



**NATIONAL COMPETENCY STANDARDS  
FOR  
HOME APPLIANCES SERVICE TECHNICIAN  
(NC2 & NC3)**

1<sup>st</sup> publication 2017

2<sup>nd</sup> revision 2022

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## FOREWORD

The Department of Occupational Standards of the Ministry of Labour and Human Resources proudly presents the revised National Competency Standards (NCS) for Home Appliances Technician as part of TVET reform initiative for improving the quality of Vocational Education and Training System in Bhutan. The standards represent the fruits of hard work and invaluable experiences gained by the department since its establishment in the latter half of 2003. The main aim of developing National Competency Standards is to set up a well-defined nationally recognized Vocational Qualification and Certification system that will help set a benchmark for the Technical Vocational Education and Training (VET) System in our country aligned to international best practices.

National Competency Standards is one of the base pillars in the Bhutan Vocational Qualification Framework (BVQF) and is the first step in its implementation. The standards are developed to ensure that employees or vocational graduates possess and acquire the desired skills, knowledge and attitude required by industries and employers. In order to ensure this close match in supply and demand of skills, knowledge and attitude, standards have been developed in close consultation and partnership with industry experts and validated by the Technical Advisory Committees for the concerned economic sectors.

A vocational education and training system based on National Competency Standards shall ensure that delivered training is of a high quality and relevant to the needs of the labour market. As a result, future TVET graduates will be better equipped to meet the need and expectations of industries and employers. This positive impact on the employability of TVET graduates will enhance the reputation of vocational education and training and make it attractive to school leavers.

While acknowledging the existing level of cooperation and collaboration, the ministry earnestly requests employers and training providers to extend the fullest support and cooperation in implementing the National Competency Standards. The ultimate objective is to build a competent and productive national workforce that will contribute to the continued socio-economic progress of our country.

I gratefully acknowledge the valuable contributions made by experts from industries during the consultation, verification and validation processes of the standards. I look forward to improved engagement and active participation of the industry and employers in the development of a quality assured demand driven TVET system in the near future.

Department of Occupational Standards,  
Ministry of Labour and Human Resources

## ACKNOWLEDGEMENT

**Revision Date** : 20<sup>th</sup> April 2022.

**Endorsement date** : 20<sup>th</sup> April 2022

**Date of Review.** : 20<sup>th</sup> April, 2025 (max. 3 years).

### **Subject experts involved during the consultation workshop:**

1. Prem Bdr. Biswa, Deepshika Electronics Repair Shop
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3. Phurba Sangay Sherpa, Lekdrup Institute
4. Suresh Rai, Champa Electronics Repair Shop
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### **Subject Experts involved in validation workshop**

1. Dorji Gyeltshen, Asst Instructor, JWPTI
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3. Karma Chogyal, Associate Lecturer, JWPTI

### **Development group (Facilitator):**

1. Karma Loday, Specialist, DOS, MoLHR
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# PACKAGING OF QUALIFICATIONS

**National Certificate Level 3**

Service Micro Wave Oven  
(7412-U9-L3)

Service Infrared/induction  
stove (7412-U8-L3)

Service Washing  
Machine (7412-U7-L3)

Service Geyser (7412-U6 L3)

**National Certificate Level 2**

Service Mixer Grinder  
(7412-U5-L2)

Service Room Heater  
(7412-U4-L2)

Service Water Boiler  
(7412-U3-L2)

Service Curry cooker  
(7412-U2-L2)

Service Rice Cooker  
(7412-U1-L2)

**Entry**

## OVERVIEW OF UNIT COMPETENCIES

### National Certificate - Level 2

UNIT TITLE	ELEMENTS OF COMPETENCE
Service Rice Cooker	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair rice cooker</li></ol>
Service Curry Cooker	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair curry cooker</li></ol>
Service Water Boiler	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair water boiler</li></ol>
Service Room Heater	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair Heater</li></ol>
Service Mixer Grinder	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair Mixer Grinder</li></ol>

### National Certificate - Level 3

UNIT TITLE	ELEMENTS OF COMPETENCE
Service Geyser	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair Geyser</li></ol>
Service Washing Machine	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair washing machine</li></ol>
Service Induction/Infrared Stove	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair induction/ Infrared Stove</li></ol>
Service Microwave Oven	<ol style="list-style-type: none"><li>1. Diagnose the fault</li><li>2. Repair microwave oven</li></ol>

**UNIT TITLE** : **Service Rice Cooker**

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of rice cooker following standard procedures, ensuring safety practices at all times.

