

# Model Curriculum

## Broadband Technician

**SECTOR: TELECOM**  
**SUB-SECTOR: PASSIVE INFRASTRUCTURE**  
**OCCUPATION: CUSTOMER SERVICES**  
**REF ID: TEL/Q0102**  
**NSQF LEVEL: 4**



  

## Certificate

**CURRICULUM COMPLIANCE TO  
QUALIFICATION PACK – NATIONAL OCCUPATIONAL  
STANDARDS**

is hereby issued by the

**TELECOM SECTOR SKILL COUNCIL**

for the

**MODEL CURRICULUM**

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: Broadband Technician QP No. TEL/Q0102 NSQF Level 4

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Date of Issuance: \_\_\_\_\_  
Valid up to: \_\_\_\_\_

Authorized Signatory:  
(Telecom Sector Skill Council)

\* Valid up to the next review date of the Qualification Pack

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# Broadband Technician

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Broadband Technician”, in the “Telecom” Sector/Industry and aims at building the following key competencies amongst the learner

<b>Program Name</b>	<b>Broadband Technician</b>		
<b>Qualification Pack Name &amp; Reference ID.</b>	TEL/Q0102, Version Number 1.0		
<b>Version No.</b>	1.0	<b>Version Update Date</b>	28-12 – 2015
<b>Pre-requisites to Training</b>	Ability to troubleshoot and solve problems, colour vision, manual dexterity, strong customer service skills and bookkeeping skills, familiarity with workforce management software, ping tools.		
<b>Training Outcomes</b>	<b>After completing this programme, participants will be able to:</b> <ul style="list-style-type: none"><li>• <b>Aggregate awareness of mining and equipment installation and configuring CPE:</b> arrange and check access to site, tools, and cables according to guidelines</li><li>• <b>Comprehend and initiate the importance of reporting and recording:</b> ensure all reports, CPE configurations, settings, and faults are documented for future reference.</li><li>• <b>Establish connection amongst service provider gateway, CPE and user device:</b> ensure connectivity, settings and tests are properly executed.</li><li>• <b>Identify, locate and execute CPE faults, cable and connector faults:</b> understand different types of cables, correct pairs, software required for installation and various tests for troubleshooting</li></ul>		

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Broadband Technician” Qualification Pack issued by “TSSC: Telecom Sector Skills Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p><b>Communication Systems</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 10:00</p> <p><b>Corresponding NOS Code</b> TEL/N0111</p>	<ul style="list-style-type: none"> <li>• Educating various kinds of communication system</li> <li>• Imparting the working principal of fiber and its utilization</li> </ul>	<p>Server Cat 5 cables, Copper cables, Routers(Wireless Fidelity), Modem, Switch and Hub RF antenna internet discs and suitable cables</p>
2	<p><b>Installation and hardware equipment</b></p> <p><b>Theory Duration</b> (hh:mm) 40:00</p> <p><b>Practical Duration</b> (hh:mm) 55:00</p> <p><b>Corresponding NOS Code</b> TEL/N0111 TEL/N0113</p>	<ul style="list-style-type: none"> <li>• Imparting basic knowledge of equipment used in Communication, cable connectors and their functions</li> <li>• Training on Multi meter/crimping Tools/ Cable Faults Locators/ Earth Tester, and their workings</li> <li>• Explaining the basics wiring diagram</li> <li>• Calculating equipment load vis-a-vis UPS rating</li> <li>• Understanding various type of cable and their uses like OFC/UTP/STP/ Twisted Pair</li> </ul>	<p>Server, different kinds of cables, connectors, Modems, Routers, Switches, Hubs, Bridges, Interfaces and crimping tools</p>
3	<p><b>Connectivity</b></p> <p><b>Theory Duration</b> (hh:mm) 30:00</p> <p><b>Practical Duration</b> (hh:mm) 55:00</p> <p><b>Corresponding NOS Code</b> TEL/N0011, TEL/N0112</p>	<ul style="list-style-type: none"> <li>• Comprehending the process of lying cables</li> <li>• Explaining the basics of Modem, Router, and Switch and their functions</li> <li>• Creating CPE network, service provider gateway</li> <li>• Establishing connectivity between CPE and end user device</li> <li>• Making the student understand of various IP configuration and basic commands used in broadband</li> <li>• Documenting the steps for installation</li> </ul>	<p>Desktop, connecting devices , crimping tools and connectors, laptop or other specific portable device to connect CPE and carryout Faults diagnostics &amp; repairs offline and online UPS</p>
4	<p><b>Power Supply</b></p> <p><b>Theory Duration</b> (hh:mm) 20:00</p>	<ul style="list-style-type: none"> <li>• Learning the steps of UPS installation, AC maintenance</li> <li>• Imparting knowledge of voltage, current checks, carry out earthing checks, etc.</li> <li>• Routing of power supply</li> </ul>	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<b>Practical Duration</b> (hh:mm) 30:00  <b>Corresponding NOS Code</b> TEL/N0114		
5	<b>Networking Topology</b>  <b>Theory Duration</b> (hh:mm) 10:00  <b>Practical Duration</b> (hh:mm) 10:00  <b>Corresponding NOS Code</b> TEL/N0111, TEL/N0112 TEL/N0113, TEL/N0114	<ul style="list-style-type: none"> <li>Acquiring basic topologies used in broadband connection, cabling types, connectors, TCP/IP, IP address, Subnet Mask, Ethernet Address, MAC Address, V4-V6, CPE, EMI/EMC, crimping, UPS</li> </ul>	
6	<b>Trouble Shooting</b>  <b>Theory Duration</b> (hh:mm) 10:00  <b>Practical Duration</b> (hh:mm) 20:00  <b>Corresponding NOS Code</b> TEL/N0113	<ul style="list-style-type: none"> <li>Identifying, troubleshooting and rectifying cable and connector fault, CPE fault</li> <li>Documenting the steps and changes made</li> </ul>	Multi meter tester, various kinds of repeaters, Interfaces and Model Desktop
	<b>Total Duration</b>  <b>Theory Duration</b> <b>120:00</b>  <b>Practical Duration</b> <b>180:00</b>	<b>Unique Equipment Required:</b> Laptop, white board, marker, projector	

