REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

AGRICULTURAL ENGINEER CRAFTSPERSON

LEVEL 5

PROGRAMME ISCED CODE: 0716 454 A

TVET CDACC
P.O. BOX 15745-00100 NAIROBI

APPLY MATHEMATICS

UNIT CODE: 0541 441 05A

TVET CDACC CODE: ENG/OS/AGR/CC/02/5/MA

UNIT DESCRIPTION:

This unit describes the competences required in order to apply algebra, trigonometric functions, coordinate geometry, statistics, vector theorem, matrices and to carry out mensuration.

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. Apply algebra	1.1 Calculations involving indices are performed as per task requirement 1.2 Calculations involving logarithms are performed as per task requirement 1.3 Scientific calculator is used in solving mathematical problems as per task requirement 1.4 Simultaneous equations are solved as per task requirement 1.5 Quadratic equations are solved as per as per task requirement
2. Apply trigonometric functions	2.1 Calculations involving trigonometry are performed as per task requirement 2.2 Calculations involving reciprocal trigonometric functions are performed as per task requirement 2.3 Pythagorean trigonometric identity is applied as per task 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. ***Bold and italicized terms are elaborated in the Range.***
3. Carry out mensuration	3.1 Units of measurements and their symbols are determined as per task requirement 3.2 Conversion of units of measurement are performed as per task requirement 3.3 Calculation of length, width, height, perimeter, area and angles of figures is performed as per task requirement 3.4 Measurements and estimations of quantities is performed as per task requirement
4. Apply statistics and probability	4.1 Presentation of data is done as per task requirement 4.2 Measures of ***central tendency*** are obtained as per task requirement 4.3 Measures of ***dispersion*** are obtained as per task requirement 1.1 Probability of occurrence of events are determined

RANGE

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

Variable	**Range**
1. Central tendency may include but not limited to:	1.1 Mean 2.1 Mode 3.1 Median

Variable	Range
2. Dispersion may include but not limited to:	1.1 Variance 1.2 Standard deviation

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:

- Applying fundamental operations (addition, subtraction, division, multiplication)
- Using and applying mathematical formulas
- Logical thinking
- Problem solving
- Drawing graphs
- Using different measuring tools

Required Knowledge

The individual needs to demonstrate knowledge of:

- Fundamental operations (addition, subtraction, division, multiplication)
- Calculating area and volume
- Types and purpose of measuring instruments
- Units of measurement and abbreviations
- Rounding techniques
- Types of fractions
- Types of tables and graphs
- Presentation of data in tables and graphs

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 Solved simultaneous equations as per task requirement

	1.2 Solved quadratic equations as per as per task requirement 1.3 Performed calculations involving trigonometry as per task requirement 1.4 Determined normal and tangents as per task requirement 1.5 Performed calculation of length, width, height, perimeter, area and angles of figures as per task requirement 1.6 Obtained measures of central tendency as per task requirement
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 activities or tasks
3. Methods of Assessment	3.1 Competency in this unit may be assessed through: 3.2 Written tests 3.3 Portfolio of evidence 3.4 Third party report
4. Context of Assessment	Competency may be assessed in the workplace or simulated workplace
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.