**CODE** : **7412-U1-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the fault	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures 1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Check physical condition of rice cooker as per the job requirement following standard procedures 1.4 Select and use <b>materials</b> as per the job requirement following standard procedures 1.5 Conduct electrical test as per the job requirement following standard procedures
2. Repair rice cooker	2.1. Prepare cost estimate as per the job requirement following standard procedures 2.2. Remove <b>defective parts</b> as per the job requirement following standard procedures 2.3. Replace defective parts as per the job requirement following standard procedures 2.4. Test the functioning of rice cooker as per the job requirement following standard procedures 2.5. Assemble the rice cooker as per the job requirement following standard procedures

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment (PPE) may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand gloves</li> <li>• Safety Mask</li> </ul>	<ul style="list-style-type: none"> <li>• Safety boot</li> <li>• Safety Goggles</li> </ul>
<b>Tools and equipment may include but not limited to conducting:</b>	
<ul style="list-style-type: none"> <li>• Plier</li> <li>• Tester</li> <li>• Multi meter</li> <li>• Crimping tools</li> <li>• IR(Insulation Resistance)tester</li> </ul>	<ul style="list-style-type: none"> <li>• Screw driver set</li> <li>• Soldering iron with stand</li> <li>• Series testing board</li> <li>• Wire Striper</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Nuts</li> <li>• Screws</li> <li>• Insulation tape</li> <li>• Insulation sleeve</li> <li>• Thermal fuse</li> <li>• Thermostat</li> </ul>	<ul style="list-style-type: none"> <li>• Heat proof wires</li> <li>• Soldering paste</li> <li>• Soldering lead</li> <li>• Sand paper</li> <li>• Thimbles</li> </ul>
<b>Defective parts may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• AC Cable</li> <li>• Thermal Fuse</li> <li>• Relay</li> <li>• Thermostat</li> <li>• Magnetic Switch</li> </ul>	<ul style="list-style-type: none"> <li>• Indicator bulb</li> <li>• Resistor</li> <li>• Heating Coil</li> <li>• Warm Coil</li> <li>• Micro Switch</li> <li>• AC plug top</li> </ul>

<b>Critical aspects applicable to this unit:</b>
<ul style="list-style-type: none"> <li>• Demonstrate safe working practices at all times in accordance with OHS regulations.</li> <li>• Conduct electrical test as per the job requirement following standard procedures</li> <li>• Replace defective parts as per the job requirement following standard procedures</li> </ul>



UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Basic electrical circuits</li> <li>• Basic electrical signs and symbols</li> <li>• Basic Color Coding of wires</li> <li>• Rating and specification of components</li> <li>• Components of rice cooker</li> <li>• Working Principle of rice cooker</li> <li>• Functions of components</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Negotiation</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Analytical Skills</li> <li>• Time Management</li> </ul>

**UNIT TITLE** : **Service Curry Cooker**

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of curry cooker following standard procedures ensuring safety practices at all times.

**CODE** : **7412-U2-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the Fault	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures 1.2 Select and use <b>tools and equipment as</b> per the job requirement following standard procedures 1.3 Check physical condition of curry cooker as per the job requirement following standard procedures 1.4 Select and use <b>materials</b> as per the job requirement following standard procedures 1.5 Conduct electrical test as per the job requirement following standard procedures
2. Repair Curry Cooker	2.1. Prepare cost estimate as per the job requirement following standard procedures 2.2. Remove <b>defective parts</b> as per the job requirement following standard procedures 2.3. Replace defective parts as per the job requirement following standard procedures 2.4. Test the functioning of curry cooker as per the job requirement following standard procedures 2.5. Assemble the curry cooker as per the job requirement following standard procedures

<b>RANGE STATEMENT</b>	
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand gloves</li> <li>• Safety Mask</li> </ul>	<ul style="list-style-type: none"> <li>• Safety boot</li> <li>• Safety Goggles</li> </ul>
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Plier</li> <li>• Tester</li> <li>• Multi meter</li> <li>• Series testing board</li> <li>• IR tester</li> </ul>	<ul style="list-style-type: none"> <li>• Screw driver set</li> <li>• Soldering iron with stand</li> <li>• Wire Striper</li> <li>• Crimping tools</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Nuts</li> <li>• Screws</li> <li>• Insulation tape</li> <li>• Insulation sleeve</li> </ul>	<ul style="list-style-type: none"> <li>• Soldering lead</li> <li>• Soldering paste</li> <li>• Sand paper</li> <li>• Heat proof wires</li> <li>• Thimbles</li> </ul>
<b>Defective parts may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• AC Cable</li> <li>• Thermostat</li> <li>• Heating Coil</li> <li>• Regulator</li> </ul>	<ul style="list-style-type: none"> <li>• AC plug top</li> <li>• Indicator bulb/lamp</li> <li>• Resistor</li> </ul>

<p><b>Critical aspects applicable to these unit:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate safe working practices at all times in accordance with OHS regulations.</li> <li>• Conduct physical and electrical test as per the job requirement following standard procedures</li> <li>• Replace defective parts as per the job requirement following standard procedures</li> </ul>
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UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Basic electrical circuits</li> <li>• Basic electrical signs and symbols</li> <li>• Basic Color Coding of wires</li> <li>• Rating and specification of components</li> <li>• Components of curry cooker</li> <li>• Working Principle of curry cooker</li> <li>• Functions of components</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Negotiation</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Analytical Skills</li> <li>• Time Management</li> </ul>

**UNIT TITLE :** Service Water Boiler

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of water boiler following standard procedures, ensuring safety practices at all times.

