



**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**

## PERFORM WORKSHOP TECHNOLOGY PRACTICES

**UNIT CODE:** 0716 441 02A

**TVET CDACC CODE:** ENG/OS/AGR/CC/01/5/MA

### UNIT DESCRIPTION

This unit specifies the competencies required by an Agricultural Engineering Craftsperson to perform workshop technology practices. It involves performing bench works, carrying out mechanical machining operations, fabricating farm tools and equipment, maintaining farm machinery and workshop tools and equipment.

### ELEMENTS AND PERFORMANCE CRITERIA

<b>ELEMENT</b>	<b>PERFORMANCE CRITERIA</b>
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 Perform bench works	1.1 <i>Personal protective equipment</i> are worn based on OSHA 1.2 <i>Bench work tools</i> are identified and assembled as per work procedure 1.3 <i>Bench work operations</i> are performed as per work requirements 1.4 Bench work tools are maintained as per manufacturer's specifications and manuals
2 Carry out mechanical machining operations	2.1 Personal protective equipment are worn based on OSHA 2.2 <i>Mechanical machining machines</i> are identified according to operations to be carried out 2.3 <i>Mechanical machining operations</i> are performed as per the work requirements

<b>ELEMENT</b> These describe the key outcomes which make up workplace function	<b>PERFORMANCE CRITERIA</b> 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>
	2.4 Mechanical machines used are maintained as per manufacturer's specifications and manuals
3 Fabricate farm tools and equipment	3.1 Personal protective equipment are worn based on OSHA 3.2 Designs for farm tools and equipment are prepared as per work requirement 3.3 Working drawings are prepared as per the engineering standards 3.4 Bill of quantities for farm tools and equipment are prepared in line with the designs and drawings 3.5 Material schedule is prepared in line with the design and drawings 3.6 Tools, material and machines for fabrication are identified based on the operation requirement 3.7 Designed farm tools and equipment are fabricated as per working drawings. 3.8 Fabricated farm tools and equipment are tested as per work requirements
4 Maintain farm machinery, workshop tools and equipment	4.1 Personal protective equipment are worn based on OSHA 4.2 <b><i>Maintenance tools and equipment</i></b> are identified and assembled as per work requirement. 4.3 Farm machinery, workshop tools and equipment are maintained in line with manufacturer's manuals.

## RANGE

Variable	Range
1. Personal protective equipment may include but are not limited to:	<ul style="list-style-type: none"> <li>• Gloves</li> <li>• Helmet</li> <li>• Safety boots</li> <li>• Safety goggles</li> <li>• Overalls</li> <li>• Dust coat</li> <li>• Ear muffs</li> <li>• Face masks</li> </ul>
2. Bench work tools may include but are not limited to:	<ul style="list-style-type: none"> <li>• Cutting tools</li> <li>• Grinding tools</li> <li>• Drilling tools</li> <li>• Measuring tools</li> <li>• Boring</li> <li>• Holding tools</li> <li>• Striking tools</li> <li>• Marking tools</li> <li>• Threading tools</li> </ul>
3. Bench work operations may include but are not limited to:	<ul style="list-style-type: none"> <li>• Cutting</li> <li>• Filing</li> <li>• Scrapping</li> <li>• Measuring</li> <li>• Drilling</li> <li>• Striking</li> <li>• Grinding</li> </ul>
4. Mechanical machining machines may include but are not limited to:	<ul style="list-style-type: none"> <li>• Bending machine</li> <li>• Welding machine</li> <li>• Lathe machine</li> <li>• Milling machine</li> </ul>

	<ul style="list-style-type: none"> <li>• Drilling machine</li> <li>• Sheet metal holding machine</li> </ul>
5. Mechanical machining operations may include but are not limited to:	<ul style="list-style-type: none"> <li>• Cutting</li> <li>• Knurling</li> <li>• Chamfering</li> <li>• Drilling</li> <li>• Boring</li> <li>• Taper turning</li> <li>• Threading</li> </ul>
6. Maintenance tools and equipment may include but are not limited to:	<ul style="list-style-type: none"> <li>• Screwdriver set</li> <li>• Pliers</li> <li>• Wire strippers</li> <li>• Wrenches</li> <li>• Safety gear</li> <li>• Files</li> <li>• Spanners</li> <li>• Hammers</li> <li>• Drills</li> </ul>

## REQUIRED KNOWLEDGE AND SKILLS

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

### Required knowledge

- Tools and equipment
- Safety regulations
- Mathematics
- Electrical machine components
- Power supply

### Required skills

- Analytical

- Critical thinking
- Problem solving
- Quality control
- Interpretation of technical drawings
- Circuit interpretation

## EVIDENCE GUIDE

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

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Worn personal protective equipment based on OSHA</li> <li>1.2 Performed bench work operations as per work requirements</li> <li>1.3 Maintained bench work tools as per manufacturer's specifications and manuals</li> <li>1.4 Performed mechanical machining operations as per work requirements</li> <li>1.5 Maintained mechanical machines as per manufacturer's specifications and manuals</li> <li>1.6 Prepared designs for farm tools and equipment as per work requirement</li> <li>1.7 Prepared working drawings as per engineering standards</li> <li>1.8 Prepared bill of quantities for farm tools and equipment in line with the designs and drawings</li> <li>1.9 Prepared material schedule in line with the design and drawings</li> <li>1.10 Fabricated farm tools and equipment as per working drawings.</li> </ul>
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	<p>1.11 Tested fabricated farm tools and equipment as per work requirements</p> <p>1.12 Maintained farm machinery, workshop tools and equipment in line with manufacturer's manuals.</p>
2. Resource Implications	<p>The following resources should be provided:</p> <p>2.1 Appropriately simulated environment where assessment can take place</p> <p>2.2 Access to relevant work environment</p> <p>2.3 Resources relevant to the proposed activity or tasks</p>
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	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>