**Grand Total Course Duration: 300Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by TSSC: Telecom Sector Skill Council)

## Trainer Prerequisites for Job role: “Broadband Technician” mapped to Qualification Pack: “TEL/Q0102, Version No. 1.0”

Sr. No.	Area	Details
1	<b>Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ <u>TEL/Q0102</u> , Version No. 1.0”
2	<b>Personal Attributes</b>	The individual should have good communication skills with a clear diction; regional language proficiency; strong customer service focus; pleasant personality; should be self-motivated; should be able to apply practical judgment to successfully perform the assigned responsibilities and a team player with ability to work under pressure.
3	<b>Minimum Educational Qualifications</b>	Preferably equivalent to Diploma
4a	<b>Domain Certification</b>	Certified for Job Role: “Broadband Technician” mapped to QP: “ <u>TEL/Q0102</u> , Version No. 1.0” Minimum accepted score as per respective TSSC guidelines.
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “ <u>TEL/Q0102</u> , Version No. 1.0”. Minimum accepted score as per respective TSSC guidelines.
5	<b>Experience</b>	<ul style="list-style-type: none"> <li>The trainer should be certified by TSSC as ‘Train the Trainer’ and Assessor and</li> <li>Worked as Broadband Technician for a minimum of 2-3 years</li> </ul>

## Annexure: Assessment Criteria

<b>Assessment Criteria</b>	
<b>Job Role</b>	<b>Broadband Technician</b>
<b>Qualification Pack</b>	<b>TEL/Q0102, Version No. 1.0</b>
<b>Sector Skill Council</b>	<b>Telecom</b>

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre(as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on these criteria.
5	To pass the Qualification Pack, every trainee should score a minimum of 40% in every NOS and 50% overall.
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessable Outcome	Assessment Criteria	Total Mark (400)	Sub Element Weightage	Out of	Theory	Skills Practical
1. TEL/N0111 (Cable/system wiring and equipment installation at customer premises)	Prepare for wiring and equipment installation	100	40	5	5	0
				10	5	5
				5	0	5
				5	0	5
				5	0	5
				5	0	5
				5	5	0
	Undertake wiring & Install system hardware		10	10	0	
			5	5	0	
			5	5	0	
			5	0	5	
			10	0	10	
			5	0	5	
	Clean up worksite and complete documentation		5	5	0	
			5	5	0	
			5	5	0	
			5	5	0	
		<b>Total</b>		<b>100</b>	<b>55</b>	<b>45</b>
2. TEL/N0112 (Configuration of equipment and establishing Broadband connectivity)	Configuring CPE	100	20	10	0	10
				5	0	5
				5	0	5
			20	5	0	5



	Establishing connectivity with service provider gateway	PC5. ping service provider gateway		30	5	0	5		
		PC6. analyze test results for connectivity and throughput parameters			10	10	0		
		PC7. configure end user device to establish LAN connectivity with the CPE			15	5	10		
		PC8. ping CPE from end user device and analyze response			15	5	10		
	Record configuration setting and testing steps for customer	PC9. record CPE configuration settings			30	10	10	0	
		PC10. record end user device configuration setting				5	5	0	
		PC11. record pinging procedure and expected result parameters				5	5	0	
		PC12. brief customer on basic troubleshooting steps/self-help				10	0	10	
							100	40	60
	3.TEL/N0113 (Trouble-shoot to localize and rectify faults)	Locate and trouble shoot cable & connector fault		PC1. differentiate between types of cables	100	20	5	5	0
				PC2. Identify correct cable pairs			5	0	5
				PC3. Undertake continuity check and localize fault distance			10	0	10
Troubleshoot CPE fault		PC4. understand relevance of various indicative lights on the CPE		40		5	5	0	
		PC5. connect CPE to laptop/CPU/portable device for fault diagnostic				5	0	5	
		PC6. install CPE access software, if required				10	0	10	
		PC7. access CPE through browser/software application and run diagnostic application				10	0	10	
Rectify the faults with cable, connectors and CPE		PC8. decipher results to localize fault		20		10	5	5	
		PC9. carry out re-connectorization/crimping (of cable pairs with connector) or replace cable, if required				5	0	5	
		PC10. re-configure the CPE to correct settings				10	0	10	
Complete documentation and clean up worksite		PC11. reset CPE, if required.		20		5	0	5	
		PC12. record steps undertaken for fault localization/isolation				10	10	0	
		PC13. record changes undertaken for fault rectification				5	5	0	
							5	5	0
					100	35	65		
4. TEL/N0114 (UPS installation & Domestic Power Supply checks)	Scope	PC1. carry out voltage, current checks	100	100	15	5	10		
		PC2. carry out earthing checks			15	5	10		
		PC3. installation of ups			10	5	5		
		PC4. routing of power supply through ups			15	5	10		
		PC5. calculate equipment load vis-à-vis ups rating			15	15	0		
		PC6. exercise precautions whilst handling power supplies			15	10	5		
		PC7. UPS battery checks & replacement			15	5	10		
					100	50	50		