



**NATIONAL COMPETENCY STANDARDS
FOR
COMPUTER SYSTEMS AND NETWORK
TECHNICIAN
(CERTIFICATE 2 &3)**

**INFORMATION AND
COMMUNICATION TECHNOLOGY
SECTOR**



**TECHNICAL & VOCATIONAL EDUCATION AND
TRAINING (TVET) QUALITY COUNCIL,
BHUTAN QUALIFICATIONS AND PROFESSIONALS
CERTIFICATION AUTHORITY,
THIMPHU, BHUTAN
DECEMBER 2024**

FOREWORD

The TVET Quality Council, BQPCA is pleased to present the National Competency Standards (NCS) for **Computer Systems and Network Technician, BQF Certificate 2&3** which is developed in consultation with the field experts and trainers. The main objective of developing National Competency Standards is to set up a well-defined nationally recognized TVET Qualifications that will help in setting a benchmark for the TVET Qualifications in our country aligned to the international best practices.

The standards are developed to ensure that the TVET trainees possess the desired Skills, Knowledge and Attitude required by the industries. In order to ensure the relevancy of the competencies, the standards are developed in close consultation and partnership with industry experts and trainers from training institutes.

A training system based on National Competency Standards shall ensure that the training is relevant to the needs of the labour market. As a result, future TVET trainees will be better skilled to meet the needs and expectations of industries and employers. Such a positive impact on the employability of TVET graduates will enhance the reputation of the TVET system and make it attractive to the youths.

While acknowledging the existing level of cooperation and collaboration, the Council earnestly requests employers and training providers to extend the fullest support and cooperation in development and implementation of the National Competency Standards. The ultimate objective is to build a competent and productive national workforce that will contribute to the socio-economic development of our country. We gratefully acknowledge the valuable contributions made by experts from industries and trainers during the consultation and validation processes of the NCS development. We further look forward to improved industry engagement and active participation of trainers in the development of a quality-assured demand driven TVET system.

Director
BQPCA

ACKNOWLEDGEMENT

Date of Validation :13th December 2024

Next date of Revision :12th December 2027

The TVET Quality Council, Bhutan Qualifications and Professionals Certification Authority would like to express our deepest appreciation to the following industry and subject matter experts who have participated in revision and validation of National Competency Standards for CSNT:

Experts Involved During the Consultation Workshop to Revise NCS for Computer Systems and Network Technician			
SN	Name	Designation	Organization
1	Namkha Zangpo	Engineer	Tashi Cell
2	Ugyen Wangdi	Engineer	Tashi Cell
3	Jigme Singye	Engineer	Bhutan Telecom
4	Komal Sundas	Engineer	Bhutan Telecom
5	Rinchen Dorji	Engineer	Bank of Bhutan
6	Rudra Prasad	Trainer	TTI, Rangjung

Experts Involved During the Consultation Workshop to Validate NCS for Computer Systems and Network Technician			
SN	Name	Designation	Organization
1	Jampa Choeda	ICT Associate	Paro College of Education
2	Uraj Ghalley	Technician	NGN
3	Abhi Narayan Sanyasi	Developer	Freelance
4	Saraswati Monger	Technician	SAT
5	Tshering Norbu	Technician	Super Net Infocom
6	Churamuni Luitel	Trainer	CMI
7	Sancha Bdr. Subba	Trainer	Thimphu TTI

Facilitator from the TVET Quality Council, BQPCA		
Prem Kumar Bhattarai	Program Officer	TVET QC, BQPCA

PACKAGING OF QUALIFICATIONS

Carryout Monitoring and Administration of Network Security (3511-U7-L3)

Carryout Network Devices and Server Configuration (3511-U6-L3)

CERTIFICATE 2

Carryout Installation & Configuration of Physical Security Devices (3511-U5-L2)

Carryout Maintenance of Network (3511-U4-L2)

Carryout Installation & Configuration of Network (3511-U3-L2)

