proper handling of battery fluids • Explain Electrical Systems principles and operations • Discuss uses of tools for battery testing and replacement • Explain servicing activities • Explain OSHS Rule 1150 • Discuss waste management in disposing batteries and corresponding environmental laws • Discuss Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 • Service battery 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	(112 hrs) 16 hrs
	1.2 Check and replace alternator	<ul style="list-style-type: none"> • Explain Electrical Systems principles and operations • Demonstrate wiring coherence procedure 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation 	16 hrs

		<ul style="list-style-type: none"> • Discuss soldering procedures • Identify uses of tools for checking and replacing alternator • Discuss replacement and repair of alternator • Explain OSHS Rule 1150 • Recommend repair of alternator • Check and replace alternator 	<ul style="list-style-type: none"> • Role playing 	<ul style="list-style-type: none"> • Practical Demonstration 	
	1.3 Service Electrical Circuit	<ul style="list-style-type: none"> • Explain Electrical Systems principles and operations • Identify types of electrical connection • Discuss schematic and wiring diagrams • Discuss causes of short circuits and their repairs • Discuss testing of wiring coherence procedure • Identify consumable electrical parts of electrical circuit • Discuss removal and replacement procedures of consumable electrical parts • Identify electrical safety indicators • Explain OSHS Rule 1080 • Demonstrate electrical 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	40 hrs

		<p>safety indicators inspection</p> <ul style="list-style-type: none"> • Service Electrical Circuit 			
	1.4 Diagnose and replace starting system components	<ul style="list-style-type: none"> • Identify starting system components • Identifying problem of starting components • Identify tools for removal and replacement of starting motors and their uses • Discuss replacement and repair procedures of starting system components • Discuss soldering procedures • Explain OSHS Rule 1150 and Rule 1080 • Discuss ASAE s. 318.15 • Discuss Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 • Diagnose and replace starting system components 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	24 hrs

	1.5 Complete work processes	<ul style="list-style-type: none"> • Discuss final inspection procedures • Explain turning- over procedures of the repaired unit • Explain accomplishment of workplace documents • Explain 5S of Good Housekeeping • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Discuss waste management • Perform tests of part and system • Complete work processes 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	8 hrs
2. Diagnose and Repair Engine System of 4-Wheel Tractor	2.1 Service engine fuel system	<ul style="list-style-type: none"> • Discuss SDS and GHS • Identify parts of fuel system • Discuss fuel system troubleshooting • Identify tools for removal and replacement of injection pump unit and their uses • Discuss removal and replacement procedures of the injection pump unit 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	(112 hrs) 24 hrs

		<p>and fuel filters and strainers</p> <ul style="list-style-type: none"> • Explain OSHS Ruel 1080, Rule 1090 and Rule 1150 • Discuss RA 6969 • Discuss Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 • Service engine fuel system 			
	2.2 Service cooling system	<ul style="list-style-type: none"> • Discuss SDS and GHS • Identify parts of cooling system • Explain handling of basic and special tools • Discuss handling of hazardous liquid • Discuss proper assembling and disassembling of cooling system components • Discuss replacement and replenishment of coolant and oil • Discuss repair process of radiator and its corresponding environmental laws • Discuss Toxic Substances and Hazardous and Nuclear 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	24 hrs

		<p>Wastes Control Act of 1990</p> <ul style="list-style-type: none"> • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service cooling system 			
	2.3 Service body and power train system of engines	<ul style="list-style-type: none"> • Discuss SDS and GHS • Identify parts of body and power train system of engines • Discuss body and power train system troubleshooting • Identify special tools and their uses • Discuss supervision duties • Discuss Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service body and power train system of engines 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	40 hrs
	2.4 Service engine Lubrication System	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss lubricating system theories and principles • Identify parts of lubrication system • Identify classification of 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	16 hrs

		lubricants <ul style="list-style-type: none"> • Discuss handling of lubricants • Discuss supervision duties • Discuss Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service engine Lubrication System 			
	2.5 Complete work processes	<ul style="list-style-type: none"> • Discuss final inspection procedures • Explain turning- over procedures of the repaired unit • Explain accomplishment of workplace documents • Explain 5S of Good Housekeeping • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Perform tests of part and system • Complete work 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	9 hrs

