



# Model Curriculum

**QP Name: IoT Installation Solution Architect**

**QP Code: TEL/Q6216**

**QP Version: 2.0**

**NSQF Level: 5**

**Model Curriculum Version: 2.0**

Telecom Sector Skill Council  
Estel House, 3rd Floor, Plot No:- 126, Sector 44  
Gurugram, Haryana 122003

# Table of Contents

Training Parameters .....	2
Program Overview .....	3
Training Outcomes.....	3
Compulsory Modules.....	3
Module Details .....	5
Module 1: Role and Responsibilities of IoT Installation Solution Architect .....	5
Module 2: Carry Out Market Analysis on Application of IoT.....	6
Module 3: Supervise the installation activities of IoT devices and systems .....	8
Module 4: Carry out Acceptance Testing and Site Optimization.....	10
Module 5: Process of implementing Effective communication and coordination at work.....	12
Module 6: Process of managing work and resources, and ensure health and safety at the work.....	14
Module 7: On-the-Job Training .....	17
Module 8: DGT/VSQ/N0102 Employability Skills (60 hours) .....	18
Annexure.....	20
Trainer Requirements .....	20
Assessor Requirements.....	21
Assessment Strategy.....	24
References .....	25
Glossary.....	25
Acronyms and Abbreviations .....	26

## 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	<p>Completed 2nd year of 3-year/ 4-years UG  <b>OR</b>  Pursuing 2nd year of 3-year/ 4-years UG and continuing education  <b>OR</b>  Completed 2nd year of diploma (after 12th)  <b>OR</b>  Pursuing 2nd year of 2-year diploma after 12th with No Experience required  <b>OR</b>  12th pass with 2 years of any combination of NTC/NAC/CITS or equivalent with No Experience required  <b>OR</b>  Completed 3-year diploma after 10th  <b>OR</b>  12th Grade pass with 1-year of NTC/NAC  <b>OR</b>  Completed 1st year of 3-year/ 4-years UG with 1-year relevant experience  <b>OR</b>  12th Grade pass with 2-year relevant experience  <b>OR</b>  10th Grade pass with 4-year relevant experience  Previous relevant Qualification of NSQF Level 4 with 3-year relevant experience</p>
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	30/06/2022
Next Review Date	30/06/2025
NSQC Approval Date	30/06/2022
Version	2.0
Model Curriculum Creation Date	30/06/2022

Model Curriculum Valid Up to Date	30/06/2025
Model Curriculum Version	2.0
Minimum Duration of the Course	630 Hours
Maximum Duration of the Course	630 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.

- Implement steps to assess industry trends and collect information on leading IoT devices dealers.
- Analyse current services and evaluate requirement for new IoT services.
- Prepare cost workout for IoT solution implementation.
- Perform pre-installation activities.
- Manage IoT devices and system installation executed by technicians and check routing for connected devices.
- Implement steps to perform acceptance testing (AT) of the installed IoT devices based on the business model and optimization of devices.
- Prepare required reports/logs.
- Discuss how to plan work effectively, implement safety practices and optimize use of resources.
- Demonstrate how to communicate, develop interpersonal skills and become gender and Person with Disability (PwD) sensitive.

## 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
<b>Bridge Module</b>	<b>20:00</b>	<b>10:00</b>	<b>00:00</b>	-	<b>30:00</b>
Module 1: Role and Responsibilities of IoT Installation Solution Architect	20:00	10:00	00:00	-	30:00
<b>TEL/N6260 – Perform Market Analysis on Application of IoT NOS Version No. 1.0 NSQF Level 5</b>	<b>60:00</b>	<b>80:00</b>	<b>40:00</b>	-	<b>180:00</b>
Module 2: Carry Out Market Analysis on Application of IoT	60:00	80:00	40:00	-	180:00
<b>TEL/N6261 – Supervise in installation of IoT devices and system NOS Version No. 1.0 NSQF Level 5</b>	<b>40:00</b>	<b>70:00</b>	<b>40:00</b>	-	<b>150:00</b>
Module 3: Supervise the installation activities of IoT devices and system	40:00	70:00	40:00	-	150:00

<b>TEL/N6262 – Administer acceptance testing and site optimization activities</b> <b>NOS Version No. 1.0</b> <b>NSQF Level 5</b>	<b>40:00</b>	<b>70:00</b>	<b>40:00</b>	<b>-</b>	<b>150:00</b>
Module 4: Carry out acceptance testing and site optimization	40:00	70:00	40:00	-	150:00
<b>TEL/N9103: Implement effective interaction at work</b> <b>NOS Version-1.0</b> <b>NSQF Level-5</b>	<b>10:00</b>	<b>20:00</b>	<b>00:00</b>	<b>-</b>	<b>30:00</b>
Module 4: Communication and Interpersonal skills	10:00	20:00	00:00	-	30:00
<b>TEL/N9104: Manage work, resources, and safety at workplace</b> <b>NOS Version-1.0</b> <b>NSQF Level-5</b>	<b>10:00</b>	<b>20:00</b>	<b>00:00</b>	<b>-</b>	<b>30:00</b>
Module 5: Working effectively and optimizing resources for a safe workplace	10:00	20:00	00:00	-	30:00
DGT/VSQ/N0102 Employability Skills (60 Hours)	60:00	00:00	00:00	00:00	60:00
<b>Total Duration</b>	<b>240:00</b>	<b>270:00</b>	<b>120:00</b>	<b>00:00</b>	<b>630:00</b>

# Module Details

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

### Terminal Outcomes:

- Identify the role and responsibilities of IoT Installation Solution Architect.
- Explain the scope of work for IoT Installation Solution Architect.

