



**REPUBLIC OF KENYA**

**COMPETENCY BASED MODULAR CURRICULUM**

**FOR AGRICULTURAL ENGINEERING  
KNQF LEVEL 5**

**(CYCLE 3)**

**PROGRAMME ISCED CODE: 0716 454 A**



**TVET CDACC  
P.O. BOX 15745-00100 NAIROBI**

## WORKSHOP TECHNOLOGY PRACTICES

**UNIT CODE:** 0716 441 02A

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

**UNIT DURATION:** 100 Hours

### Relationship to Occupational Standards

This unit addresses the unit of competency: **Perform workshop technology practices**

### 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.

### Summary of Learning Outcomes

S/No	Learning Outcomes	Duration (Hours)
1.	Perform bench works	30
2.	Carry out mechanical machining operations	30
3.	Fabricate farm tools and equipment	30
4.	Maintain farm machinery, workshop tools and equipment	10
<b>TOTAL</b>		<b>100</b>

### Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Perform bench works	1.1 Metal workshop safety precautions and PPEs e.g. 1.1.1 Gloves 1.1.2 Helmet 1.1.3 Safety boots 1.1.4 Safety goggles 1.1.5 Overalls	<ul style="list-style-type: none"><li>Practical</li><li>Project</li><li>Portfolio of evidence</li><li>Third party report</li></ul>

	<p>1.1.6 Dust coat</p> <p>1.1.7 Ear muffs</p> <p>1.2 Metal workshop hand tools e.g.</p> <p>1.2.1 Cutting tools</p> <p>1.2.2 Grinding tools</p> <p>1.2.3 Drilling tools</p> <p>1.2.4 Measuring tools</p> <p>1.2.5 Boring</p> <p>1.2.6 Holding tools</p> <p>1.2.7 Striking tools</p> <p>1.2.8 Marking tools</p> <p>1.2.9 Threading tools</p> <p>1.3 Use of metal workshop hand tools</p> <p>1.4 Metal workshop hand operations e.g.</p> <p>1.4.1 Cutting</p> <p>1.4.2 Filing</p> <p>1.4.3 Scrapping</p> <p>1.4.4 Measuring</p> <p>1.4.5 Drilling</p> <p>1.4.6 Striking</p> <p>1.4.7 Grinding</p> <p>1.5 Maintenance of metal workshop hand tools</p>	<ul style="list-style-type: none"> <li>• Written tests</li> <li>• Oral questioning</li> </ul>
2. Carry out mechanical machining operations	<p>2.1 Metal workshop safety requirements</p> <p>2.2 Workshop machines e.g.</p> <p>2.2.1 Bending machine</p> <p>2.2.2 Welding machine</p> <p>2.2.3 Lathe machine</p> <p>2.2.4 Milling machine</p>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Portfolio of evidence</li> <li>• Third party report</li> </ul>

	<p>2.2.5 Drilling machine</p> <p>2.2.6 Sheet metal holding machine</p> <p>2.3 Metal workshop machine operations e.g.</p> <p>2.3.1 Cutting</p> <p>2.3.2 Knurling</p> <p>2.3.3 Chamfering</p> <p>2.3.4 Drilling</p> <p>2.3.5 Boring</p> <p>2.3.6 taper turning</p> <p>2.3.7 Threading</p> <p>2.4 Maintenance of metal workshop machines</p> <p>2.5 Use of metal workshop machines</p>	<ul style="list-style-type: none"> <li>• Written tests</li> <li>• Oral questioning</li> </ul>
3. Fabricate farm tools and equipment	<p>3.1 Metal workshop safety requirements</p> <p>3.2 Hand tools used during fabrication</p> <p>3.3 Fabrication of different types of farm tools and equipment</p>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Portfolio of evidence</li> <li>• Third party report</li> <li>• Written tests</li> <li>• Oral questioning</li> </ul>
4. Maintain farm machinery, workshop tools and equipment	<p>4.1 Machines used during fabrication</p> <p>4.2 Maintenance of tools and machines</p> <p>4.3 Filing of workshop maintenance report</p>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Portfolio of evidence</li> <li>• Third party report</li> <li>• Written tests</li> </ul>

		<ul style="list-style-type: none"> <li>• Oral questioning</li> </ul>
--	--	--

### **Suggested Delivery Methods**

- Demonstration by trainer
- Discussions
- Practical work by trainee(s)
- Exercises
- Industrials visits
- Internet.
- Simulation

### **Recommended Resources for 25 Trainees**

<b>S/No.</b>	<b>Category/Item</b>	<b>Description/ Specifications</b>	<b>Quantity</b>	<b>Recommended Ratio (Item: Trainee)</b>
<b>A</b>	<b>Learning Materials</b>			
1.	Goggles		5 pcs	1:5
2.	Safety shoes		5 pcs	1:5
3.	Overall		5 pcs	1:5
4.	Cap		5 pcs	1:5
5.	Ear Muffs			
6.	Gloves			
<b>B</b>	<b>Learning Facilities &amp; infrastructure</b>			
2.	Lecture/theory room	40 m <sup>2</sup>	1	1:25
3.	Tools and Equipment storage facility		1	1:25
4.	Workshop	40 m <sup>2</sup>	1	1:25
<b>C</b>	<b>Consumable materials</b>			

	Mild steel plate			
	Sheet metal			
	Brass sheets			
	Zinc sheets			
	Aluminum sheets			
	Bright Drawn Mild Steel			
	Carbon steel			
	Brass rods			
	Aluminum rods			
	Abrasive materials			
	Grinding paste			
	Cotton wastes			
	Cleaning detergents			
<b>D</b>	<b>Tools and Equipment</b>			
	Welding			
	Drilling machines			
	Vices			
	Burnishing machine			
	Cutting tools			
	Combination square			
	Centre punch			
	Centre lathe			
	Scribers			
	Calipers			
	Dies and taps			
	Surface plate			
	V-blocks			
	Dial gauge			
	Die stock			
	Engineer's square			
	File card			
	Assorted Files			

	Clamps		
	Assorted hand tools		
	Hammers		
	Measuring tools		
	Drill bits		
	Assorted inspection tools and equipment		
	Inspection and measuring tools, GO and NOT GO gauges		
	Jigs and fixture		
	Pliers		
	Rotary disc abrasive grinder		
	Reamers		
	Saw		
	Screwdrivers		
	Spiral lowering		
	Tap wrench		
	Vacuum cleaners		
	V-block		
	Workbenches		
	Vacuum cleaners		
	Mops/ Brooms and buckets		
	Firefighting equipment		
	First Aid kit		