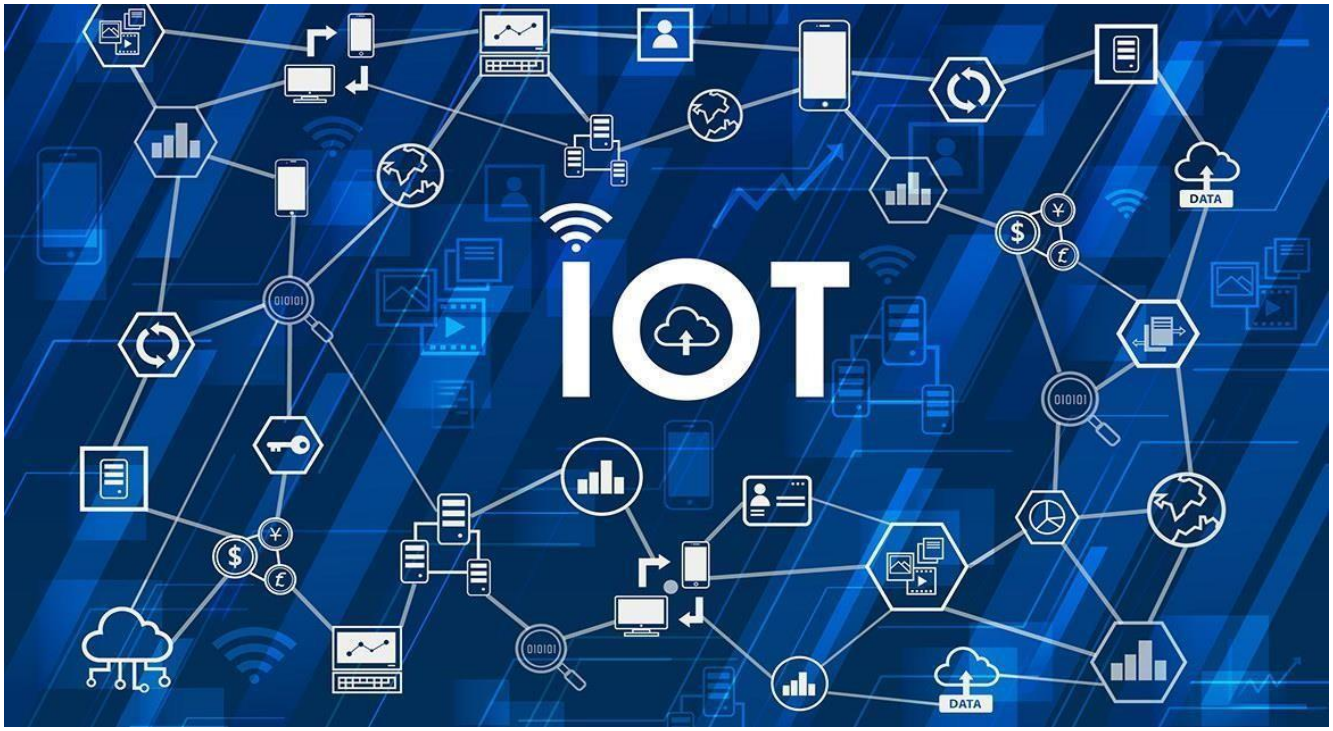


# Model Curriculum

**QP Name: IoT Installation Solution Architect**

**QP Code: TEL/Q6216**

**QP Version:** 3.0

**NSQF Level:** 5

**Model Curriculum Version:** 3.0

Telecom Sector Skill Council Estel House, 3rd Floor, Plot No: - 126, Sector - 44, Gurugram, Haryana 122003 || email: https://www.tsscindia.com/

# Table of Contents

# Training Parameters

| | |
|---|---|
| **Sector** | Telecom |
| **Sub-Sector** | Network Managed Services |
| **Occupation** | Network Operation and Maintenance |
| **Country** | India |
| **NSQF Level** | 5 |
| **Aligned to NCO/ISCO/ISIC Code** | NCO-2015/3114.6216 |
| **Minimum Educational Qualification & Experience** | Completed 2nd year of 3-year/ 4-years UG**<br>OR<br>Completed 2nd year of diploma*** (after 12th)<br>OR<br>12th Grade pass with 2-year relevant experience*<br>OR<br>Previous relevant Qualification of NSQF Level 4.5 with 1.5-year relevant experience*<br>OR<br>Previous relevant Qualification of NSQF Level 4 with 3-year relevant experience*<br><br>**Relevant experience in handling installation and basic configuration of IoT sensors and gateways in smart buildings or industrial automation environments.*<br>*** Undergraduate (UG) Degree in ECE, CS/IT, Electrical, Instrumentation / Mechatronics or any other related discipline.*<br>**** Diploma in Electronics and Communication, Telecom, Electrical, Instrumentation, CS/IT or any other related discipline* |
| **Minimum Level of Education for Training in School** | 12th Class |
| **Pre-Requisite License or Training** | NA |
| **Minimum Job Entry Age** | |
| **Last Reviewed On** | 19-Aug-2025 |
| **Next Review Date** | 30-June-2028 |
| **NSQC Approval Date** | 19-Aug-2025 |
| **Version** | 3.0 |

| | |
|---|---|
| **Minimum Duration of the Course** | 540 hours |
| **Maximum Duration of the Course** | 540 hours |

# Program Overview

This section summarizes the end objectives of the program along with its duration.

## Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Identify the roles and responsibilities of an IoT Installation Solution Architect in planning, designing, and executing IoT solution implementations across varied industry use cases
- Demonstrate how to perform market analysis on IoT applications by evaluating market needs, trends, customer pain points, and competitive offerings
- Apply techniques to supervise the installation and integration of IoT devices and systems, ensuring compliance with design specifications and operational requirements
- Illustrate the process of conducting acceptance testing and site optimization activities to validate system performance, functionality, and scalability
- Design secure network infrastructure for IoT deployments by implementing best practices in network configuration, device connectivity, data transmission, and cybersecurity
- Demonstrate effective communication and interpersonal skills to collaborate with internal teams, vendors, and customers throughout IoT project lifecycles
- Manage work activities, resource allocation, and workplace safety in line with organizational protocols and regulatory guidelines for IoT environments

## Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

| NOS and Module Details | Theory Duration | Practical Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
|---|---|---|---|---|---|
| **TEL/N6260: Perform Market Analysis on Application of IoT**<br>NOS Version No. 3.0<br>NSQF Level 5 | **30:00** | **60:00** | **30:00** | **-** | **120:00** |
| Module 1: Role and Responsibilities of IoT Installation Solution Architect | 10:00 | - | - | - | 10:00 |

| | | | | | |
|---|---|---|---|---|---|
| Module 2: Performance Market Analysis on Application of IoT | 20:00 | 60:00 | 30:00 | - | 110:00 |
| **TEL/N6261 – Supervise in installation of IoT devices and system**<br>NOS Version No. 3.0<br>NSQF Level 5 | **20:00** | **40:00** | **30:00** | **-** | **90:00** |
| Module 3: Supervision of IoT Device Installation and System Integration | 20:00 | 40:00 | 30:00 | - | 90:00 |
| **TEL/N6262 – Administer acceptance testing and site optimization activities**<br>**NOS Version No. 3.0**<br>**NSQF Level 5** | **20:00** | **40:00** | **30:00** | **-** | **90:00** |
| Module 4: Administration of Acceptance Testing and Site Optimization for IoT Systems | 20:00 | 40:00 | 30:00 | - | 90:00 |
| **TEL/N6280: Maintain secure IoT network infrastructure**<br>NOS Version No. 3.0<br>NSQF Level 5 | **30:00** | **50:00** | **40:00** | **-** | **120:00** |
| Module 5: Maintaining Secure IoT Network Infrastructure | 30:00 | 50:00 | 40:00 | - | 120:00 |
| **TEL/N9103: Implement effective interaction at work**<br>**NOS Version 3.0**<br>**NSQF Level-5** | **10:00** | **10:00** | **10:00** | **-** | **30:00** |
| Module 6: Communication and Interpersonal skills | 10:00 | 10:00 | 10:00 | - | 30:00 |
| **TEL/N9104: Manage work, Resource and safety at workplace**<br>NOS Version-3.0<br>NSQF Level-5 | **10:00** | **10:00** | **10:00** | **-** | **30:00** |
| Module 7: Manage work, Resource and safety at | 10:00 | 10:00 | 10:00 | - | 30:00 |

| | | | | | |
|---|---|---|---|---|---|
| workplace | | | | | |
| **DGT/VSQ/N0102: Employability Skills (60 Hours)**<br>NOS Version No. 1<br>NSQF Level- 5 | **60:00** | **-** | **-** | **-** | **60:00** |
| **Total Duration** | **180:00** | **210:00** | **150:00** | **-** | **540:00** |

# Module Details

## Module 1: Role and Responsibilities of IoT Installation Solution Architect

***Bridge Module TEL/N6260, v3.0***

Terminal Outcomes:

- Demonstrate comprehensive understanding of the telecom industry
- Effectively perform duties and responsibilities of an AI device installation technician
- Comply with organizational standards and ethical protocols
- Maintain high standards in team management and site supervision

| **Duration**: *10:00* | **Duration**: *0:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Explain the size, scope, and numerous subsectors of the telecom business.<br>• Describe the responsibilities and duties of an installation technician for AI devices.<br>• Describe the company's quality standards, site management policies, employee management, workplace ethics, and public relations.<br>• Describe the company's workflow and the part an AI device installation specialist plays in it. Enumerate the different daily, weekly, and monthly operations and activities that occur at the site. | |
| **Classroom Aids:** | |
| Participant handbook, whiteboard, marker, notepad, pen, computer or laptop with internet connection, projector or large screen, speakers | |
| **Tools, Equipment and Other Requirements** | |
| Google Trends, Ubersuggest (free SEO tool), WhatsApp Groups (industry-specific), Excel, Google Sheets, Statista (free version), Basic Laptop/PC (Windows/Linux), LibreOffice (documentation) | |

## Module 2: Performance Market Analysis on Application of IoT

***Mapped to TEL/N6260 & v3.0***

**Terminal Outcomes:**

- Identify relevant IoT domains and gather both secondary and primary data to support market understanding and technology adoption insights.
- Analyze market segmentation, industry trends, and competitor positioning using various analytical tools and techniques.
- Develop visual market insights and communicate them effectively through structured reports and stakeholder presentations.
- Collaborate with internal teams and ensure ethical practices, data privacy compliance, and protocol adherence during the market research process.