		processes			
3. Diagnose and Repair Axle System of 4-Wheel Tractor	3.1 Service front and rear axles	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss construction and operation of axle system • Identify parts of axle system • Identify tools and equipment and their uses • Discuss inspection and adjustment of axle system • Discuss removal, replacement and repair procedures • Explain maintenance procedures of axle system • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service front and rear axles 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	(96hrs) 24 hrs
	3.2 Service brake system	<ul style="list-style-type: none"> • Discuss SDS and GHS • Identify kinds of brake system • Identify brake system components • Identify tools and their uses • Discuss adjustment and 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	24 hrs

		replacement procedures of brake system <ul style="list-style-type: none"> • Discuss supervising duties • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service brake system 			
	3.3 Service steering system	<ul style="list-style-type: none"> • Discuss SDS and GHS • Identify steering system components • Identify tools and their uses • Discuss adjustment and replacement procedures of steering system components • Explain maintenance procedures of steering system components • Discuss supervising duties • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service steering system 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	16 hrs

	<p>3.4 Service differential system</p>	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss kinematics principle • Identify differential system components • Identify tools and their uses • Discuss adjustment and replacement procedures of differential system • Explain maintenance procedures of differential system • Discuss supervising duties • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service differential system 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	<p>24 hrs</p>
	<p>3.5 Complete work processes</p>	<ul style="list-style-type: none"> • Discuss final inspection procedures • Explain turning- over procedures of the repaired unit • Explain accomplishment of workplace documents • Explain 5S of Good Housekeeping • Explain environmental 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	<p>10 hrs</p>

		<p>laws – RA 9003 and Management Act of 2000 and RA 6969</p> <ul style="list-style-type: none"> • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Perform tests of part and system • Complete work processes 			
4. Diagnose and repair hydraulic system of 4-wheel tractor	4.1 Service hydraulic pump	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss principles of hydraulics • Explain pressure test procedures • Identify tools and their uses • Discuss removal, replacement and repair procedures of hydraulic pump • Discuss supervising duties • Discuss Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990 • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	(72 hrs)

		<p>Rule 1150</p> <ul style="list-style-type: none"> • Service hydraulic pump 			
	4.2 Service Hydraulic Distributor	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss principles of hydraulics • Explain pressure test procedures • Identify tools and their uses • Discuss removal, replacement and repair procedures of hydraulic distributor • Discuss supervising duties • Explain environmental laws – Management Act of 2000 • Explain OSHA Rule 1080, Rule 1090 and Rule 1150 • Service Hydraulic Distributor 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	16 rs
	4.3 Service Hydraulic Lift Arms	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss principles of hydraulics • Identify tools and their uses • Explain adjustment of Mechanical lift arm • Discuss removal, replacement and repair procedures of hydraulic Lift Arms 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	16 rs

		<ul style="list-style-type: none"> • Discuss supervising duties • Explain environmental laws – Management Act of 2000 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service Hydraulic Lift Arms 			
	4.4 Service Hydraulic pressure lines, blocks and reservoir	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss principles of hydraulics • Identify tools and their uses • Explain pressure test procedures • Discuss removal, replacement and repair procedures of hydraulic pressure lines • Discuss maintenance of Hydraulic pressure lines and blocks • Discuss supervising duties • Explain environmental laws – Management Act of 2000 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service Hydraulic pressure lines, blocks 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	16 rs

		and reservoir			
	4.5 Complete work processes	<ul style="list-style-type: none"> • Discuss final inspection procedures • Explain turning- over procedures of the repaired unit • Explain accomplishment of workplace documents • Explain 5S of Good Housekeeping • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Perform tests of part and system • Complete work processes 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	11 hrs
5. Diagnose and repair transmission system of 4-wheel tractor	5.1 Service clutch system	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss clutch system principle and operation • Identify types of clutch system • Identify components of clutch system • Identify tools and equipment and their uses • Discuss removal, replacement and repair procedures of clutch system 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	(88 hrs) 40 hrs

