



**REPUBLIC OF KENYA**

**COMPETENCY BASED MODULAR CURRICULUM**

**FOR**  
**AGRICULTURAL ENGINEERING**  
**KNQF LEVEL 6**

**(CYCLE 3)**

**PROGRAMME ISCED CODE: 0716 554 A**



**TVET CDACC**  
**P.O. BOX 15745-00100**  
**NAIROBI**

## **AGRICULTURAL SURVEY AND FARM PLANNING**

**UNIT CODE:** 0716 551 18A

**TVET CDACC UNIT CODE:** ENG/CU/AGR/CR/01/6/MA

**UNIT DURATION:** 180 Hours

### **Relationship to Occupational Standards**

This unit addresses the unit of competency: **Carry out agricultural survey and farm planning**

### **Unit Description**

This unit specifies the competencies required by an Agricultural Engineering Technologist Level 6 to carry out agricultural survey and farm planning. It involves carrying out agricultural feasibility study, agricultural survey and farm planning and layout.

### **Summary of Learning Outcomes**

<b>S/No.</b>	<b>Learning Outcomes</b>	<b>Duration (Hours)</b>
1.	Carry out agricultural feasibility study	40
2.	Carry out agricultural survey	100
3.	Carry out farm planning and layout	40
<b>TOTAL</b>		<b>180</b>

### **Learning Outcomes, Content and Suggested Assessment Methods**

<b>Learning Outcome</b>	<b>Content</b>	<b>Suggested Assessment Methods</b>
1. Carry out agricultural feasibility study	1.1 Factors to be considered in conducting feasibility survey 1.1.1 Functionality 1.1.2 Structure location 1.1.3 Clients' requirements 1.2 Planning for feasibility survey e.g. 1.2.1 Tools and equipment for feasibility survey 1.2.2 Types of feasibility surveys 1.2.3 Procedures for feasibility survey	<ul style="list-style-type: none"><li>• Practical</li><li>• Project</li><li>• Portfolio of evidence</li><li>• Third party report</li><li>• Written tests</li><li>• Oral questioning</li></ul>

<b>Learning Outcome</b>	<b>Content</b>	<b>Suggested Assessment Methods</b>
2. Carry out agricultural survey	<p>2.1 Types of chains e.g.</p> <ul style="list-style-type: none"> <li>2.1.1 Gunter's chain</li> <li>2.1.2 Metric chain</li> <li>2.1.3 Engineers chain</li> <li>2.1.4 Band chain</li> <li>2.1.5 Revenue chains</li> </ul> <p>2.2 Chain survey stations</p> <ul style="list-style-type: none"> <li>2.2.1 Maim station</li> <li>2.2.2 Subsidiary stations</li> <li>2.2.3 Tie stations</li> </ul> <p>2.3 Procedures in chain survey</p> <ul style="list-style-type: none"> <li>2.3.1 Reconnaissance survey</li> <li>2.3.2 Marking stations</li> <li>2.3.3 Chaining</li> <li>2.3.4 Taking measurements</li> <li>2.3.5 Analysis</li> <li>2.3.6 Report writing</li> </ul> <p>2.4 Types of levels</p> <ul style="list-style-type: none"> <li>2.4.1 Dumpy</li> <li>2.4.2 Abney</li> <li>2.4.3 Wye</li> <li>2.4.4 Tilting</li> <li>2.4.5 Precision</li> </ul> <p>2.5 Levelling terms e.g.</p> <ul style="list-style-type: none"> <li>2.5.1 Datum</li> <li>2.5.2 Backsight</li> <li>2.5.3 Foresight</li> <li>2.5.4 Intermediate sight</li> </ul>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Portfolio of evidence</li> <li>• Third party report</li> <li>• Written tests</li> <li>• Oral questioning</li> </ul>

<b>Learning Outcome</b>	<b>Content</b>	<b>Suggested Assessment Methods</b>
	<p>2.5.5 Height of instrument</p> <p>2.6 Methods of levelling</p> <ul style="list-style-type: none"> <li>2.6.1 Simple</li> <li>2.6.2 Profile</li> <li>2.6.3 Differential</li> <li>2.6.4 Reciprocal</li> </ul> <p>2.7 Relevant tools and equipment for levelling</p> <p>2.8 Construction materials and availability</p> <p>2.9 Levelling procedures</p> <p>2.10 Booking methods</p> <ul style="list-style-type: none"> <li>2.10.1 Height of collimation</li> <li>2.10.2 Rise and fall method</li> </ul> <p>2.11 Arithmetic checks</p> <p>2.12 Methods of land grading</p> <ul style="list-style-type: none"> <li>2.12.1 Profile</li> <li>2.12.2 Plane</li> <li>2.12.3 Plan inspection</li> <li>2.12.4 Contour adjustment</li> </ul> <p>2.13 Benefits of land grading</p> <p>2.14 Limitations of land grading</p>	
3. Carry out farm planning and layout	<p>3.1 Procedure of farm planning</p> <p>3.2 Types of farm layouts, eg</p> <ul style="list-style-type: none"> <li>3.2.1 Block or rectangular</li> <li>3.2.2 Contour</li> <li>3.2.3 Radial</li> <li>3.2.4 Strip or linear</li> </ul> <p>3.3 Methods of farm planning</p>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Portfolio of evidence</li> <li>• Third party report</li> <li>• Written tests</li> </ul>

<b>Learning Outcome</b>	<b>Content</b>	<b>Suggested Assessment Methods</b>
	3.3.1 Agronomic 3.3.2 Physical 3.4 Special purpose	<ul style="list-style-type: none"> <li>• Oral questioning</li> </ul>

#### **Suggested Methods of Delivery**

- Demonstration
- Projects
- Group discussion
- Direct instructions

#### **Recommended Resources for 25 Trainees**

<b>S/No.</b>	<b>Category/Item</b>	<b>Description/Specifications</b>	<b>Quantity</b>	<b>Recommended Ratio</b> (Item: Trainee)
<b>A</b>	<b>Learning Materials</b>			
	Projector		1	1:25
	Scientific calculators		25	1:25
	Survey manual		1	1:25
	Computer with internet and		1	1:25
<b>B</b>	<b>Learning Facilities &amp; infrastructure</b>			
	Classroom	40 m <sup>2</sup>	1	1:25
<b>C</b>	<b>Consumable materials</b>			
	Stationery	Assorted	1 rim of printing papers 1 packet of pens	1:25

			1packet of maker pens	
<b>D</b>	<b>Tools and equipment</b>			
	Dumpy levels		1	1:25
	Total station		1	1:25
	Reading staffs		3	1:8
	Sets of marking pin		3	1:8
	Engineer's chain		2	1:13
	Gunter's chain		2	1:13
	Measuring tapes		3	1:8
	Tripod stands		1	1:25
	Wheelbarrows		2	1:13
	Pangas		5	1:5
	Farm		0.5-acre	