**CODE :** 7412-U3-L2

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the fault	<p>1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures</p> <p>1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures</p> <p>1.3 Check physical condition of water boiler as per the job requirement following standard procedures</p> <p>1.4 Select and use <b>materials</b> as per the job requirement following standard procedures</p> <p>1.5 Conduct electrical test as per the job requirement following standard procedures</p>
2. Repair water boiler	<p>2.1. Prepare cost estimate as per the job requirement following standard procedures</p> <p>2.2. Remove <b>defective parts</b> as per the job requirement following standard procedure</p> <p>2.3. Replace defective parts as per the job requirement following standard procedures</p> <p>2.4. Test the functioning of water boiler as per the job requirement following standard procedures</p> <p>2.5. Assemble the water boiler as per the job requirement following standard procedures</p>

<b>RANGE STATEMENT</b>	
Work may take place at service center or in a training center	
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand gloves</li> <li>• Safety Mask</li> </ul>	<ul style="list-style-type: none"> <li>• Safety boot</li> <li>• Safety Goggles</li> </ul>
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Pliers</li> <li>• Tester</li> <li>• Multi meter</li> <li>• Series testing board</li> <li>• Crimping tools</li> </ul>	<ul style="list-style-type: none"> <li>• Screw driver set</li> <li>• Soldering iron with stand</li> <li>• Wrench</li> <li>• Wire Striper</li> <li>• Allen keys</li> </ul>
<b>Materials may include includes but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Nuts</li> <li>• Screws</li> <li>• Insulation tape</li> <li>• Insulation sleeve</li> </ul>	<ul style="list-style-type: none"> <li>• Soldering lead</li> <li>• Soldering paste</li> <li>• Sand paper</li> <li>• Heat proof wires</li> </ul>
<b>Defective parts may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• AC cable</li> <li>• Thermostat</li> <li>• Bimetal cut off</li> <li>• Heating Coil</li> <li>• Printed Circuit Board</li> <li>• Pump Motor</li> </ul>	<ul style="list-style-type: none"> <li>• AC plug top</li> <li>• Indicator bulb/lamp</li> <li>• Resistor</li> <li>• Thermal Fuse</li> <li>• Switch</li> </ul>

<b>Critical aspects applicable to these unit:</b>
<ul style="list-style-type: none"> <li>• Demonstrate safe working practices at all times in accordance with OHS regulations.</li> <li>• Conduct physical and electrical test as per the job requirement following standard procedures</li> <li>• Replace defective parts as per the job requirement following standard procedures</li> </ul>

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Basic electrical circuits</li> <li>• Basic electrical signs and symbols</li> <li>• Basic Color Coding of wires</li> <li>• Rating and specification of components</li> <li>• Components of water boiler</li> <li>• Working Principle of water boiler</li> <li>• Functions of components</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Negotiation</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Analytical Skills</li> <li>• Time Management</li> </ul>

**UNIT TITLE** : **Service Room Heater**

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of room heater following standard procedures, ensuring safety practices at all times.

**CODE** : **7412-U4-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the fault	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures 1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Check physical condition of room heater as per the job requirement following standard procedures 1.4 Select and use <b>materials</b> as per the job requirement following standard procedures 1.5 Conduct electrical test as per the job requirement following standard procedures
2. Repair Room Heater	2.1. Prepare cost estimate as per the job requirement following standard procedures 2.2. Remove <b>defective parts</b> as per the job requirement following standard procedures 2.3. Replace defective parts as per the job requirement following standard procedures 2.4. Test the functioning of room heater as per the job requirement following standard Procedures 2.5. Assemble the room heater as per the requirement following standard procedures



## RANGE STATEMENT

### Personal protective equipment may include but not limited to:

- Hand gloves
- Safety Mask
- Safety boots
- Safety Goggles

### Tools and equipment may include but not limited to:

- Pliers
- Tester
- Multi meter
- Series testing board
- Crimping tools
- Screw driver set
- Soldering iron with stand
- Wrench set
- Wire Stripper

### Materials may include but not limited to:

- Nuts
- Screws
- Insulation tape
- Insulation sleeve
- Soldering lead
- Soldering paste