		<ul style="list-style-type: none"> • Discuss maintenance of clutch system • Explain handling of transmission oil • Discuss supervising duties • Explain environmental laws – Management Act of 2000 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service clutch system 			
	5.2 Service drive train system	<ul style="list-style-type: none"> • Discuss SDS and GHS • Discuss drive train system principle and operation • Identify components of drive train system components • Identify tools and equipment and their uses • Discuss removal, replacement and repair procedures of drive train system • Discuss maintenance of drive train system • Explain handling of transmission oil • Discuss supervising duties • Discuss Toxic 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	40 hrs

		<p>Substances and Hazardous and Nuclear Wastes Control Act of 1990</p> <ul style="list-style-type: none"> • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Service drive train system 			
	5.3 Complete work processes	<ul style="list-style-type: none"> • Discuss final inspection procedures • Explain turning- over procedures of the repaired unit • Explain accomplishment of workplace documents • Explain 5S of Good Housekeeping • Explain environmental laws – RA 9003 and Management Act of 2000 and RA 6969 • Explain OSHS Rule 1080, Rule 1090 and Rule 1150 • Perform tests of part and system • Complete work processes 	<ul style="list-style-type: none"> • Lecture • Demonstration • Film viewing • Power point presentation • Role playing 	<ul style="list-style-type: none"> • Interview • Written examination • Direct Observation • Practical Demonstration 	8 hrs

3.2 TRAINING DELIVERY

1. The delivery of training shall adhere to the design of the curriculum. Delivery shall be guided by the principles of competency-based TVET.
 - a. Course design is based on competency standards set by the industry or recognized industry sector; **(Learning system is driven by competencies written to industry standards)**
 - b. Training delivery is learner-centered and should accommodate individualized and self-paced learning strategies;
 - c. Training can be done on an actual workplace setting, simulation of a workplace and/or through adoption of modern technology.
 - d. Assessment is based in the collection of evidence of the performance of work to the industry required standards;
 - e. Assessment of competency takes the trainee's knowledge and attitude into account but requires evidence of actual performance of the competency as the primary source of evidence.
 - f. Training program allows for recognition of prior learning (RPL) or current competencies;
 - g. Training completion is based on satisfactory performance of all specified competencies.
2. The competency-based TVET system recognizes various types of delivery modes, both on-and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities and their variations/components may be adopted singly or in combination with other modalities when designing and delivering training programs:

Institution- Based:

- Dual Training System (DTS)/Dualized Training Program (DTP) which contain both in-school and in-industry training or fieldwork components. Details can be referred to the Implementing Rules and Regulations of the DTS Law and the TESDA Guidelines on the DTP;
- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructor are not in the same place. Distance learning may employ correspondence study, audio, video, computer technologies or other modern technologies that can be used to

facilitate learning and formal and non-formal training. Specific guidelines on this mode shall be issued by the TESDA Secretariat.

- Distance learning may employ correspondence study, audio, video, computer technologies that can be used to facilitate learning and formal and non-formal training. Specific guidelines on this mode shall be issued by the TESDA Secretariat.
- The classroom- based or in – center instruction uses of learner –centered methods as well as laboratory or field- work components.

Enterprise-Based:

- Formal Apprenticeship – Training within employment involving a contract between an apprentice and an enterprise on an approved apprenticeable occupation.
- Informal Apprenticeship - is based on a training (and working) agreement between an apprentice and a master craftsperson wherein the agreement may be written or oral and the master craftsperson commits to training the apprentice in all the skills relevant to his or her trade over a significant period of time, usually between one and four years, while the apprentice commits to contributing productively to the work of the business. Training is integrated into the production process and apprentices learn by working alongside the experienced craftsperson.
- Enterprise-based Training - where training is implemented within the company in accordance with the requirements of the specific company. Specific guidelines on this mode shall be issued by the TESDA Secretariat.

