

AGRICULTURAL MACHINERY DIGITAL SYSTEMS

UNIT CODE: ENG/CU/AME/CR/03/4

Relationship to Occupational Standards

This unit addresses the unit of competency: Apply Digital Skills in Agricultural Systems

Duration of Unit: 60 hours

Unit Description

This unit specifies the competencies required to apply theoretical knowledge related to Agricultural Digital Systems **and** performing troubleshooting procedures on electronic components and systems. It also involves operating electronic diagnostic control tools and performing maintenance operations on Agricultural Digital Systems. It also involves evaluating the operations of agricultural digital systems.

Summary of Learning Outcomes

1. Apply theoretical knowledge related to Agricultural Digital Systems
2. Perform troubleshooting procedures on electronic components and systems
3. Operate electronic diagnostic control tools
4. Perform service and Maintenance operations on agricultural digital systems
5. Evaluate the Operations of agricultural digital systems

Learning Outcomes, Content and Suggested Assessment Methods

Learning outcome	Content	Suggested assessment methods
1. Apply theoretical knowledge related to agricultural digital systems	<ul style="list-style-type: none">● Concepts of magnetism● Principles of electricity● Functions of electricity and magnetism within electrical and electronic components and systems● Principles of agricultural digital systems● Computer control theory with respect to agricultural digital systems	<ul style="list-style-type: none">● Written tests● Oral presentation● Observation
2. Perform troubleshooting procedures on electronic components and systems	<ul style="list-style-type: none">● Selection of PPE according to specific context and policy● Connection of electronic diagnostic tools with agricultural equipment.	<ul style="list-style-type: none">● Written tests● Oral presentation● Observation● Project

	<ul style="list-style-type: none"> ● Different troubleshooting codes in electronic diagnostics 	
3. Operate electronic diagnostic control tools	<ul style="list-style-type: none"> ● Levels of access to electronic diagnostic tools ● Selection of electronic equipment calibration at operator level ● Description of electronic calibration of equipment at the service center level. 	<ul style="list-style-type: none"> ● Oral questioning ● Observation ● Project
4. Perform service and maintenance operations on agricultural digital systems	<ul style="list-style-type: none"> ● Care and maintenance of electronic networking diagnostic control tools ● Performance of software updates on electronic diagnostic control tools 	<ul style="list-style-type: none"> ● Oral questioning ● Observation ● Oral presentation ● Written report
5. Evaluate the operations of agricultural digital systems	<ul style="list-style-type: none"> ● Selection of PPE according to specific context and policy ● Identification of electronic diagnostic control tools ● Connection of selected electronic diagnostic tools with agricultural equipment. ● Interpretation of results from selected electronic diagnostic tools 	<ul style="list-style-type: none"> ● Oral questioning ● Observation ● Oral presentation ● Written report ● Project

Suggested Methods of Delivery

- Presentations and practical demonstrations by trainer;
- Guided learner activities and research to develop underpinning knowledge;
- Supervised activities and projects in a workshop
- Instructor lead facilitation of theory
- Demonstrations
- Simulation/Role play
- Group Discussion
- Projects
- Presentations
- Case studies
- Assignments

The delivery may also be supplemented and enhanced by the following, if the opportunity allows:

- Visiting lecturer/trainer from the Agricultural Machinery service and repair sector;
- Industrial visits.

Recommended Resources

<p>Tools</p> <p>Comprehensive set of hand tools for agricultural machinery and equipment maintenance and repair.</p>
<p>Equipment</p> <ul style="list-style-type: none"> ● A fully equipped agricultural machinery and equipment maintenance workshop; ● Computers ● TV sets ● LCD projectors ● Internet access to manufacturers' technical information; ● Personal protective equipment (PPE) and suitable coverings to protect vehicles; ● Facilities for the disposal of waste oil and used parts; ● Customer database and systems for recording maintenance records.
<p>Materials and supplies</p> <p>Consumables for maintaining agricultural digital systems including:</p> <ul style="list-style-type: none"> ● Stationery ● Charts ● Video clips ● Audio tapes ● Radio set ● Digital multi-meters ● Test lights ● Laptop diagnostic systems ● On-board diagnostic systems ● Batteries ● Sensors ● Regulators ● Heaters ● LED ● Printed circuit boards ● Communication plugs ● Circuit tests ● Component tests ● Service code diagnostics ● Replacement parts: ● Cleaning materials
<p>Reference materials</p>

- Manufacturers service manuals for tractors and agricultural machines and equipment that are being serviced;
- Appropriate agricultural engineering text books available on numerous websites

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