Carryout Troubleshooting of Computer System & Devices (3511-U2-L2)

Carryout Installation & Set up of Computer System & Devices(3511-U1-L2)

ENTRY

SUMMARY OF NCS FOR CHN TECHNICIAN

Unit Title	Element of Competence
1. Carryout Installation and Set-up of Computer Systems and Devices	1.1 Perform Personal Computer Assembly 1.2 Administer Data Back-up Operation 1.3 Install OS and Application Software 1.4 Install Peripheral Devices 1.5 Conduct Test and Monitoring
2. Carryout Troubleshooting of Computer System and Devices	2.1 Diagnose Faults 2.2 Rectify Faults
3. Carryout Installation and Configuration of Network	3.1 Prepare for Network Installation 3.2 Install Network 3.3 Configure Network 3.4 Conduct Test
4. Carryout Maintenance of Network	4.1 Prepare for Maintenance Work 4.2 Diagnose Computer Systems and Network Fault 4.3 Perform Maintenance
5. Carryout Installation and Configuration of Physical Security Devices	5.1 Prepare for Installation of Physical Security Devices 5.2 Install Physical Security Devices 5.3 Configure Physical Security Devices 5.4 Conduct Test

6. Carryout Network Devices and Server Configuration	6.1 Perform Network Device Configuration 6.2 Perform Installation and configuration of Servers 6.3 Conduct Test
7. Carryout Monitoring and Administration of Network Security	7.1 Perform Administration of Network Security 7.2 Setup Firewall 7.3 Perform Monitoring of Network Security

UNIT TITLE	Carryout Installation and Set- up of Computer System and Devices
DESCRIPTOR	This unit covers the competencies required to perform personal computer assembly; administer data back-up operation; set up operating system and application software and set- up peripheral devices following standard procedures
CODE	3511-U1-L2
CREDIT	10
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform Personal Computer Assembly	1.1 Identify customers' requirements following standard procedure 1.2 Use PPE as per the job requirements 1.3 Use tools and equipment as per the job requirement following standard procedure 1.4 Estimate the quantity of materials obtained as per the job requirements 1.5 Install devices as per the job requirement following standard procedure 1.6 Document the details of installation works/devices following the standard procedures

<p>2. Administer Data Back-up Operation</p>	<p>2.1 Identify data to be backed up following standard procedure</p> <p>2.2 Perform data back-up following standard procedure</p> <p>2.3 Restore backed-up data following standard procedure</p>
<p>3. Set-up Operating System and Application Software</p>	<p>3.1 Identify software and hardware compatibility following standard procedure</p> <p>3.2 Install Operating System (OS) following standard procedure</p> <p>3.3 Install application Softwares following standard procedure</p> <p>3.4 Activate and update OS and application Softwares following standard procedure</p>
<p>4. Set- up Peripheral Devices</p>	<p>4.1 Identify peripheral devices to be installed following standard procedure</p> <p>4.2 Install peripheral devices using various interfaces following standard procedure</p> <p>4.3 Test the peripheral devices following standard procedure</p>

5. Perform Test and Monitoring of System and Devices	5.1 Ensure the functionality of system and devices following standard procedure 5.2 Inspect the installed application software and devices following standard procedure 5.3 Document test following standard procedure
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RANGE STATEMENT	
PPE may include but not limited to:	
<ul style="list-style-type: none"> Goggles Safety Shoes Mask 	<ul style="list-style-type: none"> Uniform Anti-static Gloves Antistatic writs band
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> Multi-meter Desoldering tool Wire stripper Allen key 	<ul style="list-style-type: none"> Pliers IC insertion / extraction tool Screw drivers
Materials may include but not limited to:	
<ul style="list-style-type: none"> Soldering iron & lead Drivers 	<ul style="list-style-type: none"> Operating system CDs/USB Flux
Devices may include but not limited to:	
<ul style="list-style-type: none"> Monitor/Screen Motherboard HDD/SDD RAM 	<ul style="list-style-type: none"> Graphic cards Key board NIC cards Touch pad
Data back-up may include but not limited to:	