Community-Based

- Short term programs conducted by non- government organizations NGOs, LGUs, training centers and other TVET providers which are intended to address the specific needs of a community. Such programs can be conducted in informal settings such as barangay hall, basketball courts, etc. These programs can also be mobile training program (MTP)

3.3 TRAINEE ENTRY REQUIREMENTS

Trainees or students wishing to enroll in this course should possess the following requirements:

- Must have completed at least 10 years of basic education or an Alternative Learning System (ALS) Certificate of Completion with grade 10 equivalent holder
- Must have communication skills
- Must have arithmetic skills
- Must have industry experience or immersion through the following mode:
 - Training: training on automotive servicing (repair and maintenance) for at least 528 hours (3 months) and 4-wheel tractor operation for at least 8 hours
 - OR**
 - Work experience: equivalent and relevant work experience on automotive servicing **OR** 4-wheel tractor operation for at least 2 years for the last 5 years

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS

AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III

Recommended list of tools, equipment and materials for the training of 25 trainees for Agricultural Machinery Servicing (4-Wheel Tractor) NC III

A. List of Tools, Equipment and Materials for Full Qualification

TOOLS	
QTY.	Description
6 pcs	Mechanical Pliers
6 pcs	Diagonal pliers/long-nose pliers
6 pcs	Wire Cutters
6 pcs	Snap knife cutter (STD)
6 pcs	Snap ring pliers (In)
6 pcs	Snap ring pliers (Out)
6 pcs	Soldering iron (30-120W)
6 pcs	Multi-tester
6 pcs	Phillips screw driver
6 pcs	Flat screw drivers
Wrenches	
2 pcs	Torque wrench
6 sets	Allen wrench (1.5-10mm)
6 pcs	Adjustable wrench (15")
6 sets	T-wrench (8-19mm)
6 sets	Combination wrench
6 sets	Box wrench (8-32mm)
6 sets	Strap wrench/filter remover
6 sets	Sockets with ½ drive (8-32mm)

	<ul style="list-style-type: none"> • Universal joint • Ratchet • Long and short extension • Sliding handle • Power handle
6 pcs	Tire wrench (24-26mm)
6 pcs	Puller impact type (3 tails)
6 sets	Feeler gauges
6 pcs	Ballpeen Hammer
3 pcs	Chain block
3 units	Hydraulic jack(5-10tons)
1 set	Tractor splitter
6 pcs	Piston ring compressor
6 pcs	Vice grip
6 pcs	Chisel

EQUIPMENT	
QTY	Description
1 unit	Training 4-wheel tractor with battery, engine parts, and complete axle, hydraulic, transmission system components
1 unit	Chain block (5 tons)
3 units	Pressure tester
1 unit	Grease gun

MATERIALS	
QTY.	Description
3 rolls (3m)	Soldering rod
	Electrical wires
1 roll (30m)	16 AWG
1 roll (30m)	14 AWG
10 rolls (specs)	Electrical tape
1 pack	Snap - off blade(9mm)
	Fuse
5 pcs	3A
5 pcs	5A
5 pcs	10A
5 pcs	15A
	Relays
5 pcs	5pins 12volts
5 pcs	8pins 12volts
5 pcs	Flasher relay
5 pcs	Bulbs (Park light) double contact
1 pc	Engine Stop Solenoid
10sets	Terminals (male and female)- circle
	Sensors
1 pc	Fuel sensor
1 pc	Oil sensor
1 pc	Temperature sensor
1 pc	Pressure sensor

25 pcs	Rags
PPEs	
25 pcs	Rubber gloves
25 pcs	Safety shoes
25 pcs	Coveralls
25 pcs	Goggles
25 pcs	Electrical tape
100L	Fuel oil
20 L	Engine oil (SAE15W40)
10L	Grease
1 set	Piston ring
6 pcs	Fuel filters
20L	Coolant
1 pc	Fan belt
1 sack	Saw dust
1000ml	Sealant (silicon)
1 set	Packing seals - O-rings - Oil seals - gasket
100pcs	Rags
30L	Hydraulic oil
30L	Gear oil
10L	Steering oil(ATF)
10L	Brake fluid
10L	Fuel
40 rolls	Teflon tape
1 set	First aid kit