| **Duration**: *20:00* | **Duration**: *60:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Discuss different IoT domains such as smart home, industrial IoT, and health tech, and their market characteristics.<br>• Learn about secondary data sources like industry reports, white papers, and digital publications relevant to IoT.<br>• Comprehend primary research methods including surveys, interviews, and questionnaires for gathering user needs and market insights.<br>• Discuss tools and techniques for data extraction, organization, and management (e.g., Excel, Google Sheets, databases).<br>• Grasp market segmentation and classification based on industry, geography, applications, and customer profiles.<br>• Study how to benchmark competitors by analyzing features, pricing, performance, scalability, and support.<br>• Discuss emerging IoT technology trends such as edge computing, AI integration, 5G connectivity, and regulatory impacts.<br>• Learn to perform SWOT analysis to assess competitor strengths, weaknesses, opportunities, and threats. | • Identify relevant IoT domains and gather secondary data from credible sources.<br>• Design and conduct primary research such as surveys and interviews to capture end-user needs.<br>• Extract, clean, and organize market data using spreadsheets or databases.<br>• Segment IoT markets based on classification criteria for focused analysis.<br>• Conduct competitor benchmarking and evaluate current market trends.<br>• Perform SWOT analyses of top competitors to Discuss market positioning.<br>• Create charts, graphs, heat maps, and other visualizations for market data presentation.<br>• Analyze research data to identify gaps and potential IoT use cases.<br>• Map customer pain points to IoT solutions to develop targeted value propositions.<br>• Recommend product features, use cases, or deployment strategies based on research.<br>• Prepare detailed and structured market analysis reports.<br>• Present findings to stakeholders using clear |

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| • Discuss data visualization methods for effective presentation of market shares, growth, and trends.<br>• Learn to interpret research to identify latent customer needs and unserved market demands.<br>• Discuss how to map customer pain points with IoT applications to find value creation opportunities.<br>• Study how to draft market reports with strategic recommendations for product planning and investment.<br>• Learn ethical standards, data privacy, and organizational protocols in market research and reporting.<br>• Discuss effective communication strategies for presenting data and insights to stakeholders.<br>• Learn the importance of collaboration across teams to align market insights with business objectives. | storytelling and data-supported arguments.<br>• Collaborate with product development, marketing, and strategy teams to integrate insights.<br>• |
| **Classroom Aids:** | |
| Participant handbook, whiteboard, marker, notepad, pen, computer or laptop with internet connection, projector or large screen, speakers | |
| **Tools, Equipment and Other Requirements** | |
| IndiaMart, TradeIndia, Google Trends, Ubersuggest (free SEO tool), Excel, Google Sheets, Statista (free version), WhatsApp Groups (industry-specific), LibreOffice (documentation) | |

## Module 3: Supervision of IoT Device Installation and System Integration

***Mapped to TEL/N6261 & v3.0***

**Terminal Outcomes:**

- Demonstrate the ability to assess and verify site readiness for IoT installations, ensuring all environmental and infrastructural prerequisites are met.
- Coordinate installation teams effectively, allocating tasks and ensuring adherence to safety and procedural protocols.
- Oversee IoT device installation, configuration, and firmware updates in line with manufacturer and site specifications.
- Effectively communicate deviations and improvement suggestions for continuous process enhancement.

| **Duration**: *20:00* | **Duration**: *40:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Discuss the critical site requirements for IoT device deployment, including space, ventilation, environmental conditions, power supply, and network connectivity.<br>• Learn to inspect physical and network infrastructure for compatibility with IoT systems and identify potential issues prior to installation.<br>• Discuss logistics related to delivery, unpacking, and safe storage of sensitive IoT components.<br>• Study team coordination principles, including task allocation based on installation blueprints or system diagrams.<br>• Discuss safety protocols, tool usage, and compliance with electrical and electronic installation standards.<br>• Learn to prepare and maintain checklists for materials, tools, and documentation to ensure efficient installation.<br>• Comprehend the installation process for IoT hardware components such as sensors, controllers, gateways, and end-user devices.<br>• Learn methods to validate electrical connections, device positioning, and sensor | • Verify site preparedness by inspecting space, ventilation, power, environment, and network connectivity to support IoT deployment.<br>• Inspect and validate physical and network infrastructure compatibility, identifying and resolving discrepancies before installation begins.<br>• Supervise the safe receipt, unpacking, and storage of IoT components to prevent damage or loss.<br>• Allocate installation tasks to technicians and guide them on wiring, mounting, and assembly according to blueprints or diagrams.<br>• Conduct team briefings on safety, tool use, and installation protocols, ensuring all standards are followed.<br>• Maintain and update checklists of materials, tools, and documentation to avoid installation delays.<br>• Oversee the physical installation of IoT devices ensuring adherence to manufacturer guidelines and site layout.<br>• Validate correct electrical connections, optimal device placement, and sensor calibration before system setup. |