### Defective parts may include but not limited to:

- AC Cable
- Motor
- Dump micro switch/Anti tilt switch
- Heating Elements
- Switch
- Indicators
- Regulator switch
- Resistor
- Safety Switch

### Critical aspects applicable to these unit:

- Demonstrate safe working practices at all times in accordance with OHS regulations.
- Conduct physical and electrical test as per the job requirement following standard procedure
- Replace defective parts as per the job requirement following standard procedures

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and integrity</li> <li>• Basic electrical circuits</li> <li>• Basic electrical signs and symbols</li> <li>• Basic Color Coding of wires</li> <li>• Rating and specification of components</li> <li>• Components of Rom Heater</li> <li>• Working Principle of Room Heater</li> <li>• Functions of components</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Negotiation</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Analytical Skills</li> <li>• Time Management</li> </ul>

**UNIT TITLE** : **Service Mixer Grinder**

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of Mixer Grinder following standard procedures/specifications, ensuring safety practices at all times.

**CODE** : **7412-U5-L2**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the fault	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures 1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Check physical condition of mixer grinder as per the job requirement following standard procedures 1.4 Select and use <b>materials</b> as per the job requirement following standard procedures 1.5 Conduct electrical test as per the job requirement following standard procedures
2. Repair mixer grinder	2.1. Prepare cost estimate as per the job requirement following standard procedures 2.2. Remove <b>defective parts</b> as per the job requirement following standard procedures 2.3. Replace defective parts as per the job requirement following standard procedures 2.4. Test the functioning of mixer grinder as per the job requirement following standard procedures 2.5. Assemble the mixer grinder as per the job requirement following standard procedures

## RANGE STATEMENT

Work may take place at service center or in a training center

### Personal protective equipment may include but not limited to:

- Hand gloves
- Safety boot
- Safety Mask
- Safety Goggles

### Tools and equipment may include but not limited to:

- Pliers
- Screw driver set
- Tester
- Soldering iron with stand
- Multi meter
- Wrench
- Series testing board
- Wire Stripper
- Crimping tools

### Materials may include but not limited to:

- Nuts
- Insulation sleeve
- Screws
- Soldering lead
- Insulation tape
- Soldering paste
- Carbon brush
- Grease

### Defective parts may include but not limited to:

- AC Cable
- Carbon Brush
- Motors
- Indicators bulb/lamp
- Over load switch
- Regulator switch
- Coupler
- Resistor
- Armature (rotor)

**Critical aspects applicable to these unit:**

- Demonstrate safe working practices at all times in accordance with OHS regulations.
- Conduct physical and electrical test as per the job requirement following standard procedures
- Replace defective parts as per the job requirement following standard

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"><li>• Ethics and Integrity</li><li>• Basic electrical circuits</li><li>• Basic electrical signs and symbols</li><li>• Basic Color Coding of wires</li><li>• Rating and specification of components</li><li>• Components of mixer grinder</li><li>• Working Principle of mixer grinder</li><li>• Functions of components</li></ul>	<ul style="list-style-type: none"><li>• Team work</li><li>• Negotiation</li><li>• Communication skills</li><li>• Problem solving</li><li>• Soldering</li></ul>

**UNIT TITLE** : **Service Geysers**

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of geysers following all relevant standard procedures, ensuring safety practices at all times.

**CODE** : **7412-U6-L3**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the fault	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures 1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Check physical condition of geyser as per the job requirement following standard procedures 1.4 Select and use <b>materials</b> as per the job requirement following standard procedures 1.5 Conduct electrical test as per the job requirement following standard procedures

2. Repair geyser	<p>2.1. Prepare cost estimate as per the job requirement following standard procedures</p> <p>2.2. Remove <b>defective parts</b> as per the job requirement following standard procedures</p> <p>2.3. Replace defective parts as per the job requirement following standard procedures</p> <p>2.4. Test the functioning of geyser as per the job requirement following standard procedures</p> <p>2.5. Assemble the geyser as per the job requirement following standard procedures</p>
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RANGE STATEMENT	
Work may take place at service center or in a training center.	
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand gloves</li> <li>• Safety Mask</li> </ul>	<ul style="list-style-type: none"> <li>• Safety boot</li> <li>• Safety Goggles</li> </ul>
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Pliers</li> <li>• Tester</li> <li>• Wrench</li> <li>• Crimping tools</li> <li>• Allen keys</li> </ul>	<ul style="list-style-type: none"> <li>• Multi meter</li> <li>• Screw driver set</li> <li>• Slide Wrench</li> <li>• Wire Striper</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Nuts</li> <li>• Screws</li> <li>• Heat proof wire</li> </ul>	<ul style="list-style-type: none"> <li>• Insulation tape</li> <li>• Insulation sleeve</li> <li>• Thimbles</li> </ul>
<b>Defective parts may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• AC Cable</li> <li>• 3-Pin plug top</li> <li>• Heater elements</li> <li>• Wires</li> </ul>	<ul style="list-style-type: none"> <li>• Thermostat</li> <li>• Indicator bulb</li> <li>• Resistor</li> <li>• Auto cut off</li> <li>• Fuse</li> </ul>