B. List of Tools, Materials and Equipment Per COC

COC 1: Diagnose and Repair Electrical Systems of 4-Wheel Tractor

TOOLS	
QTY.	Description
6 pcs	Mechanical Pliers
6 pcs	Diagonal pliers/long-nose pliers
6 pcs	Wire Cutters
6 pcs	Snap knife cutter (STD)
6 pcs	Soldering iron (30-120W)
6 pcs	Multi-tester
6 pcs	Phillips screw driver
6 pcs	Flat screw drivers

EQUIPMENT	
QTY.	Description
1 unit	Training 4-wheel tractor with battery

MATERIALS	
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QTY.	Description
3 rolls (3m)	Soldering rod
	Electrical wires
1 roll (30m)	16 AWG
1 roll (30m)	14 AWG
10 rolls (specs)	Electrical tape
1 pack	Snap - off blade(9mm)
	Fuse
1 box	3A
1 box	5A
1 box	10A
1 box	15A
	Relays
5pcs	5pins 12volts
5pcs	8pins 12volts
5pcs	Flasher relay
5 pcs	Bulbs/Lamps (
5pcs	Bulbs (Park light) double contact
1pc	Engine Stop Solenoid
10sets	Terminals (male and female)- circle
	Sensors
1 pc	Fuel sensor
1 pc	Oil sensor
1 pc	Temperature sensor
1 pc	Pressure sensor
25 pcs	Rags
	PPEs
25 pcs	Rubber gloves
25 pcs	Safety shoes
25 pcs	Coveralls
25 pcs	Goggles

COC2: Diagnose and Repair Engine System of 4-Wheel Tractor

TOOLS	
QTY.	Description
6 pcs	Mechanical Pliers
6 pcs	Diagonal cutting pliers/ long-nose pliers
6 pcs	Snap ring pliers (In)
6 pcs	Snap ring pliers (Out)
6 pcs	Snap knife cutter (STD)
	Wrenches
2 pcs	Torque wrench
6 sets	Allen wrench (1.5-10mm)
6 pcs	Adjustable wrench (15")
6 sets	T-wrench (8-19mm)
6 sets	Combination wrench
6 sets	Box wrench (8-32mm)
6 sets	Strap wrench/filter remover
6 sets	Sockets with ½ drive (8-32mm)

	<ul style="list-style-type: none"> • Universal joint • Ratchet • Long and short extension • Sliding handle Power handle
6 pcs	Phillips Screw driver
6 pcs	Flat screw driver
6 sets	Feeler gauges
6 pcs	Ballpeen Hammer
1 pc	Chain block
1 unit	Hydraulic jack
1 set	Tractor splitter
6 pcs	Piston ring compressor
6 pcs	Vice grip
6 pcs	Chisel

EQUIPMENT	
QTY.	Description
1 unit	Training 4- wheel tractor with complete engine parts
1 unit	Chain block (5 tons)
1 set	Test light
1 unit	Dial gauge
1 unit	Air compressor and air gun

MATERIALS	
QTY.	Description
1 pack	Snap - off blade(9mm)
25 pcs	Electrical tape
100L	Fuel oil
20 L	Engine oil (SAE15W40)
5L	Grease
1 set	Piston ring
6 pcs	Fuel filters
20L	Coolant
1 pc	Fan belt
1 set	First aid kit
1 sack	Saw dust
1000ml	Sealant (silicon)
1 set	Packing seals - O-rings - Oil seals - gasket
	Bolts
10pcs each	8mm 10mm 12mm 14mm 17mm 19mm
100pcs	Rags

1 set	PPEs <ul style="list-style-type: none"> - Safety shoes - Gloves - Goggles - Overall
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COC3: Diagnose and Repair Axle, Hydraulic and Transmission Systems of 4-Wheel Tractor