<ul style="list-style-type: none"> • Cloud • Offsite 	<ul style="list-style-type: none"> • NAS
Operating System (OS) may include but not limited to:	
<ul style="list-style-type: none"> • Mac • Windows 	<ul style="list-style-type: none"> • Linux
Application Software may include but not limited to:	
<ul style="list-style-type: none"> • Drivers • Antivirus • MS office 	<ul style="list-style-type: none"> • Web Browsers • Auto CAD • Adobe Master collection
Peripheral Devices may include but not limited to:	
<ul style="list-style-type: none"> • Printer • Projector 	<ul style="list-style-type: none"> • Scanner • Bar Code/QR Code Reader
Critical Aspects	
<ul style="list-style-type: none"> • Demonstrate compliance with safety regulation applicable to work site operation • Demonstrate competencies to assemble personal computer, set up OS and application software, test and monitor system and devices the following standard procedures 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethic and integrity • Occupational Health and Safety (OHS) Regulations • First Aid • Types of operating system and application software • Computer electronic components • Parts and devices of computer • Basic estimation and costing • Tools and materials • 5S Pillars 	<ul style="list-style-type: none"> • Team Work • Communication • Problem Solving • Interpersonal Relationship • Creativity • Time Management

UNIT TITLE	Carryout Troubleshooting of Computer System and Devices
DESCRIPTOR	This unit covers the competencies required to diagnose and rectify faults in computer system and devices following standard procedures
CODE	3511-U2-L2
CREDIT	5
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Diagnose Faults	1.1 Use PPE as per the job requirements following standard procedure 1.2 Use tools and equipment as per the job requirement following standard procedure 1.3 Identify faults in the computer systems and devices following standard procedure 1.4 Perform estimation and costing following standard procedure 1.5 Backup data following standard procedure
2. Rectify Faults	2.1 Repair/Replace defective PC components following standard procedure 2.2 Repair/Replace defective peripheral devices following standard procedure

	<p>2.3 Repair/reinstall the OS and application software as per the job requirement following standard procedure</p> <p>2.4 Test computer systems and devices following standard procedure</p> <p>2.5 Restore data following standard procedure</p> <p>2.6 Maintain report following standard procedure</p>
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RANGE STATEMENT	
PPE may include but not limited to:	
<ul style="list-style-type: none"> • Goggles • Mask • Anti-static Gloves 	<ul style="list-style-type: none"> • Safety shoes • Uniform • Anti-static wrist band
Tools & Equipment may include but not limited to:	
<ul style="list-style-type: none"> • Multi-meter • Wire stripper • Pliers • Screw drivers • LAN tester • Punch down tools 	<ul style="list-style-type: none"> • Soldering / Desoldering tool • IC insertion / extraction tool • Tweezers • Crimping tools • IC Paste • Diagnostic Tools
Devices may include but not limited to:	
<ul style="list-style-type: none"> • Monitor • Motherboard 	<ul style="list-style-type: none"> • NIC cards • Storage devices

Faults may include but not limited to:	
<ul style="list-style-type: none"> • System faults 	<ul style="list-style-type: none"> • Software faults
Devices may include but not limited to:	
<ul style="list-style-type: none"> • Monitor • Motherboard 	<ul style="list-style-type: none"> • NIC cards • Storage devices
Critical Aspects	
<ul style="list-style-type: none"> • Demonstrate compliance with safety regulation applicable to work site operation • Demonstrate competencies to diagnose and rectify faults in devices and system 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • Occupational Health and Safety (OHS) Regulations • First Aid • Basic electronic components • Ports and connectors • Hardware & Software components • E-waste • Diagnostic tools • Basic estimation and costing • 5S pillars 	<ul style="list-style-type: none"> • Team Work • Communication • Problem Solving • Interpersonal Relationship • Creativity • Time Management

