



**NATIONAL COMPETENCY STANDARDS
FOR
POWER TILLER TECHNICIAN
(NC2)**

**Department of Occupational Standards
Ministry of Labour and Human Resources
Thimphu, Bhutan.
(April 2022)**



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FOREWORD

The Department of Occupational Standards of the Ministry of Labour and Human Resources is pleased to present the National Competency Standards (NCSs) for Power Tiller Technician. 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 NCS is to set up a well-defined nationally recognized Vocational Qualification System that will help set a benchmark for the Technical Vocational Education and Training (TVET) System in our country aligned to international best practices.

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

A vocational education and training system based on NCS 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.

I gratefully acknowledge collaboration and the valuable contributions made by experts from industries during the consultation and validation processes of the standards. I look forward for continued engagement and participation of the industry and employers in the development of a quality assured demand driven TVET system and to build competent and productive national workforce that will contribute to the continued socio-economic progress of our country.

Director
Department of Occupational Standards
Ministry of Labour and Human Resources

ACKNOWLEDGEMENT

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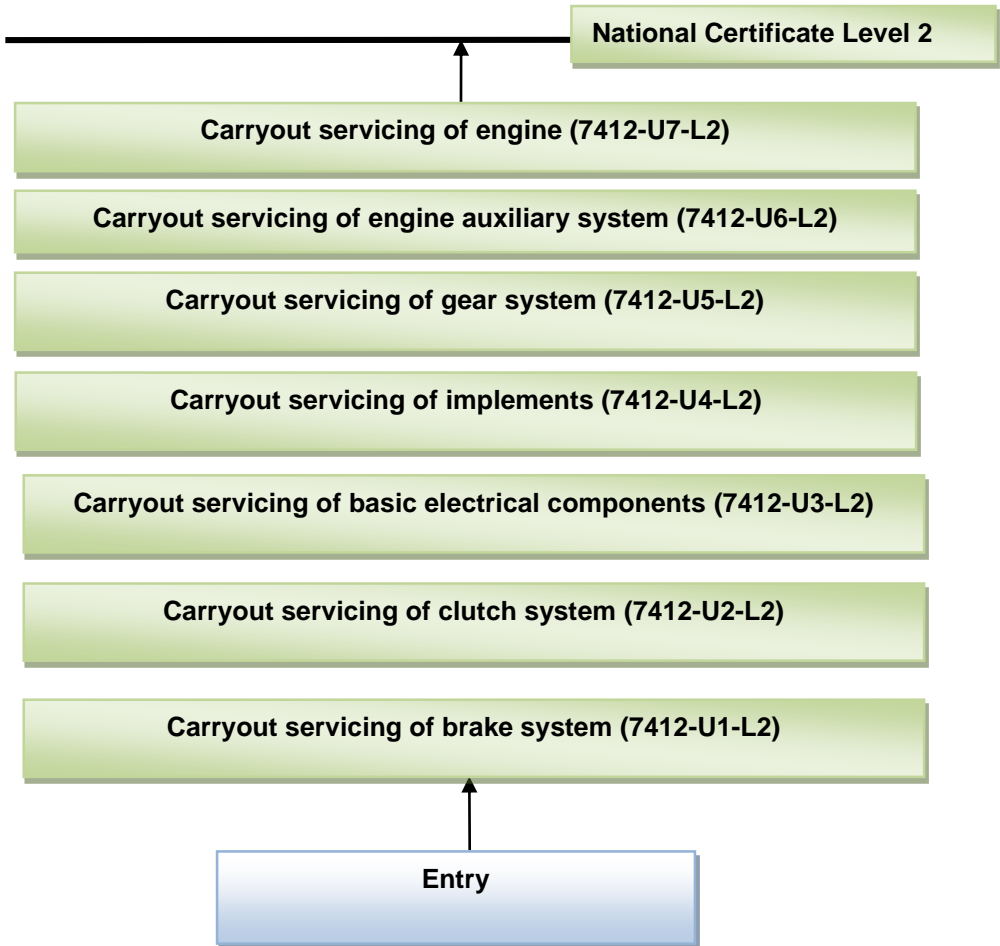
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PACKAGING OF QUALIFICATIONS



