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 RESEARCH PROJECT

UNIT CODE: 0716 541 24A

TVET CDACC CODE: ENG/OS/AGR/CC/07/6/MA

UNIT DESCRIPTION

This unit specifies the competencies required by an Agricultural Engineering Technologist Level 6 to apply research project. It includes competencies for preparing research proposal, performing field experiment and preparing research project report.

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. ***Bold and italicized terms are elaborated in the Range.***
1. Prepare research project proposal	1.1 Research topic is identified as per current trends and development in the agricultural engineering industry 1.2 Project objectives are formulated as per research topic 1.3 Full project proposal is developed as per the ***proposal writing guidelines*** 1.4 Project proposal defence is carried out as per the presentation guidelines
2. Perform field experiment	1. ***Experimental design*** is identified and applied as per the research objectives 2. ***Instruments of data collection*** are identified and assembled as per work requirement 3. Field experiments are performed as per experimental design 4. ***Statistical data analysis*** packages are applied in data analysis, interpretation and presentation

3. Prepare research project report	3.1 Project report is prepared as per the technical report writing manual 3.2 Project report defence is carried out as per the ***presentation guidelines*** 3.3 Project reports findings are disseminated through seminars

RANGE

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

Variable	**Range**
1. Proposal writing guidelines may include but are not limited to:	• Preliminaries • Body/Main text • References • Appendices
2. Experimental designs may include but are not limited to:	• Single factor experimental design • Factorial experimental design • Split plot design • Taguchi optimisation design
3. Instruments of data collection may include but not limited to:	• Structured questionnaires • Interviews • Observations • Measurements
4. Statistical data analysis packages may include but are not limited to:	• SAS • SPSS • MATLAB • Microsoft Excel

5. Presentation guidelines may include but are not limited to:	• Flow of ideas • Communication styles • Appropriate product • Display methods

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

The individual needs to demonstrate the following skills:

- Measuring
- Equipment calibration
- Data collection
- Data presentation
- Proposal writing
- Statistical data analysis
- Designing experimental layouts in the field
- Technical Report writing
- Observation
- Digital literacy

Required knowledge

The individual needs to demonstrate knowledge of:

- Project proposal format
- Project report format
- Sampling technique
- Data collection
- Data analysis
- Data presentation format
- Standard operating procedures
- Occupational safety and health procedures

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Identified research topic as per current trends and development in agricultural engineering industry 1.2 Formulated project objectives in accordance to research topic 1.3 Developed full project proposal as per the proposal writing guidelines 1.4 Identified and applied experimental design as per the research objectives 1.5 Identified and assemble instruments of data collection 1.6 Performed field experiments in accordance to experimental design 1.7 Applied statistical data analysis packages in data analysis, interpretation and presentation 1.8 Prepared project report as per the technical report writing manual
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 3.2 Project 3.3 Portfolio of evidence 3.4 Third party report 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.