TOOLS	
QTY.	Description
6 pcs	Mechanical Pliers
6 pcs	Diagonal cutting pliers/ long-nose pliers
6 pcs	Snap ring pliers (In)
6 pcs	Snap ring pliers (Out)
6 pcs	Snap knife cutter (STD)
2 pcs	Torque wrench
6 sets	Allen wrench (1.5-10mm)
6 pcs	Adjustable wrench (15")
6 sets	T-wrench (8-19mm)
6 sets	Combination wrench
6 sets	Box wrench (8-32mm)
6 sets	Strap wrench/filter remover
6 sets	Sockets with ½ drive (8-32mm) <ul style="list-style-type: none"> • Universal joint • Ratchet • Long and short extension • Sliding handle • Power handle
6 pcs	Tire wrench (24-26mm)
6 pcs	Puller impact type (3 tails)
6 pcs	Phillips Screw driver
6 pcs	Flat screw driver
6 sets	Feeler gauges
6 pcs	Ballpeen Hammer
3 pc	Chain block
3 units	Hydraulic jack(5-10tons)
1 set	Tractor splitter
6 pcs	Piston ring compressor
6 pcs	Vice grip
6 pcs	Chisel

EQUIPMENT	
QTY.	Description
1 unit	Tractor with complete axle, hydraulic, transmission system components
3 units	Pressure tester
1 unit	Air compressor with complete accessories
1 unit	Grease gun

MATERIALS	
QTY.	Description

1 pack	Snap - off blade(9mm)
30L	Hydraulic oil
30L	Gear oil
10L	Steering oil(ATF)
10L	Brake fluid
10L	Fuel
10L	Grease
100 pcs	Rags
1 sack	Saw dust
1 set	Packing seals - O-rings - Oil seals - gasket
40 rolls	Teflon tape
1 set	First aid kit
1 set	PPEs - Safety shoes - Gloves - Goggles - Overall

3.5 TRAINING FACILITIES

AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NC III

Based on a class size of 25 students/trainees

SPACE REQUIREMENT	SIZE IN METERS	AREA IN SQ. METERS	TOTAL AREA IN SQ. METERS	GRAND TOTAL AREA IN SQ. METERS
A. Building (permanent)				215.00
<ul style="list-style-type: none"> Student/Trainee Working Space 	2.00 x 1.00 per student/trainee	2.00 per student	50.00	
<ul style="list-style-type: none"> Learning Resource Center 	3.00 x 5.00	15.00	15.00	
<ul style="list-style-type: none"> Activity Room (including facilities, wash room, and store room) 	2.00 x 3.00	6.00 per student	150.00	
B. Shop and Farm area			1,000	1,000
total				1,215

3.6 TRAINER'S QUALIFICATIONS FOR AGRICULTURE SECTOR

Trainers who will deliver the training on **AGRICULTURAL MACHINERY SERVICING (4-WHEEL TRACTOR) NCIII** should have the following:

- Must be a licensed B.S. Agricultural Engineer
- Must be a holder of National TVET Trainer Certificate on Agricultural Machinery Servicing (4-WheelTractor) NCIII
- Must have at least two (2) years job/industry experience within the last five (5) years

3.7. INSTITUTIONAL ASSESSMENT

Institutional assessment is undertaken by trainees to determine their achievement of units of competency . A certificate of achievement is issued for each unit of competency.

SECTION 4 ASSESSMENT AND CERTIFICATION ARRANGEMENT

Competency Assessment is the process of collecting evidence and making judgments whether competency has been achieved. The purpose of assessment is to confirm that an individual can perform to the standards expected at the workplace as expressed in relevant competency standards.

The assessment process is based on evidence or information gathered to prove achievement of competencies. The process may be applied to a full qualification or employable unit(s) of competency in partial fulfillment of the requirements of the national qualification.

4.1. NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1.1 A National Certificate (NC) is issued when a candidate has demonstrated competence on all units of competency in a qualification with a promulgated Training Regulations.

4.1.2 A Certificate of Competency (CoC) is issued by the Authority to individuals who were assessed as competent in a single unit or cluster of related units of competency.