Overview of National Competency Standards

UNIT TITLE	ELEMENTS OF COMPETENCE
1. Carryout servicing of brake system	<ol style="list-style-type: none"> 1. Diagnose the faults 2. Service the brake system
2. Carryout servicing of clutch system	<ol style="list-style-type: none"> 1. Diagnose the faults 2. Service main clutch system 3. Service steering clutch system
3. Carryout servicing of basic electrical components	<ol style="list-style-type: none"> 1. Diagnose the faults 2. Service basic electrical components
4. Carryout servicing of implements	<ol style="list-style-type: none"> 1. Diagnose the faults 2. Service implements
5. Carryout servicing of gear system	<ol style="list-style-type: none"> 1. Diagnose the faults 2. Service gearbox
6. Carryout servicing of engine auxiliary system	<ol style="list-style-type: none"> 1. Service cooling system 2. Service fuel system 3. Service lubrication system
7. Carryout servicing of engine	<ol style="list-style-type: none"> 1. Diagnose the faults 2. Service engine

UNIT TITLE : Carryout servicing of brake system

DESCRIPTOR : This unit covers the competencies required to diagnose the faults in power tiller brake system and then to service it ensuring safety at all times.

CODE : 7412-U1-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose the faults	1.1 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures. 1.2 Participate in road test to detect faulty brake system as per the job requirement. 1.3 Troubleshoot the brake system / components to identify the faults / defects as per the job requirement following standard procedures
2. Service brake system / components	2.1 Select and use tools and equipment as per the job requirement following standard procedures. 2.2 Select and use materials as per the job requirement following standard procedures. 2.3 Dismantle the brake system / components as per the job requirement following standard procedures / manufacturer's service manual / specifications. 2.4 Repair / replace defective brake system components as per the job requirement following standard procedures / manufacturer's specifications 2.5 Adjust defective brake system components as per the job requirement following standard procedures / manufacturer's specifications

	2.6	Clean brake system components as per the job requirement following standard procedures / manufacturer's specifications
	2.7	Assemble the brake system components as per the job requirement following standard procedures / manufacturer's specifications.
	2.8	Test the performance of brake system as per the job requirement following standard procedures

RANGE STATEMENT	
Personal protective equipment (PPE) may include but not limited to:	
<ul style="list-style-type: none"> • Mask • Gloves • Goggles 	<ul style="list-style-type: none"> • Safety shoes • Working dress
Materials may include but not limited to:	
<ul style="list-style-type: none"> • Spare parts • Rags • Nuts and bolts • Seal 	<ul style="list-style-type: none"> • Lubricants and oils • Grease • Gasket
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Hand tool set 	<ul style="list-style-type: none"> • Measuring equipment
Faults and defects may include but not limited to:	
<ul style="list-style-type: none"> • Wear and tear • Breakages • Adjustment 	<ul style="list-style-type: none"> • Leakages • Misalignment
Brake system/components may include but not limited to:	
<ul style="list-style-type: none"> • Brake shoe • Cables • Brake paddle and lever 	<ul style="list-style-type: none"> • Brake drum • Springs
Critical Aspects:	
<ul style="list-style-type: none"> • Demonstrating compliance with safety regulation applicable to work site operation • Troubleshoot the brake system / components to identify the faults / defects as per the job requirement following standard procedures 	

- Repair / replace defective brake system components as per the job requirement following standard procedures / manufacturer's specifications
- Adjust defective brake system components as per the job requirement following standard procedures / manufacturer's specifications

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Working principle of brake system • Brake system components and its function 	<ul style="list-style-type: none"> • Team Work • Communication • Interpersonal relationship • Problem solving • Time management

UNIT TITLE : Carryout servicing of clutch system

DESCRIPTOR : This unit covers the competencies required to diagnose the faults in power tiller clutch system and to service main clutch system and steering clutch system ensuring safety at all times.