**Critical aspects applicable to these unit:**

- Demonstrate safe working practices at all times in accordance with OHS regulations.
- Conduct electrical test as per the job requirement following standard procedures
- Replace defective parts as per the job requirement following standard procedures

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"><li>• Ethics and Integrity</li><li>• Basic electrical circuits</li><li>• Basic electrical signs and symbols</li><li>• Basic Color Coding of wires</li><li>• Rating and specification of components</li><li>• Working Principle of Geysers</li><li>• Components of geysers</li><li>• Functions of components</li></ul>	<ul style="list-style-type: none"><li>• Team work</li><li>• Negotiation</li><li>• Communication skills</li><li>• Problem solving</li><li>• Analytical Skills</li><li>• Time management</li></ul>



**UNIT TITLE** : **Service Washing Machine**

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of washing machine following all relevant standard procedures/specifications, ensuring safety practices at all times.

**CODE** : **7412-U7-L3**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the fault	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures 1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Check physical condition of washing machine as per the job requirement following standard procedures 1.4 Select and use <b>materials</b> as per the job requirement following standard procedures 1.5 Conduct electrical test as per the job requirement following standard procedures

<p>2. Repair washing machine</p>	<p>2.1. Prepare cost estimate as per the job requirement following standard procedures</p> <p>2.2. Remove <b>defective parts</b> as per the job requirement following standard procedures</p> <p>2.3. Replace defective parts as per the job requirement following standard procedures</p> <p>2.4. Test the functioning of washing machine as per the job requirement following standard procedures</p> <p>2.5. Assemble the washing machine as per the job requirement following standard procedures</p>
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<p><b>RANGE STATEMENT</b></p>
<p>Work may take place at service center or in a training center.</p>
<p><b>Personal protective equipment may include but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Hand gloves</li> <li>• Safety boots</li> <li>• Safety Mask</li> <li>• Safety Goggles</li> </ul>

<p><b>Tools and equipment may include but not limited to:</b></p> <ul style="list-style-type: none"> <li>• Pliers</li> <li>• Screw driver set</li> <li>• Tester</li> <li>• Soldering iron with stand</li> <li>• Multi meter</li> <li>• Wrench set</li> <li>• Series testing board</li> <li>• Wire Striper</li> <li>• Crimping tools</li> </ul>
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**Materials may include but not limited to:**

- Nuts
- Screws
- Insulation tape
- Dry belt
- Fuse
- Mode selector switch
- AC plug top
- Soldering lead
- Soldering paste
- Lubricating oil
- Capacitor
- Buzzer
- Timers
- Drain valve

**Defective parts may include but not limited to:**

- Wires
- Motors
- Belts
- Printed Circuit Board
- Drain Valve
- Break Assembly
- Timers
- Capacitors
- Pulsator
- Gear box
- Sensor
- Buffer Seal

**Critical aspects applicable to these unit**

- Demonstrate safe working practices at all times in accordance with OHS regulations.
- Conduct physical and electrical test as per the job requirement following standard procedures.
- Replace defective parts as per the job requirement following standard procedures

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Basic electrical circuits</li> <li>• Basic electrical signs and symbols</li> <li>• Basic Color Coding of wires</li> <li>• Rating and specification components</li> <li>• Working Principle of Washing machine</li> <li>• Components of washing machine</li> <li>• Functions of components</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Negotiation</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Analytical Skills</li> <li>• Time Management</li> </ul>

**UNIT TITLE** : **Service Induction/Infrared Stove**

**DESCRIPTOR:** This unit covers the competencies required to diagnose faults and carry out the servicing of induction/infrared stove following all relevant standard procedures ensuring safety practices at all times.

**CODE** : **7412-U8-L3**

<b>ELEMENTS OF COMPETENCE</b>	<b>PERFORMANCE CRITERIA</b>
1. Diagnose the Fault	1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures 1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures 1.3 Check physical condition of Induction/Infrared Stove as per the job requirement following standard procedures 1.4 Select and use <b>materials</b> as per the job requirement following standard procedures 1.5 Conduct electrical test as per the job requirement following standard procedures
2. Repair Induction Stove	2.1 Prepare cost estimate as per the job requirement following standard procedures 2.2 Remove <b>defective parts</b> as per the job requirement following standard procedures 2.3 Replace defective parts as per the job requirement following standard procedures 2.4 Test the functioning of Induction Stove as per the job requirement following standard Procedures 2.5 Assemble the Induction Stove as per the job requirement following standard procedures