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| calibration.<br>• Discuss firmware update procedures and device configuration techniques using setup software or user interfaces.<br>• Study system integration principles for connecting installed devices with backend, cloud, or edge platforms.<br>• Learn system testing methods including connectivity verification, data flow validation, device discovery, and network performance checks.<br>• Discuss troubleshooting processes for configuration issues and escalation protocols for critical problems.<br>• Learn proper documentation practices including installation records, configuration files, network settings, and test reports.<br>• Discuss how to document deviations and recommend corrective actions.<br>• Study best practices for handing over installed systems to operations or maintenance teams with full documentation and walkthrough. | • Guide firmware updating and device configuration using designated software or interfaces.<br>• Ensure installed devices integrate seamlessly with backend systems or cloud platforms as per system architecture.<br>• Supervise comprehensive system testing to verify connectivity, data flow, device discovery, and network health.<br>• Identify minor configuration issues and either resolve them or escalate to technical support or R&D teams.<br>• Maintain detailed installation records including inventories, configurations, and test outcomes.<br>• Document any deviations from installation plans and recommend improvements or corrective steps.<br>• Conduct formal handover sessions for the installed system with complete documentation and operational walkthroughs to the relevant teams.<br>• |
| **Classroom Aids:** | |
| Participant handbook, whiteboard, marker, notepad, pen, computer or laptop with internet connection, projector or large screen, speakers | |
| **Tools, Equipment and Other Requirements** | |
| Digital Multimeter (Meco or Uni-T basic), Screwdriver Set, Wire Stripper, Crimping Tool, Measuring Tape, Cable Tester (basic), Smartphone (for testing with IoT apps), Blynk or ThingSpeak (free mobile IoT platforms), Flashlight (basic), Safety Gloves, Node-RED (free IoT simulator), Mosquitto (free MQTT broker), Basic Laptop/PC (Windows/Linux) | |

## Module 4: Administer acceptance testing and site optimization activities

***Mapped to TEL/N6262 & v3.0***

**Terminal Outcomes:**

- Demonstrate the ability to plan, coordinate, and execute IoT system acceptance tests aligned with project requirements.
- Identify, document, and escalate system defects using structured methods and industry best practices.
- Apply performance tuning and optimization techniques to enhance the reliability and efficiency of IoT systems.
- Deliver professional, detailed documentation and ensure a seamless client sign-off and operational handover.

| **Duration**: *20:00* | **Duration**: *30:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Discuss the purpose and scope of acceptance testing in IoT implementations, including functional, performance, and interoperability aspects.<br>• Learn how to interpret project specifications, acceptance criteria, and system documentation to prepare for testing.<br>• Discuss coordination strategies for working with installation, integration, and quality teams without impacting ongoing operations.<br>• Study the components of a structured testing protocol, including tool selection, checklist preparation, and verification procedures.<br>• Gain knowledge of key performance indicators in IoT systems such as connectivity, data integrity, latency, power efficiency, and security.<br>• Learn best practices for systematic test result documentation and issue tracking.<br>• Discuss the methods for identifying bugs, failures, and deviations from expected system behavior.<br>• Study defect escalation procedures and Discuss how to communicate issues effectively with engineering or vendor teams.<br>• Learn how to propose corrective actions | • Review relevant project documentation and acceptance criteria to prepare for on-site IoT testing.<br>• Coordinate effectively with relevant teams to schedule and conduct acceptance testing with minimal disruption.<br>• Set up and verify the readiness of testing tools, protocols, and safety procedures.<br>• Conduct real-world tests on IoT systems to validate functionality, performance, and interoperability.<br>• Verify technical parameters such as connectivity strength, data integrity, latency thresholds, and security configurations.<br>• Record test outcomes and observations in a standardized and organized format.<br>• Identify system faults or non-conformities and document them with appropriate evidence and details.<br>• Escalate critical findings to responsible teams and track progress until resolution.<br>• Recommend configuration or deployment changes based on test data and system performance.<br>• Analyze logs and system performance |

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| based on testing insights—covering configurations, firmware, and deployment strategy.<br>• Discuss techniques for analyzing system logs, signal quality, latency, and throughput to uncover performance bottlenecks.<br>• Study system optimization concepts, including tuning of device parameters, network configurations, and sensor placements.<br>• Learn the importance of revalidation after optimization to verify performance improvements.<br>• Discuss the structure and requirements of acceptance testing reports, including diagrams, logs, and summaries.<br>• Learn how to conduct client reviews and obtain formal sign-off after testing and optimization phases.<br>• Study the documentation, training, and knowledge transfer required for successful operational handover. | metrics to pinpoint inefficiencies and bottlenecks.<br>• Implement fine-tuning actions like adjusting sensor positions or updating device/network parameters.<br>• Conduct post-optimization testing to confirm that performance improvements meet project benchmarks.<br>• Compile comprehensive test and optimization documentation for stakeholder review.<br>• Facilitate formal sign-off from quality or client teams upon successful testing completion.<br>• Provide operational teams with updated manuals, training sessions, and documentation for smooth system handover.<br>• |
| **Classroom Aids:** | |
| Participant handbook, whiteboard, marker, notepad, pen, computer or laptop with internet connection, projector or large screen, speakers | |
| **Tools, Equipment and Other Requirements:** | |
| Ookla Speedtest app, Android WiFi Analyzer app, Postman (free API tester), Notepad++, Signal Strength Meter App, Wireshark (free tool for packet analysis), Ping command tool (pre-installed in OS), Basic Laptop/PC (Windows/Linux) | |

## Module 5: Maintaining Secure IoT Network Infrastructure

***Mapped to TEL/N6280 & v3.0***

**Terminal Outcomes:**

- Demonstrate the ability to design, secure, test, and optimize IoT network architectures that meet functional and regulatory requirements.
- Effectively identify and mitigate network security risks while ensuring system resilience and compliance.
- Deliver comprehensive documentation and training materials to facilitate maintenance and operational handover.