CODE : 7412-U2-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose the faults	1.1 Participate in road test to identify the faults as per the job requirement. 1.2 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures. 1.3 Troubleshoot the system / components to identify the faults / defects as per the job requirement following standard procedures
2. Service main clutch system / components	2.1 Select and use tools and equipment as per the job requirement following standard procedures. 2.2 Select and use materials as per the job requirement following standard procedures. 2.3 Dismantle the main clutch system / components as per the job requirement following standard procedures / manufacturer's service manual / specifications. 2.4 Repair / replace defective clutch system components as per the job requirement following standard procedures / manufacturer's specifications 2.5 Adjust defective clutch system components as per the job requirement following standard procedures / manufacturer's specifications

	<p>2.6 Clean / lubricate clutch system components as per the job requirement following standard 5 procedures / manufacturer's specifications</p> <p>2.7 Assemble the clutch system components as per the job requirement following standard procedures / manufacturer's specifications.</p> <p>2.8 Test the performance of main clutch system as per the job requirement following standard</p>
<p>3. Service steering clutch system / components</p>	<p>3.1 Dismantle the steering clutch system / components as per the job requirement following standard procedures / manufacturer's service manual / specifications.</p> <p>3.2 Repair / replace defective steering clutch system components as per the job requirement following standard procedures / manufacturer's specifications</p> <p>3.3 Adjust defective steering clutch system components as per the job requirement following standard procedures / manufacturer's specifications</p> <p>3.4 Clean / lubricate steering clutch system components as per the job requirement following standard procedures / manufacturer's specifications</p> <p>3.5 Assemble the steering clutch system components as per the job requirement following standard procedures / manufacturer's specifications.</p> <p>3.6 Test the performance of steering clutch system as per the job requirement following standard procedures.</p>

RANGE STATEMENT	
Personal protective equipment (PPE) may include but not limited to:	
<ul style="list-style-type: none"> • Mask • Gloves • Goggles 	<ul style="list-style-type: none"> • Safety shoes • Working dress
Materials may include but not limited to:	
<ul style="list-style-type: none"> • Spare parts • Rags • Emery paper 	<ul style="list-style-type: none"> • Lubricants and oils
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Hand tool set • Hydraulic press 	<ul style="list-style-type: none"> • Pulley puller • C-clamp equipment
Faults and defects may include but not limited to:	
<ul style="list-style-type: none"> • Wear and tear • Breakages • Adjustment 	<ul style="list-style-type: none"> • Leakages • Misalignment
Main clutch system/components may include but not limited to:	
<ul style="list-style-type: none"> • Cir-clip lock • Lock washer • Friction plate • Linkages • Clutch plate • Drive plate • Cam lever 	<ul style="list-style-type: none"> • Bearings • Springs • Clutch cables • Spring seat • Push sleeve • Check nuts
Steering clutch system/components may include but not limited to:	
<ul style="list-style-type: none"> • Clutch • Clutch lever • Gear • Return Spring 	<ul style="list-style-type: none"> • Fork • Cable • Bearing
Critical Aspects:	
<ul style="list-style-type: none"> • Demonstrating compliance with safety regulation applicable to work site operation • Troubleshoot the faults / defects as per the job requirement following standard procedures • Repair / replace defective system components as per the job requirement following standard procedures / manufacturer's specifications 	

- Adjust defective system components as per the job requirement following standard procedures / manufacturer's specifications

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Working principle of main clutch system and • Working principle of steering clutch system • Main clutch system components and its function • Steering clutch system components and its function 	<ul style="list-style-type: none"> • Team Work • Communication • Interpersonal relationship • Problem solving • Time management

UNIT TITLE : Carryout servicing of basic electrical components

DESCRIPTOR : This unit covers the competencies required to diagnose the faults in basic power tiller electrical components and then to service it ensuring safety at all times.

CODE : 7412-U3-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose the faults	1.1 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures. 1.2 Troubleshoot the electrical components to identify the faults / defects as per the job requirement following standard procedures
2. Service basic electrical components	2.1 Select and use tools and equipment as per the job requirement following standard procedures. 2.2 Select and use materials as per the job requirement following standard procedures. 2.3 Repair / replace basic electrical components as per the job requirement following standard procedures 2.4 2.4 Adjust basic electrical components as per the job requirement following standard procedures / manufacturer's specifications 2.5 Clean basic electrical components as per the job requirement following standard procedures / manufacturer's specifications 2.6 Test the performance of electrical components as per the job requirement following standard procedures.

