



REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

AGRICULTURAL ENGINEERING TECHNICIAN

LEVEL 6

PROGRAMME ISCED CODE: 0716 454 A



**TVET CDACC
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NAIROBI**

CARRY OUT FARM IRRIGATION AND DRAINAGE

UNIT CODE: 0716 451 14A

TVET CDACC CODE: ENG/OS/AGR/CR/05/5/MA

UNIT DESCRIPTION

This unit specifies the competencies required by an Agricultural Engineering 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.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	These are assessable statements which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the Range.</i>
1. Design farm irrigation and drainage systems	1.1 <i>Farm irrigation and drainage system</i> work drawing is prepared as per work requirement 1.2 Farm irrigation and drainage system design approvals is obtained as per work requirement 1.3 Farm irrigation and drainage system material costing is prepared as per approved designs and drawing 1.4 Farm irrigation and drainage system material schedule is prepared based on design and drawing
2. Install farm irrigation and drainage systems	2.1 Personal protective equipment are worn based on OSHA 2.2 <i>Farm irrigation and drainage system tools and equipment</i> are assembled as per work requirements. 2.3 Farm irrigation and drainage system is installed as per approved designs and work drawings 2.4 Farm irrigation and drainage system is tested as per work requirements
3. Maintain farm irrigation and drainage systems	3.1 Personal protective equipment are worn based on OSHA 3.2 Farm irrigation and drainage system maintenance schedule is prepared as per irrigation and drainage system manuals

	<p>3.3 Farm irrigation and drainage system tools and equipment are assembled as per work requirement.</p> <p>3.4 Farm irrigation and drainage system is maintained as per work requirement</p>
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RANGE

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range
1. Farm irrigation and drainage system may include but are not limited to:	<ul style="list-style-type: none"> • Surface • Sub surface • Sprinkler • Trickle • Centre pivot
2. Farm irrigation and drainage system tools and equipment may include but are not limited to:	<ul style="list-style-type: none"> • Drip kit • Pipes • Fittings • Water meter • Flow meters • pumps

REQUIRED KNOWLEDGE AND SKILLS

This section describes the knowledge and skills required for this unit of competency.

Required knowledge

The individual needs to demonstrate knowledge of:

- Data analysis and presentation
- Computer application packages
- Field assessment procedures
- Different land condition
- Different farm tools and materials

- Soil and water conservation
- Occupational safety and health procedures

Required skills

The individual needs to demonstrate the following skills:

- Record keeping
- Planning
- Technical report writing
- Digital literacy
- Measuring
- Decision making
- Communication skills

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Worn personal protective equipment based on OSHA 1.2 Prepared working drawings as per work requirements 1.3 Prepared bill of quantities as per approved designs and drawings 1.4 Prepared material schedule based on design and drawings 1.5 Installed irrigation and drainage systems according to designs and working drawings 1.6 Prepared maintenance schedule as per irrigation and drainage system 1.7 Maintained irrigation and drainage systems as per work requirement
2. Resource implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment

	2.3 Resources relevant to the proposed activity or tasks
3. Methods of assessment	<p>Competency in this unit may be assessed through:</p> <p>3.1 Practical's</p> <p>3.2 Projects</p> <p>3.3 Portfolio of Evidence</p> <p>3.4 Third Party Reports</p> <p>3.5 Written tests</p> <p>3.6 Oral assessment</p>
4. Context of assessment	<p>Competency may be assessed:</p> <p>4.1 Workplace</p> <p>4.2 Simulated work environment</p>
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.