

## FARM IRRIGATION AND DRAINAGE SYSTEMS

**ISCED UNIT CODE:** 0811 451 06A

**TVETCDACC UNIT CODE:** AQ/CU/PN/CC/03/5/MA

### Relationship to Occupational Standards

This unit addresses the unit of competency: carry out farm irrigation and drainage

**Duration of Unit: 180 HOURS**

### UNIT DESCRIPTION

This unit specifies the competencies required by an Agripreneurship technologist level 6 to carry out farm irrigation and drainage. It involves designing farm irrigation and drainage systems, installing farm irrigation and drainage systems and maintaining farm irrigation and drainage systems.

### Summary of learning outcomes

By the end of this unit of learning, the trainee should be able to:

S/No	Learning Outcomes	Duration (Hours)
1.	Design farm irrigation and drainage systems	60
2.	Install farm irrigation and drainage systems	60
3.	Maintain farm irrigation and drainage systems	60
<b>Total</b>		<b>180</b>

### Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Design farm irrigation and drainage systems	1.1 Farm irrigation and drainage system work drawing <ul style="list-style-type: none"><li>1.1.1 Surface</li><li>1.1.2 Sub surface</li><li>1.1.3 Sprinkler</li><li>1.1.4 Trickle</li></ul>	<ul style="list-style-type: none"><li>• Practical</li><li>• Project</li><li>• Third party report</li></ul>

drainage systems	1.1.5 Centre pivot 1.2 Farm irrigation and drainage system design approvals 1.3 system material costing -Material costing components -Material estimation process 1.4 preparing Farm irrigation and drainage system material schedule	<ul style="list-style-type: none"> <li>• Portfolio of evidence</li> <li>• Written tests</li> <li>• Oral questioning</li> </ul>
2 Install farm irrigation and drainage systems	2.1 Personal protective equipment <ul style="list-style-type: none"> <li>✓ Types</li> <li>✓ Uses</li> </ul> 2.2 Farm irrigation and drainage system tools, equipment and uses <ul style="list-style-type: none"> <li>2.2.1 Drip kit</li> <li>2.2.2 Pipes</li> <li>2.2.3 Fittings</li> <li>2.2.4 Water meter</li> <li>2.2.5 Flow meters</li> <li>2.2.6 Pumps</li> </ul> 2.3 Installation of farm irrigation and drainage system <ul style="list-style-type: none"> <li>• irrigation and drainage system installation procedure</li> <li>• irrigation and drainage system testing</li> </ul> 2.4 Testing of farm irrigation and drainage system	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Written tests</li> <li>• Oral questioning</li> </ul>
3 Maintain farm irrigation and drainage systems	3.1 personal protective equipment <ul style="list-style-type: none"> <li>• Types</li> <li>• Use</li> </ul> 3.2 Farm irrigation and drainage system maintenance schedule <ul style="list-style-type: none"> <li>• Daily</li> <li>• Weekly</li> <li>• Monthly</li> <li>• Annually</li> <li>• seasonally</li> </ul> 3.3 Assembling of Farm irrigation and drainage system tools and equipment <ul style="list-style-type: none"> <li>• Drip kit</li> <li>• Pipes</li> <li>• Fittings</li> </ul>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Written tests</li> <li>• Oral questioning</li> </ul>

	<ul style="list-style-type: none"> <li>• Water meter</li> <li>• Flow meter</li> <li>• Pump</li> </ul> <p>3.4 Farm irrigation and drainage system maintenance</p> <ul style="list-style-type: none"> <li>• -irrigation system maintenance practices</li> <li>• -drainage system maintenance practices</li> </ul>	
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### Suggested methods of delivery

- Project
- Demonstration
- Practicals
- Discussions
- Direct instruction

### Recommended resources for 25 trainees

S/No	Item/Category	Description/Specification	Quantity	Recommended Ratio (Item: Trainee)
A	<b>Learning Materials</b>			
	Text books & E-learning materials	Agricultural engineering	5	1:5
B	<b>Learning Facilities &amp; infrastructure</b>			
	classroom		1	1:25
C	<b>Consumable materials</b>			
	notebooks	A4 SIZE	25	1:1
	Flip chart		1	1:25
D	<b>Tools and Equipment</b>			
	Projectors	EPSON 2788 LUMEN or any brand	1	1:25
	Computers	Any brand-5 <sup>th</sup> generation and above COi5	5	1:5

	internet	Reliable and fast		
	Ranging rods/pegs	Wooden 1ft	10	1:2
	Measuring tape	100m long	5	1:5
	Shovels		5	1:5
	Jembes	Wooden handle and sharp	5	1:5
	Mattock	Wooden handle and sharp	5	1:5
	Pangas	Sharp with good handle	1	1:5
	Water taps		5	1:5
	Gutters	pvc	5	1:5
	Rope/strings	100 m long manilla rope	2	1:10
	Pipes	Pvc pipes 100m	1	
	Emitters			
	Pump		2	
	Tanks	100l tank	1	1:25
	Nozzles		5	1:5
	Valves		5	1:5