RANGE STATEMENT	
Personal protective equipment (PPE) may include but not limited to:	
<ul style="list-style-type: none"> • Mask • Gloves • Goggles 	<ul style="list-style-type: none"> • Safety shoes • Working dress
Materials may include but not limited to:	
<ul style="list-style-type: none"> • Spare parts • Wires 	<ul style="list-style-type: none"> • Insulation tape
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Screw Driver set • Hand tool set 	<ul style="list-style-type: none"> • Plier
Faults and defects may include but not limited to:	
<ul style="list-style-type: none"> • Wear and tear 	<ul style="list-style-type: none"> • Breakages
Basic electrical components may include but not limited to:	
<ul style="list-style-type: none"> • Wires • Bulbs 	<ul style="list-style-type: none"> • Switch • Alternators
Critical Aspects:	
<ul style="list-style-type: none"> • Demonstrating compliance with safety regulation applicable to work site operation • Troubleshoot the faults / defects as per the job requirement following standard procedures • Repair / replace defective system components as per the job requirement following standard procedures / manufacturer's specifications • Adjust defective system components as per the job requirement following standard procedures / manufacturer's specifications 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Basic electrical components and its function 	<ul style="list-style-type: none"> • Team Work • Communication • Interpersonal relationship • Problem solving • Time management

UNIT TITLE : Carryout servicing of implements

DESCRIPTOR : This unit covers the competencies required to diagnose the faults in power tiller implements and then to service it ensuring safety at all times

CODE : 7412-U4-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose the faults	1.1 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures. 1.2 Inspect the implements / parts to identify the faults / defects as per the job requirement following standard procedures
2. Service implements	2.1 Select and use tools and equipment as per the job requirement following standard procedures. 2.2 Select and use materials as per the job requirement following standard procedures. 2.3 Repair / replace implement / parts as per the job requirement following standard procedures 2.4 Adjust implement / parts as per the job requirement following standard procedures / manufacturer's specifications 2.5 Test the performance of implements as per the job requirement following standard procedures.

RANGE STATEMENT	
Personal protective equipment (PPE) may include but not limited to:	
<ul style="list-style-type: none"> • Mask • Gloves • Goggles 	<ul style="list-style-type: none"> • Safety shoes • Working dress
Materials may include but not limited to:	
<ul style="list-style-type: none"> • Spare parts • Tray 	<ul style="list-style-type: none"> • Rags • Oil and lubricants
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Hand tool set 	<ul style="list-style-type: none"> • Lever
Faults and defects may include but not limited to:	
<ul style="list-style-type: none"> • Wear and tear • Misalignment 	<ul style="list-style-type: none"> • Breakages • Leakages
Implements may include but not limited to:	
<ul style="list-style-type: none"> • Rotovator • Plow 	<ul style="list-style-type: none"> • Trailer
Critical Aspects:	
<ul style="list-style-type: none"> • Demonstrating compliance with safety regulation applicable to work site operation • Troubleshoot the faults / defects as per the job requirement following standard procedures • Repair / replace defective system components as per the job requirement following standard procedures / manufacturer's specifications • Adjust defective system components as per the job requirement following standard procedures / manufacturer's specifications 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Implements and its function • Components of implements • Types of implements 	<ul style="list-style-type: none"> • Team Work • Communication • Interpersonal relationship • Problem solving • Time management

UNIT TITLE : Carryout servicing of gear system

DESCRIPTOR : This unit covers the competencies required to diagnose the faults in power tiller gear system and then to service gear system / components ensuring safety at all times.