UNIT TITLE	Carryout Installation and Configuration of Network
DESCRIPTOR	This unit covers the competencies required to install, configure and conduct network test
CODE	3511-U3-L2
CREDIT	10
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Prepare for Network Installation	1.1 Identify customers' requirements following standard procedure 1.2 Perform site survey following standard procedure 1.3 Design network layout following standard procedure 1.4 Perform estimation and costing following standard procedure
2. Perform Network Installation	2.1 Use PPE as per the job requirement following standard procedure 2.2 Use tools and equipment following standard procedure 2.3 Install network devices and accessories following standard procedure 2.4 Set up network using fiber technology following standard procedure

3. Perform Network Configuration	<p>3.1 Check network devices and firmware for configuration following standard procedure</p> <p>3.2 Use Network Configuration tools following standard procedure</p> <p>3.3 Configure network parameters and remote access as per network layout following standard procedure</p>
4. Conduct Test	<p>4.1 Test the installation and configuration following standard procedure</p> <p>4.2 Use remote access tools following standard procedure</p> <p>4.3 Troubleshoot network using network diagnostic tools and commands following standard procedure</p> <p>4.4 Prepare documents following standard procedure</p>

RANGE STATEMENT	
PPE may include but not limited to:	
<ul style="list-style-type: none"> Goggles Mask Gloves Helmet 	<ul style="list-style-type: none"> Uniform Safety shoes Safety belt
Network layout may include but not limited to:	

<ul style="list-style-type: none"> • IP address • VLAN 	<ul style="list-style-type: none"> • Subnet • Network topology
Materials / devices may include but not limited to:	
<ul style="list-style-type: none"> • Network cards • Cables (Fiber/UTP) • RJ45 connectors • Tissue paper • Console Cable • Casing and capping bit 	<ul style="list-style-type: none"> • Fiber joint box • Fiber patch cord • Joint sleeve • Network Simulator (CISCO Packet Tracer, GNS3)
Tools and Equipment may include but not limited to:	
<ul style="list-style-type: none"> • Routers • Switches • Fusion Splicer set • Laser/power meter • Cable tester 	<ul style="list-style-type: none"> • Mediaconverter/ONU/OLT • OTDR • Multi meter • Enclosure • FODP
Devices and accessories may include but not limited to:	
<ul style="list-style-type: none"> • Router • Switch • Ethernet Patch Cord 	<ul style="list-style-type: none"> • Rack • Access point/wifi router
Fiber technology may include but not limited to:	
<ul style="list-style-type: none"> • FODP • SFP • Media Convertor 	<ul style="list-style-type: none"> • Fiber Patch Cord • Connector
Network configuration tools may include but not limited:	
<ul style="list-style-type: none"> • Console Cable 	<ul style="list-style-type: none"> • LAN Cable
Remote access tools may include but not limited to:	

<ul style="list-style-type: none"> • Minicom • SSH 	<ul style="list-style-type: none"> • GUI • Telnet
Network diagnostic tools and commands may include but not limited to:	
<ul style="list-style-type: none"> • Ping • traceroute • MTR • NS lookup 	<ul style="list-style-type: none"> • ARP • OTDR • LAN Tester
Critical Aspects	
<ul style="list-style-type: none"> • Demonstrate compliance with safety regulation applicable to work site operation • Demonstrate competencies to set up range of networks following standard procedure 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and Integrity • First Aid • Occupational Health and Safety (OHS) Regulations • Estimation and Costing • Evolving Network Technology • CLI Commands • IP subnetting (Basic IPV4 and IPV6) • Switching and Routing concepts • OSI or TCP/IP model • Introduction to Fiber Optic Technology • Basic concept of power system • 5S Pillars 	<ul style="list-style-type: none"> • Team Work • Communication • Problem Solving • Interpersonal Relationship • Creativity • Time Management