| **Duration**: *30:00* | **Duration**: *50:00* |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Explain key networking requirements in IoT systems such as range, latency, bandwidth, and scalability.<br>• Describe the use cases and characteristics of various communication technologies like Wi-Fi, LoRaWAN, Zigbee, NB-IoT, and Ethernet.<br>• Interpret IP addressing schemes, subnetting, VLAN configuration, and routing principles in IoT network environments.<br>• Explain different network topologies (star, mesh, hybrid) and their suitability based on operational needs.<br>• Identify encryption and secure communication protocols such as TLS, WPA3, and IPSec.<br>• Describe the role and configuration of firewalls, VLANs, ACLs, and zero-trust models in IoT security.<br>• Understand authentication methods used in IoT (e.g., digital certificates, token-based, key-based).<br>• Explain intrusion detection and prevention systems (IDS/IPS) and over-the-air (OTA) update security.<br>• Identify common vulnerabilities in IoT systems (e.g., open ports, default | • Analyze IoT system requirements to identify communication needs based on use-case scenarios (e.g., smart home, industrial monitoring), considering factors like device density, data volume, latency, and power constraints.<br>• Show how to set up appropriate communication protocols such as Wi-Fi for high-speed LAN, LoRaWAN for long-range low-power communication, or Zigbee/NB-IoT for dense sensor networks, based on environmental and operational needs.<br>• Design basic IP addressing and subnetting plans tailored to IoT systems.<br>• Create logical and physical network topologies, including star, mesh, and hybrid layouts, based on the device type, location, and data flow requirements, using network design tools or diagrams.<br>• Configure encryption protocols (e.g., TLS on MQTT, WPA3 for Wi-Fi) to secure data transmission between IoT devices and cloud or edge systems.<br>• Implement secure tunneling (e.g., VPNs, IPSec tunnels) for remote access and encrypted communication between network segments or external access points.<br>• Set up firewalls and access control lists |

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| passwords, outdated firmware).<br>• Describe risk mitigation strategies and incident response planning in IoT infrastructure.<br>• Interpret global data security and privacy regulations applicable to IoT such as ISO 27001, NIST IoT, and GDPR.<br>• Understand principles of performance testing in networks (e.g., throughput, latency, signal strength).<br>• Explain the need for simulating cyber-attack scenarios for security validation.<br>• Recognize best practices in documenting network design, device configuration, and compliance protocols. | (ACLs) to restrict inbound and outbound traffic, segment the network into zones (e.g., VLANs), and isolate critical IoT systems from general enterprise networks.<br>• Apply authentication mechanisms like X.509 certificates, token-based access, or pre-shared keys on devices, edge gateways, and cloud services to ensure trusted communication.<br>• Deploy intrusion detection/prevention systems (IDS/IPS) to monitor network traffic, identify threats, and configure alerts or auto-blocking mechanisms for suspicious activities.<br>• Implement secure OTA (Over-the-Air) update mechanisms to regularly update firmware, verify digital signatures, and avoid device compromise during update processes.<br>• Demonstrate the process to scan the network for vulnerabilities such as open ports, weak/default credentials, unpatched firmware, or unencrypted links, using security tools like Nmap, OpenVAS, or custom scripts.<br>• Employ corrective actions by applying firmware patches, changing passwords, disabling unused ports/services, and enforcing device hardening measures.<br>• Ensure regulatory compliance by mapping network policies and data flows to standards like ISO 27001 (information security), NIST IoT Framework, or GDPR (data privacy), and prepare for audit checks.<br>• Develop contingency and recovery plans such as redundant gateways, automated backup systems, failover mechanisms, and data recovery steps in case of attacks or hardware failures.<br>• Conduct performance testing under different network loads and record key indicators like packet loss and latency.<br>• Simulate cyber-threats such as spoofing or DDoS and observe network response.<br>• Document the full network architecture including IP plans, firewall rules, routing |

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|---|---|
| | tables, device configurations, encryption settings, and compliance mappings in standardized formats.<br>• Create technical documentation and user manuals for support teams, including step-by-step guides for setup, maintenance, security protocols, troubleshooting, and escalation processes. |
| **Classroom Aids:** | |
| Participant handbook, whiteboard, marker, notepad, pen, computer or laptop with internet connection, projector or large screen, speakers | |
| **Tools, Equipment and Other Requirements:** | |
| pfSense or OPNsense (open-source firewalls), OpenVPN (free VPN solution), OpenSSL (for encryption testing), Wireshark (security inspection), Nmap (network scanner), KeePass (free password manager), Cisco Packet Tracer, Kali Linux (free for penetration testing), Basic Router with VLAN support, Basic Laptop/PC (Windows/Linux) | |

## Module 6: Implement Effective Interaction at Workplace

***Mapped to NOS: TEL/N9103, v3.0***

**Terminal Outcomes:**

- Demonstrate effective communication skills in diverse workplace scenarios using appropriate modes and tools.
- Apply inclusive and respectful behaviour while collaborating with colleagues, supervisors, and persons with disabilities (PwDs).
- Resolve workplace conflicts and team coordination issues using constructive communication and mutual understanding.