CODE : 7412-U5-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose the faults	1.1 Participate in road test to identify the faults as per the job requirement 1.2 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures. 1.3 Troubleshoot / examine / inspect the transmission system / components to identify the faults / defects as per the job requirement following standard procedures
2. Service gear system / components	2.1 Select and use tools and equipment as per the job requirement following standard procedures. 2.2 Select and use materials as per the job requirement following standard procedures. 2.3 Disassemble the gear system / components as per the job requirement following standard procedures / manufacturer's service manual / specifications. 2.4 Repair / replace defective gear system components as per the job requirement following standard procedures / manufacturer's specifications 2.5 Clean / lubricate gear system components as per the job requirement following standard procedures / manufacturer's specifications

	2.6	Assemble the gear system components as per the job requirement following standard procedures / manufacturer's specifications.
	2.7	Test the performance of gear system as per the job requirement following standard procedures.

RANGE STATEMENT	
Personal protective equipment (PPE) may include but not limited to:	
<ul style="list-style-type: none"> • Mask • Gloves • Goggles 	<ul style="list-style-type: none"> • Safety shoes • Working dress
Materials may include but not limited to:	
<ul style="list-style-type: none"> • Spare parts 	<ul style="list-style-type: none"> • Rags • Gear oil
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Hand tool set • Jack • Pulley puller 	<ul style="list-style-type: none"> • Lever • Chain pulley
Faults and defects may include but not limited to:	
<ul style="list-style-type: none"> • Wear and tear • Misalignment 	<ul style="list-style-type: none"> • Breakages • Leakages
Gear system/ components may include but not limited to:	
<ul style="list-style-type: none"> • Shafts • Gear box • Fork • Rear Cover 	<ul style="list-style-type: none"> • Bearings • Gears • CSI guide • Levers
Critical Aspects:	
<ul style="list-style-type: none"> • Demonstrating compliance with safety regulation applicable to work site operation • Troubleshoot the faults / defects as per the job requirement following standard procedures • Repair / replace defective system components as per the job requirement following standard procedures / manufacturer's specifications 	

- Adjust defective system components as per the job requirement following standard procedures / manufacturer's specifications

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Working principle of gear system • Gear system components and its function • Types of gears • Types of gear oils 	<ul style="list-style-type: none"> • Team Work • Communication • Interpersonal relationship • Problem solving • Time management

UNIT TITLE : Carryout servicing of engine auxiliary system

DESCRIPTOR : This unit covers the competencies required to diagnose and service cooling system / components, diagnose and service fuel system / components & diagnose and service lubrication system / components ensuring safety at all times.

CODE : 7412-U6-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Service cooling system / components	1.1 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures. 1.2 Troubleshoot the cooling system / components to identify the faults / defects as per the job requirement following standard procedures 1.3 Select and use tools and equipment as per the job requirement following standard procedures. 1.4 Select and use materials as per the job requirement following standard procedures. 1.5 Disassemble the cooling system / components as per the job requirement following standard procedures / manufacturer's service manual / specifications. 1.6 Repair / replace defective cooling system components as per the job requirement following standard procedures / manufacturer's specifications 1.7 Adjust defective cooling system components as per the job requirement following standard procedures / manufacturer's specifications

	1.8	Clean / lubricate cooling system components as per the job requirement following standard procedures / manufacturer's specifications
	1.9	Assemble the cooling system components as per the job requirement following standard procedures / manufacturer's specifications.
	1.10	Test the performance of cooling system as per the job requirement following standard procedures.
2. Service fuel system / components	1.11	Troubleshoot fuel system / components to identify the faults / defects as per the job requirement following standard procedures
	2.1	Disassemble the fuel system / components as per the job requirement following standard procedures / manufacturer's service manual / specifications.
	2.2	Repair / replace defective fuel system components as per the job requirement following standard procedures / manufacturer's specifications
	2.3	Adjust defective fuel system components as per the job requirement following standard procedures / manufacturer's specifications
	2.4	Clean / lubricate fuel system components as per the job requirement following standard procedures / manufacturer's specifications
	2.5	Assemble the fuel system components as per the job requirement following standard procedures / manufacturer's specifications.
	2.6	Test the performance of fuel system as per the job requirement following standard procedures.
3. Service lubrication system / components	3.1	Troubleshoot the lubrication system / components to identify the faults / defects as per the job requirement following standard procedures

	3.2	Disassemble the lubrication system / components as per the job requirement following standard procedures / manufacturer's service manual / specifications.
	3.3	Repair / replace defective lubrication system components as per the job requirement following standard procedures / manufacturer's specifications
	3.4	Adjust defective lubrication system components as per the job requirement following standard procedures / manufacturer's specifications
	3.5	Clean / lubricate lubrication system components as per the job requirement following standard procedures / manufacturer's specifications
	3.6	Assemble the lubrication system components as per the job requirement following standard procedures / manufacturer's specifications.
	3.7	Test the performance of lubrication system as per the job requirement following standard procedures.