UNIT TITLE	Carryout Maintenance of Network
DESCRIPTOR	This unit covers the competencies required to prepare for maintenance work and to perform maintenance following standard procedures
CODE	3511-U4-L2
CREDIT	5
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Prepare for Maintenance of Network	1.1 Analyze existing network documentation following standard procedure 1.2 Create maintenance plan following standard procedure 1.3 Collect tools and equipment and following standard procedure 1.4 Collect materials as per the job requirement following standard procedure 1.5 Perform estimation and costing following standard procedure 1.6 Identify storage media for data back up following standard procedure

<p>2. Perform Network Maintenance</p>	<p>2.1 Use <i>personal protective equipment</i> as per the job requirements following standard procedure</p> <p>2.2 Conduct data back up following standard procedure</p> <p>2.3 Update firmware and patches for networking devices following standard procedure</p> <p>2.4 Inspect hardwares associated with network following standard procedure</p> <p>2.5 Troubleshoot network using <i>network diagnostic tools and commands</i> following standard procedure</p> <p>2.6 Monitor network using <i>network monitoring system</i> following standard procedure</p> <p>2.7 Prepare maintenance report following standard procedure</p>
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RANGE STATEMENT	
PPE may include but not limited to:	
<ul style="list-style-type: none"> • Goggles • Mask • Safety shoes • Helmet 	<ul style="list-style-type: none"> • Gloves • uniform • Anti-static wrist band
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Multi-meter 	<ul style="list-style-type: none"> • LAN tester

<ul style="list-style-type: none"> • Crimping tools • Wire stripper • Punching tools • Screw drivers 	<ul style="list-style-type: none"> • Fusion Splicer • OTDR machine/Laser light • Power meter
Materials may include but not limited to:	
<ul style="list-style-type: none"> • Patch cables • Protection sleeves 	<ul style="list-style-type: none"> • RJ45 Connector
Storage media may include but not limited to:	
<ul style="list-style-type: none"> • Hard disk/SSD • USB drive 	<ul style="list-style-type: none"> • Cloud storage
Network diagnostic tools and commands may include but not limited to:	
<ul style="list-style-type: none"> • Ping • Traceroute • MTR • NS lookup 	<ul style="list-style-type: none"> • ARP • OTDR • LAN Tester
Network monitoring system may include but not limited to:	
<ul style="list-style-type: none"> • Libre NMS • Zabbix 	<ul style="list-style-type: none"> • Nagios core • PRTG
Critical Aspects	
<ul style="list-style-type: none"> • Demonstrate compliance with safety regulation applicable to work site operation • Demonstrate competencies to perform network maintenance work following standard procedure 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and integrity • Occupational Health & Safety • First Aid • Estimation and costing • CLI Commands • Network Monitoring System • 5S Pillars 	<ul style="list-style-type: none"> • Team Work • Communication • Problem Solving • Interpersonal Relationship • Creativity • Time Management

UNIT TITLE	Carryout Installation and Configuration of Physical Security Devices
DESCRIPTOR	This unit covers the competencies required to install security devices, configure security devices and to conduct test on physical security devices
CODE	3511-U5-L2
CREDIT	10
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Set up Physical Security System	1.1 Conduct site survey as per the job requirement following standard procedure 1.2 Use tools and equipment following standard procedure 1.3 Use PPE as per the job requirements following standard procedure 1.4 Collect required materials / devices as per the job requirements 1.5 Perform estimation and costing following standard procedure 1.6 Install CCTV system following standard procedure 1.7 Install access control system following standard procedure

	1.8 Configure physical security system setting as per the job requirement following standard procedure
2. Conduct Test and Documentation	3.1 Test the physical security devices following standard procedure 3.2 Troubleshoot physical security devices following standard procedure 3.3 Document the process and activities related to installation of physical security devices