COC 1: Diagnose and Repair Electrical Systems of 4-Wheel Tractor

COC 2: Diagnose and Repair Engine System of 4-Wheel Tractor

COC 3: Diagnose and repair axle, hydraulic and transmission systems of 4-wheel tractor

- Diagnose and Repair Axle System of 4-Wheel Tractor
- Diagnose and Repair Hydraulic System of 4-Wheel Tractor
- Diagnose and Repair Transmission System of 4-Wheel Tractor

4.1.3 Upon accumulation of the COCs acquired, an individual shall be issued the corresponding National Certificate for the Qualification.

4.1.4 Individuals wanting to be certified will have to be assessed in accordance with the requirements identified in the relevant unit/s of competency.

4.1.5 The industry shall determine assessment and certification requirements for each qualification with promulgated Training Regulations. It includes the following:

- a. Entry requirements for candidates
- b. Evidence gathering methods
- c. Qualification requirements of competency assessors
- d. Specific assessment and certification arrangements as identified by industry

4.9.6 Recognition of Prior Learning (RPL). Candidates who have gained competencies through informal training, previous work or life experiences may apply for recognition in a particular qualification through a recognition/ assessment process.

4.2. COMPETENCY ASSESSMENT REQUISITE

4.2.1 **Self-Assessment Guide.** The self-assessment guide (SAG) is accomplished by the candidate prior to actual competency assessment. SAG is a pre-assessment tool to help the candidate and the assessor determine what evidence is available, where gaps exist, including readiness for assessment.

This document can:

- a) Identify the candidate's skills and knowledge
- b) Highlight gaps in candidate's skills and knowledge
- c) Provide critical guidance to the assessor and candidate on the evidence that need to be presented
- d) Assist the candidate to identify key areas in which practice is needed or additional information or skills that should be gained prior

4.2.2 **Accredited Assessment Center.** Only Assessment Center accredited by TESDA is authorized to conduct competency assessment. Assessment centers undergo a quality assured procedure for accreditation before they are authorized by TESDA to manage the assessment for National Certification.

4.2.3 **Accredited Competency Assessor.** Only accredited competency assessor is authorized to conduct assessment of competence. Competency assessors undergo a quality assured system of accreditation procedure before they are authorized by TESDA to assess the competencies of candidates for National Certification.

**Supermarket of Competencies
AGRI-FISHERY Sector**

**BASIC
COMPETENCIES**

Lead workplace communication	Lead small teams	Apply critical thinking and problem-solving techniques in the workplace	Work in a diverse environment	Propose methods of applying learning and innovation in the organization
Use information systematically	Evaluate occupational safety and health work practices	Evaluate environmental work practices	Facilitate entrepreneurial skills for micro-small-medium enterprises (MSMEs)	

**COMMON
COMPETENCIES**

Apply safety measures in farm operations	Use farm servicing tools and equipment	Perform estimation and calculations	Process farm wastes
Maintain service records	Conduct Diagnosis	Perform Shop Maintenance	

**CORE
COMPETENCIES**

Diagnose and Repair Electrical Systems of 4-Wheel Tractor	Diagnose and Repair Engine System of 4-Wheel Tractor	Diagnose and Repair Axle System of 4-Wheel Tractor	Diagnose and Repair Hydraulic System of 4-Wheel Tractor	Diagnose and Repair Transmission System of 4-Wheel Tractor
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GLOSSARY OF TERMS

4-WHEEL TRACTOR	Refers to describe a farm vehicle that provides the power and traction to mechanize agricultural tasks, especially for tilling operations
ACCESSORIES	Refers to additional items or parts to complete a certain unit and does not have of any importance in the system
ELECTROLYTIC TYPE	Refers to a type of battery which can be charged by reversing internal reactions inside the system
EQUIPMENT	Refers to tools or any tangible resources to be used to perform the study of four-wheel tractor servicing e.g. four-wheel tractor and air compressor
HYDRAULIC SYSTEM	Refers to a system where fluids (oil, in this case) are involved
MAINTENANCE FREE TYPE	Refers to a type of battery that does not need for maintaining the water/acid level inside the system
SERVICE SPECIAL TOOLS	Refers to diagnosing, repairing and replacement Refer to tools to repair or troubleshoot four-wheel tractor unit/s which are not available in the market, and should be fabricated to fit to a particular system of a four-wheel tractor



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