RANGE STATEMENT	
Personal protective equipment (PPE) may include but not limited to:	
<ul style="list-style-type: none"> • Mask • Gloves • Goggles 	<ul style="list-style-type: none"> • Safety shoes • Working dress
Materials may include but not limited to:	
<ul style="list-style-type: none"> • Spare parts • Coolant 	<ul style="list-style-type: none"> • Rags • Fuel • Engine Oil
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Hand tool set • Injector nozzle tester 	<ul style="list-style-type: none"> • Calibration equipment

Faults and defects may include but not limited to:	
<ul style="list-style-type: none"> • Wear and tear • Misalignment • Adjustment 	<ul style="list-style-type: none"> • Breakages • Leakages
Cooling system /components may include but not limited to:	
<ul style="list-style-type: none"> • Belt • Pulley • Radiator • Gasket • Drain Plug 	<ul style="list-style-type: none"> • Water jacket • Fan • Bearing • Tension pulley
Fuel system /components may include but not limited to:	
<ul style="list-style-type: none"> • Injector nozzle • Fuel injection pump • Fuel tank 	<ul style="list-style-type: none"> • Pipes • Fuel filters • Governor
Lubrication system /components may include but not limited to:	
<ul style="list-style-type: none"> • Oil pump • Oil filter • Oil seal 	<ul style="list-style-type: none"> • Signal • Oil gallery
Critical Aspects:	
<ul style="list-style-type: none"> • Demonstrating compliance with safety regulation applicable to work site operation • Troubleshoot the faults / defects as per the job requirement following standard procedures • Repair / replace defective system components as per the job requirement following standard procedures / manufacturer's specifications • Adjust defective system components as per the job requirement following standard procedures / manufacturer's specifications 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Working principle of fuel and lubrication system • Cooling, fuel and lubrication system components and its functions • Types and properties of coolant, fuels and lubricants 	<ul style="list-style-type: none"> • Team Work • Communication • Interpersonal relationship • Problem solving • Time management

UNIT TITLE : Carryout servicing of engine

DESCRIPTOR : This unit covers the competencies required to diagnose the faults in power tiller engine system / components and then to service it safety at all times.

CODE : 7412-U7-L2

ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose the faults	1.1 Select and use personal protective equipment (PPE) as per the job requirement following standard procedures. 1.2 Troubleshoot the engine / components to identify the faults / defects as per the job requirement following standard procedures
2. Service engine / components	2.1 Select and use tools and equipment as per the job requirement following standard procedures. 2.2 Select and use materials as per the job requirement following standard procedures. 2.3 Disassemble the engine / components as per the job requirement following standard procedures / manufacturer's service manual / specifications. 2.4 Repair / replace defective engine components as per the job requirement following standard procedures / manufacturer's specifications 2.5 Adjust defective engine components as per the job requirement following standard procedures / manufacturer's specifications 2.6 Clean / lubricate engine components as per the job requirement following standard procedures / manufacturer's specifications

	2.7	Assemble the engine components as per the job requirement following standard procedures / manufacturer's specifications
	2.8	Test the performance of engine as per the job requirement following standard procedures.