<p>3. Repair Infrared Stove</p>	<p>3.3. Prepare cost estimate as per the job requirement following standard procedures</p> <p>3.4. Remove <b>defective parts</b> as per the job requirement following standard procedures</p> <p>3.5. Replace defective parts as per the job requirement following standard procedures</p> <p>3.6. Test the functioning of Infrared Stove as per the job requirement following standard procedures</p> <p>3.7. Assemble the Infrared Stove as per the job requirement following standard procedures</p>
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<b>RANGE STATEMENT</b>	
Work may take place at service center or in a training center	
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand gloves</li> <li>• Safety Mask</li> </ul>	<ul style="list-style-type: none"> <li>• Safety boot</li> <li>• Safety Goggles</li> </ul>
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Pliers</li> <li>• Tester</li> <li>• Multi meter</li> <li>• Series testing board</li> <li>• Crimping tools</li> </ul>	<ul style="list-style-type: none"> <li>• Screw driver set</li> <li>• Soldering iron with stand</li> <li>• Wire Stripper</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Nuts</li> <li>• Screws</li> <li>• Insulation tape</li> <li>• Cleaning Brush</li> </ul>	<ul style="list-style-type: none"> <li>• Insulation sleeve</li> <li>• Soldering lead</li> <li>• Soldering paste</li> <li>• Volatile Liquid</li> </ul>
<b>Defective parts may include but not limited to:</b>	

- AC Cable
- Printed Circuit Board (Up to-coupler, Indicator LED, Rectifier diode, MOSFET)
- Cooling fan
- Coil
- Regulator switch
- Infrared Sensor
- Buzzer
- Induction disc/glass (Cook Top)

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> <li>• Ethics and Integrity</li> <li>• Basic electrical circuits</li> <li>• Basic electrical signs and symbols</li> <li>• Basic Color Coding of wires</li> <li>• Rating and specification of components</li> <li>• Components of Induction/Infrared Stove</li> <li>• Working Principle of Induction/Infrared Stove</li> <li>• Functions of components</li> </ul>	<ul style="list-style-type: none"> <li>• Team work</li> <li>• Negotiation</li> <li>• Communication skills</li> <li>• Problem solving</li> <li>• Analytical skills</li> <li>• Time Management</li> </ul>

- Critical aspects applicable to these unit:**
- Demonstrate safe working practices at all times in accordance with OHS regulations.
  - Conduct physical and electrical test as per the job requirement following standard procedures
  - Replace defective parts as per the job requirement following standard procedures

UNIT TITLE : **Service Microwave Oven**

DESCRIPTOR: This unit covers the competencies required to diagnose faults and carry out the servicing of microwave oven following all relevant standard procedures ensuring safety practices at all times

CODE : **7412-U9-L3**

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose the Fault	<p>1.1 Select and use <b>personal protective equipment (PPE)</b> as per the job requirement following standard procedures</p> <p>1.2 Select and use <b>tools and equipment</b> as per the job requirement following standard procedures</p> <p>1.3 Check physical condition of Micro wave Oven as per the job requirement following standard procedures</p> <p>1.4 Select and use <b>materials</b> as per the job requirement following standard procedures</p> <p>1.5 Conduct electrical test as per the job requirement following standard procedures</p>
2. Repair Microwave oven	<p>2.1. Prepare cost estimate as per the job requirement following standard procedures</p> <p>2.2. Remove <b>defective parts</b> as per the job requirement following standard procedures</p> <p>2.3. Replace defective parts as per the job requirement following standard procedures</p> <p>2.4. Test the functioning of Micro Wave Oven as per the job requirement following standard Procedures</p> <p>2.5. Assemble the Microwave Oven as per the job requirement following standard procedures</p>



<b>RANGE STATEMENT</b>	
Work may take place at service center or in a training center	
<b>Personal protective equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Hand gloves</li> <li>• Safety Mask</li> </ul>	<ul style="list-style-type: none"> <li>• Safety boot</li> <li>• Safety Goggles</li> </ul>
<b>Tools and equipment may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Pliers</li> <li>• Tester</li> <li>• Multi meter</li> <li>• Series testing board</li> <li>• Allen keys</li> </ul>	<ul style="list-style-type: none"> <li>• Screw driver set</li> <li>• Soldering iron with stand</li> <li>• Wire Stripper</li> <li>• Crimping tools</li> </ul>
<b>Materials may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• Nuts</li> <li>• Screws</li> <li>• Insulation tape</li> <li>• Cleaning Brush</li> <li>• Volatile Liquid</li> </ul>	<ul style="list-style-type: none"> <li>• Insulation sleeve</li> <li>• Soldering lead</li> <li>• Soldering paste</li> <li>• De-soldering pump</li> </ul>
<b>Defective parts may include but not limited to:</b>	
<ul style="list-style-type: none"> <li>• AC cable</li> <li>• PCB</li> <li>• Regulator</li> <li>• AC plug top</li> <li>• Cooling fan</li> <li>• Buzzer</li> </ul>	<ul style="list-style-type: none"> <li>• Heating coil</li> <li>• Capacitor</li> <li>• Heat proof wire</li> <li>• Temperature Sensor</li> <li>• Timer</li> </ul>