RANGE STATEMENT	
PPE may include but not limited to:	
<ul style="list-style-type: none"> • Goggles • Mask • Safety boot • Helmet 	<ul style="list-style-type: none"> • Gloves • Uniform • Safety belt
Tools and equipment may include but not limited to:	
<ul style="list-style-type: none"> • Drilling machine with bits • Pliers • Crimping tools • Ladders 	<ul style="list-style-type: none"> • Multi meter • Cutting pliers • Screw driver set
Materials/Devices may include but not limited to:	
<ul style="list-style-type: none"> • Storage devices(USB Drive, HDD/SSD) • Application software 	<ul style="list-style-type: none"> • DVRs / NVRs/wireless • Casing and capping • PoE switch

<ul style="list-style-type: none"> • Cables/fiber • CCTV camera • Mounting accessories • Monitor • Camera Jack 	<ul style="list-style-type: none"> • RJ45 connectors • Media convertor • Patch cord • BNC Connector
CCTV system may include but not limited to:	
<ul style="list-style-type: none"> • DVR • NVR 	<ul style="list-style-type: none"> • PTZ
Access control system may include but not limited to:	
<ul style="list-style-type: none"> • Biometric • Time and attendance tracking 	<ul style="list-style-type: none"> • Door access cards
Critical Aspects	
<ul style="list-style-type: none"> • Demonstrate compliance with safety regulation applicable to work site operation • Demonstrate competencies to install and configure physical security system following standard procedure 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethic and integrity • Types of physical security devices • Occupational Health and Safety (OHS) Regulations • Basic First Aid • Basic knowledge of electronic components • Current domestic/ industry security devices • Estimation and costing • Types and specification of cameras 	<ul style="list-style-type: none"> • Team Work • Communication • Problem Solving • Interpersonal Relationship • Creativity • Time Management

UNIT TITLE	Carryout Network Devices and Server Configuration
DESCRIPTOR	This unit covers the competencies required to install, configure and conduct test on server and network devices
CODE	3511-U6-L3
CREDIT	25
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform Network Device Configuration	1.1 Use PPE following standard procedure 1.2 Configure router following standard procedure 1.3 Configure switch following standard procedure 1.4 Test router and switch configuration following standard procedure
2. Perform Installation and Configuration of Servers	2.1 Install Windows server OS following standard procedure 2.2 Install Linux server OS following standard procedure 2.3 Configure windows serve following standard procedure

	2.4 Configure Linux server following standard procedure
3. Conduct Test	3.1 Test the server for functionality as per the job requirement following standard procedure 3.2 Check system stress test following standard procedure 3.3 Prepare report following standard procedure

RANGE STATEMENT	
PPE may include but not limited to:	
<ul style="list-style-type: none"> Goggles Mask Safety shoes 	<ul style="list-style-type: none"> Gloves Company dress Anti-static wrist band
Configuration of Router may include but not limited to:	
<ul style="list-style-type: none"> Routing protocols NAT 	<ul style="list-style-type: none"> ACL DHCP
Configuration of switch may include but not limited to:	
<ul style="list-style-type: none"> VLAN STP 	<ul style="list-style-type: none"> Trunk and access ports LACP
Critical Aspects	
<ul style="list-style-type: none"> Demonstrate compliance with safety regulation applicable to work site operation Demonstrate competencies to install and configure network devices and servers following standard procedure 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and integrity • Occupational Health and Safety (OHS) • Basic First Aid • Types of server • Basic commands on Linux • Virtualization and cloud • Types of Server operating system • Types of routers and switches • 5S Pillars 	<ul style="list-style-type: none"> • Team Work • Communication • Problem Solving • Interpersonal Relationship • Creativity • Time Management

UNIT TITLE	Carryout Monitoring and Administration of Network Security
DESCRIPTOR	This unit covers the competencies required to administer network security, set up firewalls and monitor network security following standard procedures
CODE	3511-U7-L3
CREDIT	15
ELEMENTS OF COMPETENCE	PERFORMANCE CRITERIA
1. Perform Administration of Network Security	1.1 Use PPE following standard procedure 1.2 Control user account following standard procedure 1.3 Secure file and resources access following standard procedure
2. Setup Firewall	2.1 Identify different types of firewalls following standard procedure 2.2 Install and configure security policies on firewall following standard procedure 2.3 Prepare report following standard procedure
3. Perform Monitoring of Network Security	3.1 Develop monitoring strategies following standard procedure 3.2 Monitor network security following standard procedure