RANGE STATEMENT

Personal protective equipment (PPE) may include but not limited to:
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- | | |
|---|---|
| <ul style="list-style-type: none"> • Mask • Gloves • Goggles | <ul style="list-style-type: none"> • Safety shoes • Working dress |
|---|---|

Materials may include but not limited to:
--

- | | |
|--|---|
| <ul style="list-style-type: none"> • Spare parts • Lubricants and oils | <ul style="list-style-type: none"> • Rags • Fuel • |
|--|---|

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

- | | |
|---|--|
| <ul style="list-style-type: none"> • Hand tool set • Hydraulic press • Measuring instruments • Air compressor | <ul style="list-style-type: none"> • Special service tool • Service tray |
|---|--|

Faults and defects may include but not limited to:

- | | |
|---|---|
| <ul style="list-style-type: none"> • Wear and tear • Misalignment • Adjustment | <ul style="list-style-type: none"> • Breakages • Leakages |
|---|---|

Engine system /components may include but not limited to:
--

- | | |
|---|---|
| <ul style="list-style-type: none"> • Pistons and ring • Engine head • Valve • Cylinder liner • Bearing • Push rod • Connecting rod • Balancer | <ul style="list-style-type: none"> • Engine block • Cam shaft • Gasket • Crank shaft • Rocker arm • Tappet • Timing gear |
|---|---|

Critical Aspects:

- | |
|---|
| <ul style="list-style-type: none"> • Demonstrating compliance with safety regulation applicable to work site operation |
|---|

- Troubleshoot the faults / defects as per the job requirement following standard procedures
- Repair / replace defective system components as per the job requirement following standard procedures / manufacturer's specifications
- Adjust defective system components as per the job requirement following standard procedures / manufacturer's specifications

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Working principle of engine • Engine components and its function • Engine emission • Valve timing • Valve Mechanism 	<ul style="list-style-type: none"> • Team Work • Communication • Interpersonal relationship • Problem solving • Time management

ANNEXURE

A. National Competency Standards (NCS)

The 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.

Purpose of National Competency Standards

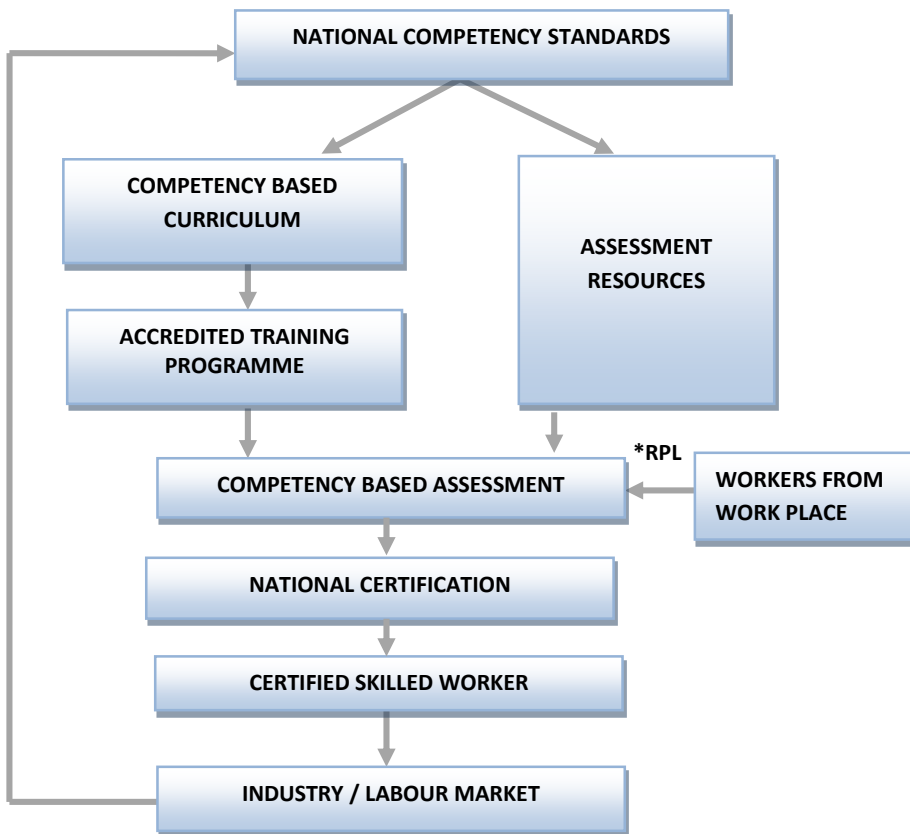
National Competency Standards serve a number of purposes including:

- Providing advice to curriculum developers about the competencies to be included in curriculum.
- Providing specifications to assessment resource developers about the competencies 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.