**Critical aspects applicable to these unit:**

- Demonstrate safe working practices at all times in accordance with OHS regulations.
- Conduct physical and electrical test as per the job requirement following standard procedures
- Replace defective parts as per the job requirement following standard

<b>UNDERPINNING KNOWLEDGE</b>	<b>UNDERPINNING SKILLS</b>
<ul style="list-style-type: none"><li>• Ethics and Integrity</li><li>• Basic electrical circuits</li><li>• Basic electrical signs and symbols</li><li>• Basic Color Coding of wires</li><li>• Rating and specification of components</li><li>• Components of Microwave Oven</li><li>• Working Principle of Microwave oven</li><li>• Functions of components</li></ul>	<ul style="list-style-type: none"><li>• Team work</li><li>• Negotiation</li><li>• Communication skills</li><li>• Problem solving</li><li>• Analytical skills</li><li>• Time Management</li></ul>

## **Annexure:**

### **1.1 National Competency Standards (NCS)**

National Competency Standards specify the skill, knowledge and attitudes applied to a particular occupation. Standards also specify the standards or criteria of performance of a competent worker and the various contexts in which work may take place. Standards provide explicit advice to assessors regarding the skill and knowledge to be demonstrated by candidates seeking formal recognition either following training or through work experience.

### **1.2 Purpose of National Competency Standards**

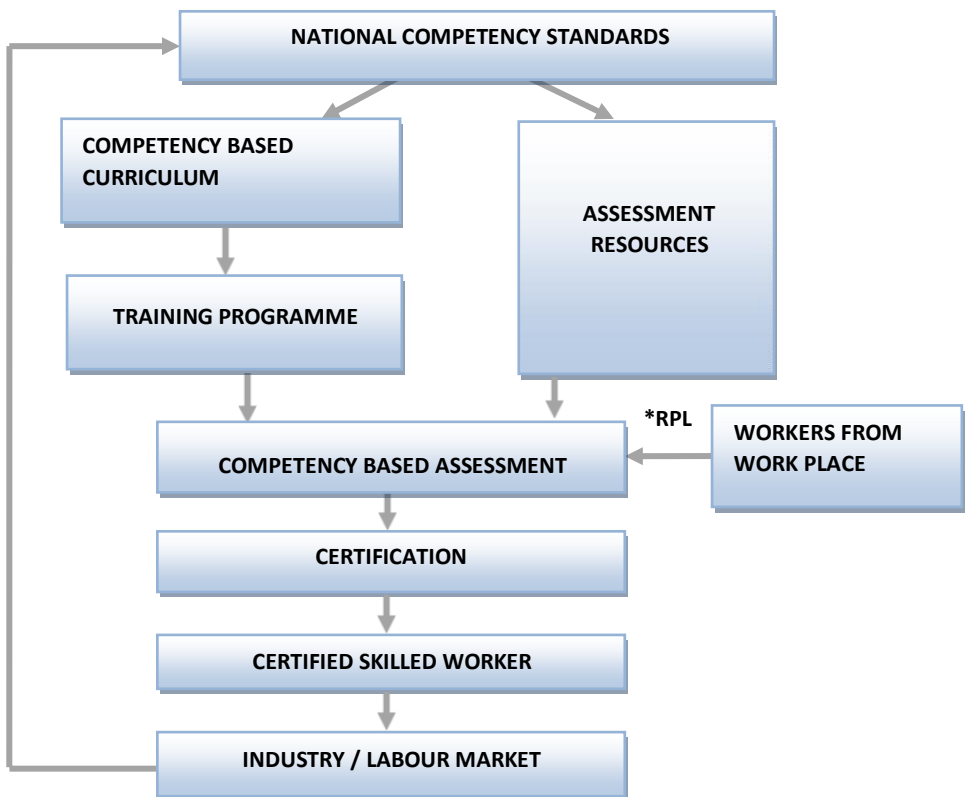
Competency Standards serve a number of purposes including:

- Providing advice to curriculum developers about the skill and knowledge to be included in curriculum.
- Providing specifications to assessment resource developers about the skill, knowledge and attitudes within an occupation to be demonstrated by candidates.
- Providing advice to industry/employers about job functions, which in turn can be used for the development of job descriptions, performance appraisal systems and work flow analysis.