| **Duration: 10:00** | **Duration: 10:00** |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Explain the importance of effective communication and collaboration in a professional setting.<br>• Describe appropriate communication modes (face-to-face, email, chat, video conferencing) for various workplace scenarios.<br>• Discuss protocols for escalating delays, reporting issues, and ensuring quality deliverables.<br>• Identify techniques to manage team dynamics and resolve conflicts constructively.<br>• Outline inclusive communication practices respecting gender, cultural diversity, and disabilities.<br>• Describe categories of disabilities and organisational accommodations for persons with disabilities (PwDs).<br>• Recognise policies and schemes promoting workplace inclusion and accessible work environments.<br>• Explain the impact of unconscious bias and the importance of respectful workplace behaviour. | • Demonstrate effective verbal and written communication with supervisors, peers, and clients in simulated workplace tasks.<br>• Role-play situations to clarify task expectations, report delays, and provide feedback in a professional manner.<br>• Use appropriate communication tools (e.g., email, chat, video conferencing) based on workplace scenarios.<br>• Collaborate with team members to plan tasks and resolve bottlenecks while maintaining mutual respect and alignment with team goals.<br>• Display respectful behaviour in resolving interpersonal and operational conflicts.<br>• Facilitate inclusive group discussions that accommodate diverse team members including PwDs.<br>• Apply inclusive language and demonstrate culturally and socially sensitive communication practices.<br>• Role-play to assist a team member with a disability through a mock task scenario ensuring accessibility and inclusion.<br>• Exhibit professionalism and fairness while interacting with individuals of different backgrounds, identities, or abilities. |

| Classroom Aids |
| --- |
| Training Kit (Trainer Guide, Presentations), Whiteboard, Markers, Notebooks, Pens, Laptop/Computer with an Internet connection, Speakers, Projector or Large screen. |
| **Tools, Equipment and Other Requirements** |
| Sample of escalation matrix |

## Module 7: Manage Work, Resource and Safety at Workplace

***Mapped to NOS: TEL/N9104, v3.0***

**Terminal Outcomes:**

- Evaluate individual and team performance in alignment with defined quality and productivity standards.
- Implement workplace safety protocols and environmentally sustainable practices in daily operations.
- Facilitate continuous learning, skill development, and problem-solving within the team to enhance overall effectiveness.

| **Duration: 10:00** | **Duration: 10:00** |
|---|---|
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| • Explain the importance of continuous learning, self-direction, and team skill development for professional growth.<br>• Describe methods to identify training needs and foster team participation in upskilling initiatives.<br>• Illustrate logical thinking techniques and problem-solving frameworks applicable to operational challenges.<br>• Explain performance standards, task prioritisation, and quality assurance systems used in the workplace.<br>• Describe organisational safety policies, types of workplace hazards, and applicable emergency protocols.<br>• Explain practices that promote mental well-being and respectful workplace culture.<br>• Describe energy, water, and material conservation practices, including paperless and digital-first systems.<br>• Identify preventive maintenance and reporting practices for tools, equipment, and digital resources.<br>• Explain the relevance of ESG (Environmental, Social, and Governance) principles in workplace operations. | • Plan and update individual or team learning schedules based on skill gap assessments.<br>• Facilitate participation in knowledge-sharing, training, and cross-functional learning initiatives.<br>• Demonstrate logical analysis and root cause identification for workplace challenges.<br>• Propose actionable solutions to common operational and team-related problems.<br>• Apply task management and prioritisation strategies to organise individual and team workflows.<br>• Use checklists and monitoring systems to track task completion, accuracy, and quality standards.<br>• Display effective delegation techniques and scheduling for optimal productivity.<br>• Conduct safety briefings and demonstrate correct responses to common workplace risks or incidents.<br>• Report hazards, health issues, and equipment malfunctions using standard reporting templates.<br>• Promote inclusive and mental wellness practices through team discussions or |

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| | feedback mechanisms.<br>• Implement environmentally responsible actions like switching to digital records and optimising resource use.<br>• Perform regular upkeep of digital tools and equipment following routine maintenance guidelines. |
| **Classroom Aids** | |
| Training Kit (Trainer Guide, Presentations), Whiteboard, Markers, Notebooks, Pens, Laptop/Computer with an Internet connection, Speakers, Projector or Large screen. | |
| **Tools, Equipment and Other Requirements** | |
| Maintenance Log Sheets, Safety Signage Posters, Fire Extinguisher, First Aid Kit, Feedback and Evaluation Forms, etc. | |

## Module 8: DGT/VSQ/N0102: Employability Skills (60 Hours)

| **Mandatory Duration:** 60:00 | | | |
|---|---|---|---|
| **Location: On-Site** | | | |
| **S.No.** | **Module Name** | **Key Learning Outcomes** | **Duration (hours)** |
| 1 | **Introduction to Employability Skills** | • Discuss the Employability Skills required for jobs in various industries<br>• List different learning and employability related GOI and private portals and their usage | 1.5 Hours |
| 2 | **Constitutional values - Citizenship** | • Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen.<br>• Show how to practice different environmentally sustainable practices. | 1.5 Hours |
| 3 | **Becoming a Professional in the 21st Century** | • Discuss the importance of relevant 21st-century skills.<br>• Exhibit 21st-century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn, etc., in personal or professional life.<br>• Describe the benefits of continuous learning. | 2.5 Hours |
| 4 | **Basic English Skills** | • Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone<br>• Read and interpret text written in basic English<br>• Write a short note/paragraph / letter/e -mail using basic English | 10 Hours |
| 5 | **Career Development & Goal Setting** | • Create a career development plan with well-defined short- and long-term goals | 2 Hours |
| 6 | **Communication Skills** | • Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.<br>• Explain the importance of active listening for effective communication | 5 Hours |