B. 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 TVET sector against national competency standards, in training institutions, in the workplace, in schools or anywhere where learning takes place.

Components of the Bhutan Vocational Qualifications Framework (BVQF)



* RPL = Recognition of Prior Learning

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 III)
- National Certificate Level 2 (NC II)
- National Certificate Level 1 (NC I)

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

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

National Certificate Level 2

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

National Certificate Level 3

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

CODING USED FOR NATIONAL COMPETENCY STANDARDS

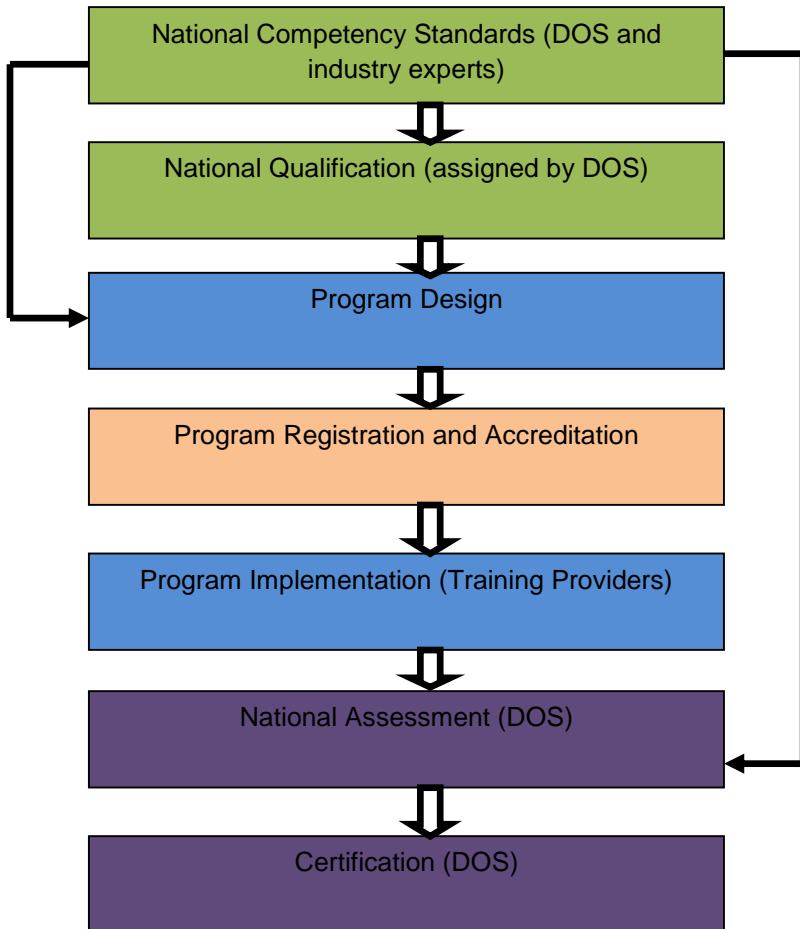
The coding and classification system developed in Bhutan is logical, easy to use, and also aligned with international best practises. The Bhutanese coding and classification system is based on the International Standard Classification of Occupations, 2008 (ISCO-08) developed by the International Labour Organisation (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 units of competency standard is to identify the level in qualification packages 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 packages.

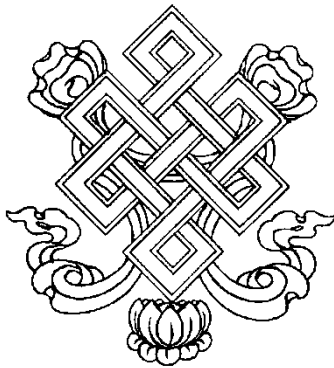
Implementation and Operational Procedures for National Competency Standards



Key:

MoLHR – Ministry of Labour and Human Resources

DOS – Department of Occupational Standards



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