REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

AGRICULTURAL ENGINEERING TECHNICIAN

LEVEL 6

PROGRAMME ISCED CODE: 0716 454 A

TVET CDACC
P.O. BOX 15745-00100
NAIROBI

APPLY SOIL MECHANICS PRINCIPLES

UNIT CODE: 0716 541 23A

TVET CDACC CODE: ENG/OS/AGR/CC/06/6/MA

UNIT DESCRIPTION

This unit describes the competencies required by an Agricultural Engineering Technologist Level 6 in order to apply soil mechanics principles. It involves conducting site feasibility study, carrying out soil tests and analysing and interpreting soil test data.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	**PERFORMANCE CRITERIA** These are assessable statements which specify the required level of performance for each of the elements.
1.Conduct site feasibility study	1.1 Personal protective equipment are based on OSHA 1.2 Tools and equipment are identified and assembled as per work requirement 1.3 ***Ecological, physical, economical and socio-economic factors*** are analysed 1.4 Feasibility study for the site is carried out as per soil mechanics manuals 1.5 Feasibility study report is prepared as per work requirement.
2. Carry out soil tests	2.1 Personal protective equipment are worn based on OSHA 2.2 Soil testing machinery, tools and equipment are identified and assembled as per work requirement 2.3 Carry out ***insitu and laboratory soil tests*** according to soil mechanics manuals
3. Analyse and interpret soil test data	3.1 Data entry and cleaning is carried out as per software specification 3.2 Data analysis is carried out as per work requirement

ELEMENT These describe the key outcomes which make up workplace function	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements.
	3.3 Analysis and interpretation report is prepared as per work procedure.

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. Personal protective equipment may include but are not limited to:	• Gloves • Helmet • Face shields • Safety goggles • Safety boots • Overalls • Dust coat • Ear muffs • Face masks
2. Ecological, physical, economical and socio-economic factors may include but are not limited to:	• Terrain • Climate • Soil properties • capital • Soil water • Culture • Social values
3. Insitu and laboratory soil tests may include but are not limited to:	• Infiltration • Sieve analysis • Moisture content • Cone index

	• Soil shear strength

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:

- Field assessment procedures
- Different land condition
- Different farm tools and materials
- Waste management and disposal methods
- Occupational safety and health procedures

Required Skills

The individual needs to demonstrate the following skills:

- Logical thinking
- Problem solving
- Communication
- Analytical

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	Assessment requires evidence that the candidate: 1.1 Worn personal protective equipment based on OSHA 1.2 Analysed Ecological, physical, economical and socio-economic factors 1.3 Carried out feasibility study for the site as per soil mechanics manuals 1.4 Prepared feasibility study report as per engineering standards. 1.5 Carried out *insitu* and laboratory soil tests according to soil mechanics manuals

	1.6 Carried out data entry and cleaning according to standard operating procedures 1.7 Carried out data analysis using suitable methods 1.8 Prepared Analysis and interpretation report as per engineering standards
2. Resource implications	The following resources should be provided: 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	Competency in this unit may be assessed through: 3.1 Practical's 3.2 Projects 3.3 Portfolio of Evidence 3.4 Third Party Reports 3.5 Written tests 3.6 Oral assessment
4. Context of assessment	Competency may be assessed: 4.1 Workplace 4.2 Simulated work environment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.