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|---|---|---|---|
| | | • Discuss the significance of working collaboratively with others in a team | |
| 7 | **Diversity & Inclusion** | • Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD.<br>• Discuss the significance of escalating sexual harassment issues as per the POSH Act. | 2.5 Hours |
| 8 | **Financial and Legal Literacy** | • Outline the importance of selecting the right financial institution, product, and service<br>• Demonstrate how to carry out offline and online financial transactions safely and securely<br>• List the common components of salary and compute income, expenditure, taxes, investments, etc.<br>• Discuss the legal rights, laws, and aids | 5 Hours |
| 9 | **Essential Digital Skills** | • Describe the role of digital technology in today's life<br>• Demonstrate how to operate digital devices and use the associated applications and features safely and securely<br>• Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely<br>• Create sample Word documents, excel sheets and presentations using basic features<br>• Utilise virtual collaboration tools to work effectively | 10 Hours |
| 10 | **Entrepreneurship** | • Explain the types of entrepreneurship and enterprises<br>• Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan<br>• Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per the requirement<br>• Create a sample business plan for the selected business opportunity | 7 Hours |
| 11 | **Customer Service** | • Describe the significance of analysing different types and needs of customers<br>• Explain the significance of identifying customer needs and responding to them in a professional manner. | 5 Hours |

| | | | |
|---|---|---|---|
| | | • Discuss the significance of maintaining hygiene and dressing appropriately | |
| 12 | **Getting Ready for Apprenticeship & Jobs** | • Create a professional Curriculum Vitae (CV)<br>• Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals, respectively.<br>• Discuss the significance of maintaining hygiene and confidence during an interview.<br>• Perform a mock interview.<br>• List the steps for searching and registering for apprenticeship opportunities | 8 Hours |

| **List of Tools & Equipment for Employability Skills** | | |
|---|---|---|
| **Sl No.** | **Name of the Equipment** | **Quantity** |
| 1. | Computer (PC) with latest configurations – and Internet connection with standard operating system and standard word processor and worksheet software (Licensed)<br>(all software should either be the latest version or one/two versions below) | As required |
| 2. | UPS | As required |
| 3. | Scanner cum Printer | As required |
| 4. | Computer Tables | As required |
| 5. | Computer Chairs | As required |
| 6. | LCD Projector | As required |
| 7. | White Board 1200mm x 900mm | As required |
| Note: Above Tools &Equipment not required, if Computer LAB is available in the institute. | | |

## Module 9: On-the-Job Training

***Mapped to QP: TEL/Q6216, v3.0***

| Mandatory Duration: 150:00 | Recommended Duration: 00:00 |
|---|---|
| **Location: On-Site** | |

- Demonstrate proper handling and basic configuration of IoT infrastructure components such as edge devices, gateways, cloud connectors, and sensor networks.
- Set up and validate network connectivity between IoT devices, edge nodes, and cloud platforms using industry-standard protocols.
- Perform pre-deployment checks to ensure IoT ecosystem readiness, aligned with project-specific architecture and Standard Operating Procedures (SOPs).
- Apply basic troubleshooting techniques to identify and escalate issues related to device onboarding, data transmission, or access control.
- Use IoT platforms and dashboards to monitor telemetry data, device health status, and edge-to-cloud communication metrics.
- Conduct routine checks on device provisioning, resource utilization, and implement decommissioning of obsolete or inactive IoT nodes.
- Assist in deploying, monitoring, and disabling IoT applications or services under guidance, ensuring compliance with security and performance standards.
- Perform basic log and alert management for IoT infrastructure, including the cleanup of outdated events, snapshots, or diagnostic files.
- Track and maintain the inventory of IoT assets using structured templates or native tools, including hardware identifiers, firmware versions, and license details.
- Demonstrate effective communication with technical leads and stakeholders regarding deployment progress, incident reports, and system updates.
- Apply energy-efficient IoT design principles, such as device sleep cycles, low-power communication modes, and workload scheduling.
- Dispose of deprecated configurations, outdated firmware, or non-compliant devices in accordance with organizational policies and security standards.
- Exhibit emotional intelligence, active listening, and professionalism during team interactions, vendor meetings, and client engagements.
- Role-play professional support scenarios, including incident handling, client queries, and SLA-related issue resolution in IoT deployments.
- Respond constructively to design reviews, solution evaluations, and feedback from architects or project sponsors.
- Document system errors, connectivity disruptions, or deployment delays using ticketing platforms or predefined reporting formats.

# Annexure

## Trainer Requirements

| Trainer Prerequisites | | | | | | |
|---|---|---|---|---|---|---|
| **Minimum Educational Qualification** | **Specialization** | **Relevant Industry Experience** | | **Training Experience** | | **Remarks** |
| | | ***Years*** | ***Specialization*** | ***Years*** | ***Specialization*** | |
| Graduate | ECE, Electrical Engineering, CS, IT, Mechatronics, Instrumentation, or related discipline | 1 | Designing and deploying IoT-based solutions | 1 | IoT, embedded systems, or networking domains | Eligible for ToT program |

| Trainer Certification | |
|---|---|
| **Domain Certification** | **Platform Certification** |
| Certified for Job Role "**IoT Installation Solution Architect"**, "TEL/Q6106", version 3.0". Minimum accepted score is 80%. | Certified for Job Role **"Trainer (VET and Skills)", "MEP/Q2601", version 3.0**". Minimum accepted score as per MEPSC guidelines is 80%. |

