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 COMPUTER AIDED DRAWING

UNIT CODE: 0716 441 19A

TVET CDACC CODE: ENG/OS/AGR/CC/03/6/MA

UNIT DESCRIPTION

This unit specifies the competencies required by an Agricultural Engineering Technologist Level 6 to apply computer aided drawing. It involves using and maintaining drawing equipment and materials, producing geometric drawings, pictorial drawings, P orthographic drawings, producing assembly drawings and designing mechanical components

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 Produce geometric drawings	1.1 Drawing requirements are identified as per work requirements 1.2 ***CAD software*** are identified as per work requirement 1.3 ***Geometric CAD drawings*** are prepared as per work requirement
2 Produce pictorial drawings	2.1 Drawing requirements are identified as per work requirements 2.2 CAD software are identified as per work requirement 2.3 ***Pictorial CAD drawings*** are drafted as per work requirement
3 Produce orthographic drawings.	3.1 Drawing requirements are identified as per work requirements 3.2 CAD tools are assembled as per work requirement 3.3 ***Orthographic CAD drawings*** are prepared as per work requirement
4 Produce assembly drawings	4.1 ***Orthographic views*** are exploded according to standard conventions of orthographic drawings

	4.2 Pictorial drawings are exploded according to standard conventions of pictorial drawings 4.3 Orthographic and pictorial views are assembled as per drawing specifications 4.4 Sectional views are produced according to standard conventions of drawing 4.5 Parts list is developed according to drawing schematic
5 Design mechanical components	5.1 Mechanical components design is drafted as per work requirements 5.2 Computer aided engineering (CAE) is applied in simulation as per work requirements 5.3 Mechanical components are optimized according to design analysis results 5.4 Manufacturing database is created according to manufacturing process.

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. CAD software may include but are not limited to:	PC computer with the following software • AutoCAD • Inventor • Solid works • Fusion 360 • Solid edge
2. Geometric CAD drawings forms may include but are not limited to:	• 2-Dimensional • 3-Dimensional
3. Pictorial drawings may include but are not limited to	• Isometric • Oblique • Cabinet • Cavalier
4. Orthographic views may include but are not limited to:	• 1^{ST} Angle projection • 3^{rd} Angle projection

REQUIRED SKILLS AND KNOWLEDGE

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

Required knowledge

The individual needs to demonstrate knowledge of:

- Lettering
- Types of lines
- Safe use of computer systems
- Basic ICT concepts
- Computer software installation

Required skills

The individual needs to demonstrate the following skills:

- Critical thinking

- Interpretation
- Analysis and synthesis
- Communication
- Problem Solving
- Creativity

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Prepared geometric CAD drawings as per work requirement 1.2 Prepared pictorial CAD drawings as per work requirement 1.3 Prepared Orthographic CAD drawings as per work requirement 1.4 Assembled orthographic and pictorial views as per drawing specifications. 1.5 Applied Computer Aided Engineering (CAE) in simulation as per work requirements.
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 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, workplace and job role is recommended.