



**THE REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARDS  
FOR**

**CARPENTRY AND JOINERY ARTISAN**

**KNQF LEVEL 4**

**ISCED CODE: 0722 354B**



**TVET CDACC  
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NAIROBI**

## APPLY SCIENCE

TVET CDACC UNIT CODE: CON/OS/CAJ/CC/03/4/B

### UNIT DESCRIPTION

This unit describes the competence in applying science. It involves applying units and measurements, applying force, work, energy and power, applying friction, applying light and sound, applying Linear motion, applying general chemistry, applying primary and secondary cells, applying thermal properties of matter and applying pressure in fluids

### ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA <i>(Bold and italicized terms are elaborated in the Range)</i>
1 Apply units and measurements	1.1 Selected appropriate units of measurements as per the given task 1.2 Converted units from one form to another as required by the task
2 Apply Force, work, energy and power	2.1 Defined force, work, energy and power 2.2 Described forms of energy (K.E &P. E) based on the state of the matter 2.3 Solved simple calculations on work, energy and power as per the task requirements
3 Apply Friction	3.1 Defined meaning and causes of friction 3.2 Identified the advantages and disadvantages of friction 3.3 Solved simple problems on friction as per task requirements 3.4 Identified application of friction in construction as per task requirements
4 Apply Light and sound	4.1 Identified <b><i>sources of light</i></b> and sound 4.2 Applied laws of reflection and refraction 4.3 Identified types of images formed by plane and curved mirrors 4.4 Identified primary and secondary colours 4.5 Mixed two or more colours to form other colours 4.6 Solved simple calculations of location of images formed by plane and curved mirrors 4.7 Determined velocity of sound in air 4.8 Identified the properties of sound
5 Apply Linear motion	5.1 Defined and performed simple calculations on distance, displacement, speed, acceleration, velocity, scalar and vector

ELEMENT	PERFORMANCE CRITERIA ( <i>Bold and italicized terms are elaborated in the Range</i> )
6 Apply General chemistry	6.1 Applied the knowledge of experimental techniques correctly and safely 6.2 Stated the <i>classification of matter</i> 6.3 Identified the structure of atoms 6.4 Identified properties of elements and compounds, acids and bases 6.5 Described how given alloys are made 6.6 Identified magnetic and non-magnetic materials 6.7 Identified <i>sources of electricity</i> and causes of electric currents
7 Apply electrolysis	7.1 Identified the process of electrolysis 7.2 Applied the electrolysis process
8 Apply thermal properties of matter	8.1 Identified <i>sources of heat</i> 8.2 Identified the effects of heat on matter 8.3 Described <i>methods of heat transfer</i>
9 Apply pressure in fluids	9.1 Defined density and variation of pressure 9.2 Described laws of floatation 9.3 Performed simple calculations on pressure in liquids

## RANGE

Variable	Range
1. Sources of light may include but is not limited to:	<ul style="list-style-type: none"> <li>Natural sources of light</li> <li>Artificial sources of light</li> </ul>
2. Classification of matter may include but is not limited to:	<ul style="list-style-type: none"> <li>Solids</li> <li>Liquids</li> <li>Gases</li> </ul>
3. Sources of electricity may include but is not limited to:	<ul style="list-style-type: none"> <li>Renewable</li> <li>Non-renewable</li> </ul>
4. Sources of heat may include but is not limited to:	<ul style="list-style-type: none"> <li>Solar</li> <li>Biomass</li> <li>Geothermal</li> <li>Fossil fuel</li> </ul>
5. Methods of heat transfer may include but is not limited to:	<ul style="list-style-type: none"> <li>Conduction</li> <li>Convection</li> <li>Radiation</li> </ul>

## REQUIRED KNOWLEDGE

- Construction materials
- Scientific knowledge in area of specialization
- Friction
- Basic electricity
- Force, work, energy and power
- Metals and alloys
- Moments of force
- Magnetism
- Elements and compounds

## SKILLS

- Solving problems
- Scientific calculations
- General calculations

## 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 Applied units and measurements correctly 1.2 Was able to apply Force, work, energy and power 1.3 Applied Friction 1.4 Applied Light and sound 1.5 Applied Linear motion 1.6 Demonstrated knowledge of general chemistry 1.7 Applied electrolysis 1.8 Applied thermal properties of matter 1.9 Demonstrated ability of applying pressure in fluids
2. Resource Implications	The following resources should be provided: 2.1 Access to relevant workplace or appropriately simulated environment where assessment can take place 2.2 Measuring equipment 2.3 Materials relevant to the proposed activity or tasks
3. Methods of Assessment	Competency may be assessed through: 3.1 Written text

	3.2 Interview 3.3 Observation
4. Context of Assessment	Competency may be assessed 4.1 On-the-job 4.2 Off-the –job 4.3 During Industrial attachment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.