### 1.3 Bhutan Vocational Qualifications Framework (BVQF)

Bhutan Vocational Qualifications Framework is an agreed system of Assessing, Certifying and Monitoring nationally recognized qualifications for all learning in the VET sector against national standards, in training institutions, in the workplace, in schools or anywhere where learning takes place.

#### Components of the Bhutan Vocational Qualification Framework (BVQF)



\* RPL = Recognition of Prior Learning

## 1.4 BVQF Levels

The Bhutan Vocational Qualifications Framework has three levels classified based on the competency of the skilled workers. The three levels are:

- National Certificate Level 3 (NC 3) -Master Craftsman
- National Certificate Level 2 (NC 2) -Craftsman
- National Certificate Level 1 (NC 1) -Semi Skilled Worker

### BVQF Level Descriptors

The qualification levels are decided based on level descriptors. The detail of the qualification level descriptor is as follows:

#### National Certificate Level 1 (Semi skilled)

Carry out processes that:	Learning demand:	Responsibilities Which are applied:
<ul style="list-style-type: none"><li>• Are narrow in range.</li><li>• Are established and familiar.</li><li>• Offer a clear choice of routine responses.</li><li>• Involve some prioritizing of tasks from known solutions.</li></ul>	<ul style="list-style-type: none"><li>• Basic operational knowledge and skill.</li><li>• Utilization of basic available information.</li><li>• Known solutions to familiar problems.</li><li>• Little generation of new ideas.</li></ul>	<ul style="list-style-type: none"><li>• In directed activity. Under general supervision and quality control.</li><li>• With some responsibility for quantity and quality.</li><li>• With no responsibility for guiding others.</li></ul>

## National Certificate Level 2 (Craftsman)

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Require a range of well-developed skills.</li> <li>• Offer a significant choice of procedures requiring prioritization.</li> <li>• Are employed within a range of familiar context.</li> </ul>	<ul style="list-style-type: none"> <li>• Some relevant theoretical knowledge.</li> <li>• Interpretation of available information.</li> <li>• Discretion and judgment.</li> <li>• A range of known responses to familiar problems</li> </ul>	<ul style="list-style-type: none"> <li>• In directed activity with some autonomy.</li> <li>• Under general supervision and quality checking.</li> <li>• With significant responsibility for the quantity and quality of output.</li> <li>• With some possible responsibility for the output of others.</li> </ul>

## National Certificate Level 3 (Master Craftsman)

Carry out processes that:	Learning demand:	Responsibilities which are applied:
<ul style="list-style-type: none"> <li>• Requires a wide range of technical or scholastic skills.</li> <li>• Offer a considerable choice of procedures requiring prioritization to achieve optimum outcomes.</li> <li>• Are employed in a variety of familiar and unfamiliar contexts.</li> </ul>	<ul style="list-style-type: none"> <li>• A broad knowledge base which incorporates some theoretical concepts.</li> <li>• Analytical interpretation of information Informed judgment.</li> <li>• A range of sometimes innovative responses to concrete but often unfamiliar problems</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• In self-directed activity.</li> <li>• Under broad guidance and evaluation.</li> <li>• With complete responsibility for quantity and quality of output.</li> <li>• With possible responsibility for the output of others.</li> </ul>

## **1.5 CODING USED FOR NATIONAL COMPETENCY STANDARDS**

The coding and classification system developed in Bhutan is logical, easy to use, and also aligned with international best practices. The Bhutanese coding and classification system is based on the International Standard Classification of Occupations, 2008 (ISCO-08) developed by the International Labour Organization (ILO).

The coding of the National Competency Standards forms the basis of the identification code for the Vocational Education and Training Management Information System (VET – MIS) both in terms of economic sector identification and that of the individual standard.

Coding the individual unit competency standard is to identify the level in qualification package to which it belongs.

While packaging, in order to follow a logical order, only competency standards related to each other and following a logical sequence in terms of training delivery, from the simple to the complex, are clustered into a qualification package.

## **1.6 ASSESSMENT GUIDE**

### **Form of assessments**

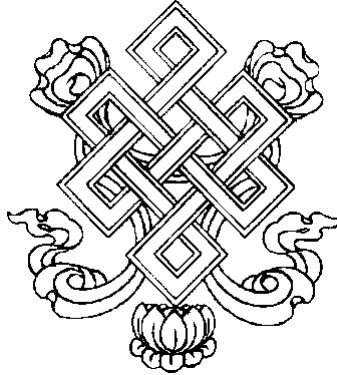
- Continuous assessment together with collected evidence of performance will be used.
- Evidence of the performance shall be based on practical demonstration.
- Knowledge can be assessed through diagrams, in writing or orally (viva- voce).

### **Assessment context**

- Competency may be assessed in the actual work place or in a simulated workplace setting.

### **Assessment condition**

- The candidate shall have access to all required tools, equipment, materials and documents.
- Candidate must complete the assessment in industry accepted time frame.



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