	3.3 Perform data back up and data encryption following standard procedure
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RANGE STATEMENT	
PPE may include but not limited to:	
<ul style="list-style-type: none"> • Goggles • Mask • Safety shoes 	<ul style="list-style-type: none"> • Gloves • Uniform • Anti-static wrist band
Resources may include but not limited to:	
<ul style="list-style-type: none"> • Operating system 	<ul style="list-style-type: none"> • Application software
Different types of firewalls may include but not limited to:	
<ul style="list-style-type: none"> • Hardware 	<ul style="list-style-type: none"> • Software
Critical Aspects	
<ul style="list-style-type: none"> • Demonstrate compliance with safety regulation applicable to work site operation. • Demonstrate competencies to perform administration and monitoring of network security and firewall set up as per the job requirements following standard procedures 	

UNDERPINNING KNOWLEDGE	UNDERPINNING SKILLS
<ul style="list-style-type: none"> • Ethics and integrity • Occupational Health and Safety (OHS) • Basic First Aid • Introduction to firewall • Basic commands on Linux 	<ul style="list-style-type: none"> • Team Work • Communication • Problem Solving • Interpersonal Relationship

<ul style="list-style-type: none">• Types of Server operating system• 5S Pillars	<ul style="list-style-type: none">• Creativity• Time Management
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ANNEXURE

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 the 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.

Bhutan Qualifications Framework (BQF)

Bhutan Qualifications Framework is an integrated national framework that outlines all types of qualification in Bhutan. As an established and nationally accepted instrument, the BQF has been benchmarked against international practices in terms of standards. The BQF aims to recognize all forms of learning systems, including formal, non-formal, and informal learning. It acknowledges technological advancements and recognizes contemporary

modes of delivery. It covers a broad range of education systems including the TVET education.

Implementation of TVET Qualifications



*** RPL = Recognition of Prior Learning**

TVET Qualifications Levels

Bhutan Qualifications Framework 2023

Table 2: Qualification Types and Levels Based on Education Sector.

BQF Level	Community Education	School Education	TVET	Higher Education	Monastic Education
8				Doctoral Degree	<i>Khewang</i> མཁམ་དབང།
7			Master's Degree Postgraduate Diploma Postgraduate Certificate	Master's Degree Postgraduate Diploma Postgraduate Certificate	<i>Tsugla Gongma</i> གཞུག་ལག་ཤོད་མ།
6			Applied Degree	Bachelor's Degree Bachelor's Degree (Honours) Graduate Diploma Graduate Certificate	<i>Tsugla Wogma</i> གཞུག་ལག་འོག་མ།
5			Advanced Diploma	Advanced Diploma	
4			Diploma	Diploma	
3		Bhutan Higher Secondary Education Certificate	Certificate 3		<i>Dringrim Gongma</i> འགྲིང་རིམ་གོང་མ།
2		Bhutan Certificate for Secondary Education	Certificate 2		<i>Dringrim Barma</i> འགྲིང་རིམ་བར་མ།
1	ALC		Certificate 1		

Level Descriptors

The TVET Qualification levels are set based on the level descriptors, as defined in the BQF. The detail of the qualification level descriptor is as follows:

Level	Knowledge	Skills	Values	Application
	Knowledge that is:	Demonstrate skills that involve:	Demonstrate values that involve:	Applied in contexts that involve:
4	Broad theoretical, technical and operational	<p>Selecting and applying a range of standard processes relevant to varied and sometimes unpredictable tasks</p> <p>Selecting and applying a range of solutions involving formulation of solutions to resolve complex issues</p> <p>Demonstrating a high level of proficiency in English and Dzongkha</p>	<p>Strong level of awareness of self and others; and an appreciation of belief system, role of social norms, and the importance of relationship building</p> <p>Application of ethical norms and legal rules in decision-making; and comprehending the correlation between values and behavior</p> <p>Commitment to own profession and quality of work</p>	<p>Stable tasks with predictable changes</p> <p>Broad guidance with some self-direction that requires sound judgement</p> <p>Taking some responsibility for planning and coordination with others</p>

3	Theoretical with some technical and operational processes	<p>Applying a range of standard processes to known but varied tasks</p> <p>Selecting and applying a range of solutions to familiar and unfamiliar problems</p> <p>Communicating effectively and clearly, both oral and written, in both English and Dzongkha</p>	<p>Sound level of self-awareness and beliefs; and ability to apply social norms and build relationships</p> <p>Application of a set of ethical norms</p> <p>Commitment to own field of interest and apply self-management of learning and performance</p>	<p>Stable tasks with some aspects of change</p> <p>General guidance and supervision that require discretion and judgement</p> <p>Adapting to own behaviour to work with others</p>
2	Basic, factual and conceptual	<p>Applying standard processes relevant to carry out known tasks</p> <p>Applying a set of known solutions to solve simple and straightforward issues</p> <p>Using simple and direct exchange of information on familiar and routine matters</p> <p>Developing basic proficiency in Dzongkha and English</p>	<p>Some level of self-awareness and beliefs, and appreciation of social norms; and significance of relationships</p> <p>Awareness of ethical norms, and openness to different activities</p> <p>Developing own knowledge and skills</p>	<p>Structured and stable tasks</p> <p>General support and Supervision that require some discretion and judgement</p> <p>Collaboration with others to achieve goals</p>

1	Foundational , every day and general	Applying operational literacy, numeracy skills required to carry out simple tasks Applying simple solutions to solve simple and straightforward everyday issues Communicating using everyday expressions and simple phrases in Dzongkha and English	Basic awareness of self, beliefs, and social norms; and understand the significance of relationships Basic awareness of fundamental ethical norms, basic civil rights, and responsibilities Willingness to understand tasks and motivated to implement them successfully	Highly structured tasks with close support and supervision Minimal Discretion and judgement Readiness to work together and share knowledge with others
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CODING USED FOR NATIONAL COMPETENCY STANDARDS

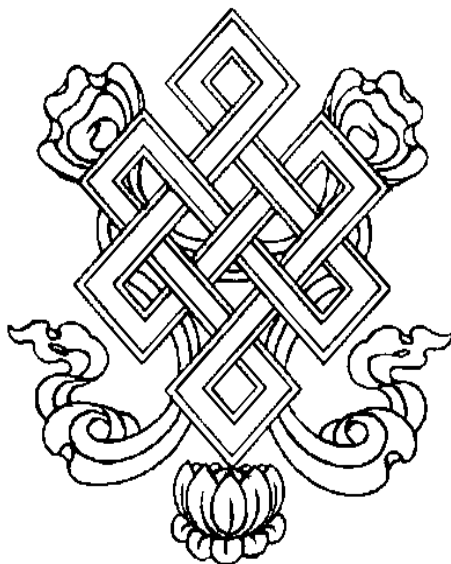
The coding and classification system developed in Bhutan is logical, easy to use, and also aligned with international best practices. The Bhutanese coding and classification system is based on the International Standard Classification of Occupations, 2008 (ISCO-08) developed by the International Labour Organisation (ILO). The coding of the National competency standards forms the basis of the identification code for the Technical and 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 national competency standards

Coding the individual skills standard has a multiple purpose:

- to identify the level,
- to identify to which module the standard belongs,

- to identify in which order the standard is clustered within that module.
- A job can include a number of competencies described in the national competency standards. However, in order to follow a logical order, only national 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 module. Some standards are so complex that they need to stand alone.



TVET Quality Council
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