## Assessor Requirements

| Assessor Prerequisites | | | | | | |
|---|---|---|---|---|---|---|
| **Minimum Educational Qualification** | **Specialization** | **Relevant Industry Experience** | | **Training Experience** | | **Remarks** |
| | | **Years** | **Specialization** | **Years** | **Specialization** | |
| Graduate | ECE, Electrical Engineering, CS, IT, Mechatronics, Instrumentation, or related discipline | 4 | Designing and deploying IoT-based solutions | 5 | IoT, embedded systems, or networking domains | Eligible for ToT program |

| Assessor Certification | |
|---|---|
| **Domain Certification** | **Platform Certification** |
| Certified for Job Role "**IoT Installation Solution Architect"**, "TEL/Q6106", version 3.0". Minimum accepted score is 80%. | Certified for Job Role **"Assessor (VET and Skills)", "MEP/Q2701", version 3.0**". Minimum accepted score as per MEPSC guidelines is 80%. |

## Trainer Requirements - Employability Skills (60 hours)

| Trainer Pre-requisites | | | | | | |
|---|---|---|---|---|---|---|
| Minimum Educational Qualification | **Specialisation** | **Relevant Industry Experience** | | **Training Experience** | | **Remarks** |
| | | ***Years*** | ***Specialisation*** | ***Years*** | ***Specialisation*** | |
| Graduate/CITS | Any discipline | | | 2 | Teaching experience | Prospective ES trainer should:<br>• have good communication skills<br>• be well versed in English<br>• have digital skills<br>• have attention to detail<br>• be adaptable<br>• have willingness to learn |
| Current ITI trainers | Employability Skills Training (3 days full-time course done between 2019-2022) | | | | | |
| Certified current EEE trainers (155 hours) | from Management SSC (MEPSC) | | | | | |
| Certified Trainer | Qualification Pack: Trainer (MEP/Q0102) | | | | | |

| **Trainer Certification** | |
|---|---|
| **Domain Certification** | **Platform Certification** |
| Certified in 90-hour Employability NOS (2022), with a minimum score of 80%<br>OR<br>Certified in 120-hour Employability NOS (2022), with a minimum score of 80% | NA |

## Assessment Strategy

1. Assessment System Overview:
    - Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
    - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
    - Assessment agency deploys the ToA certified Assessor for executing the assessment
    - SSC monitors the assessment process & records

2. Testing Environment:
    - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
    - Check the duration of the training.
    - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
    - If the batch size is more than 30 for STT and/ or 50 in RPL, then there should be 2 Assessors.
    - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
    - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
    - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
    - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:
    - Question papers created by the SME verified by the other subject Matter Experts
    - Questions are mapped with NOS and PC
    - Question Bank covers all performance criteria (PC) under each NOS of a QP. Each question can cover one or more PCs. Which means that every question needs to be mapped with PC.
    - There are sufficient number of questions in the question bank, where multiple questions are available for each PC. Typically, the number of questions should be 3 to 4 times the number of PCs.
    - Each question bank has around 150 to 200 questions.
    - Each question has a difficulty level mentioned against it and the question bank has a good mix of easy, medium and difficult questions. So, for example out of 200 Questions the proportion could be 25 difficult/ hard, 75 Medium and 100 Easy level questions.
    - Other than the Multiple-choice question (MCQ) few questions are created for Practical and viva too. For e.g., for 150-200 QB contains approximately 10-15 Viva & 10-15 practical questions.
    - Assessor must be ToA certified & trainer must be ToT Certified
    - Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:
    - Time-stamped & geotagged reporting of the assessor from assessment location
    - Center photographs with signboards and scheme specific branding
    - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
    - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
    - Surprise visit to the assessment location
    - Random audit of the batch
    - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
    - Hard copies of the documents are stored
    - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage
    - Soft copies of the documents & photographs of the assessment are stored in the Hard Drives

# References

## Glossary

| | |
|---|---|
| **Sector** | Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests. |
| **Sub-sector** | Sub-sector is derived from a further breakdown based on the characteristics and interests of its components. |
| **Occupation** | Occupation is a set of job roles, which perform similar/ related set of functions in an industry. |
| **Job role** | Job role defines a unique set of functions that together form a unique employment opportunity in an organisation. |
| **Occupational Standards (OS)** | OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts. |
| **Performance Criteria (PC)** | Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task. |
| **National Occupational Standards (NOS)** | NOS are occupational standards which apply uniquely in the Indian context. |
| **Qualifications Pack (QP)** | QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code. |
| **Unit Code** | Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N' |
| **Unit Title** | Unit title gives a clear overall statement about what the incumbent should be able to do. |
| **Description** | Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for. |

| | |
|---|---|
| **Scope** | Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required. |
| **Knowledge and Understanding (KU)** | Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard. |
| **Organisational Context** | Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility. |
| **Technical Knowledge** | Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities. |
| **Core Skills/ Generic Skills (GS)** | Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles. |
| **Electives** | Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives. |
| **Options** | Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options. |

## Acronyms and Abbreviations

| | |
|---|---|
| **NOS** | National Occupational Standard(s) |
| **NSQF** | National Skills Qualifications Framework |
| **QP** | Qualifications Pack |
| **TVET** | Technical and Vocational Education and Training |

| | |
|---|---|
| **PC** | Performance Criteria |
| **SSC** | Sector Skill Council |
| **AA** | Assessment Agency |
| **ToT** | Training of Trainers |
| **ToA** | Training of Assessors |
| **VTP** | Vocational Training Partner |
| **TC** | Training Center |
| **SME** | Subject Matter Expert |