<b>Duration: 20:00</b>	<b>Duration: 10:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the role and responsibilities of IoT Installation Solution Architect.</li> <li>• Describe the various electrical and electronic components.</li> <li>• Discuss required documentation in organization and its importance.</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the standard operating procedures (SOP) to be followed for use of tools and equipment and for performing service and minor repairs.</li> </ul> <p>Describe the safety, health and environmental policies and regulations for the work place as well as for telecom sites in general.</p>
<b>Classroom Aids:</b>	
Whiteboard and markers, chart paper and sketch pens, LCD Projector and Laptop for presentations	
<b>Tools, Equipment and Other Requirements</b>	
PCs/Laptops, Internet with Wi-Fi (Min 2 Mbps Dedicated), documents of standard operating procedures, code of conduct, checklists, schedules, tools and equipment, status report	

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

### Mapped to TEL/N6260 v1.0

#### Terminal Outcomes:

- Assess industry trends
- Collate data on leading suppliers of IoT devices
- Analyse existing services and derive potential need for a new IoT services
- Prepare a budget (cost workout) for implementing the IoT solution in the business

<b>Duration: 60:00</b>	<b>Duration: 80:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Discuss how to gather and evaluate data related to industry trends/technologies and their impact from different reliable sources.</li> <li>• List the products, customers, competitors and landscapes to confirm IoT devices preferences.</li> <li>• Explain how to collect information about latest industry trends and company’s requirements.</li> <li>• Discuss how to find out the logistics operations and approach businesses by reanalysing the methods.</li> <li>• Explain how to perform analysis of IoT application for the existing business model and the benefits which can be accomplished in the value chain.</li> <li>• Discuss the importance of keeping transparency in customer transactions.</li> <li>• Describe the life cycle and working of IoT device.</li> <li>• Discuss machines performance to be supplied to chain and logistics operations.</li> <li>• Explain the connection of IoT with robotics and artificial intelligence.</li> <li>• Describe sensors along with their types, various data formats and actuators.</li> <li>• Discuss different security mechanisms and their features.</li> <li>• Explain the importance of awareness of M2M communication.</li> <li>• Describe RF environments, vertical/horizontal obstruction.</li> <li>• Discuss the effect of metal body on sensors and RF environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement steps to update standards and practices of emerging IoT technologies regularly.</li> <li>• Perform classification of industry types for technology implementation based on usage.</li> <li>• Demonstrate how to evaluate the geographical features by using different parameters of identification and map reading.</li> <li>• Employ ways to gather the required range of access technology and frequency band based on site/customer specifications.</li> <li>• Prepare a list of foremost suppliers and key solution providers.</li> <li>• Implement steps for supplier assessment on the basis of solution performance, geographic availability, support services and security, etc.</li> <li>• Employ proper techniques to recognize different ways for business operation with continuously varying real-time data.</li> <li>• Employ ways to confirm that machines providing real-time data execute based on requirements/specifications.</li> <li>• Demonstrate how to evaluate current and potential tools for business strategies enhancement required to sell and integrate IoT devices.</li> <li>• Implement ways for key optimization business requirements assessment to choose an IoT solution.</li> <li>• Demonstrate how to assess potential of stakeholders and customers for the business.</li> </ul>



	<ul style="list-style-type: none"> <li>• Employ proper methods to evaluate the use of sensors and other IoT devices within different domains and existing business model.</li> <li>• Implement ways to evaluate range of tracking business processes and customer experience (CX) improvement as per latest IoT devices application from diverse customers.</li> <li>• Demonstrate how to recommend an appropriate IoT solution as per requirements/specifications and collected market data for the business model.</li> <li>• Implement steps to create a connectivity diagram of the mandatory devices to the application server for its requirements evaluation.</li> <li>• Demonstrate how to prepare costs workouts for IoT devices implementation/integration and services into the existing business and operations in progress.</li> <li>• Perform classification of involved implementation/integration costs such as hardware and software.</li> <li>• Implement steps to make a descriptive budgets/costs report and discuss the same with the authorized personnel to get a signoff before IoT solution implementation.</li> </ul>
<b>Classroom Aids:</b>	
Laptop, white board, marker, projector	
<b>Tools, Equipment and Other Requirements</b>	
IoT devices, sensors, costs reports, documents related to industry trends, etc.	

## Module 3: Supervise in Installation IoT Devices and System

### Mapped to TEL/N6261 v1.0

#### Terminal Outcomes:

- Advise the team on pre-installation activities
- Inspect routing for connected devices

<b>Duration: 40:00</b>	<b>Duration: 70:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• List the different types of micro-processor boards required for integration based on present set up needed on site.</li> <li>• Discuss required software/hardware into IoT solution for attaining optimal output.</li> <li>• Explain the working procedure including Data Collection, Device Integration, etc.</li> <li>• Discuss how to recognize the devices application used to collect, send and act on data.</li> <li>• List the frameworks used in IoT including Amazon Web Services (AWS) IoT , Arm Mbed IoT, etc.</li> <li>• Explain IoT architecture including hardware setup on breadboard or preboard.</li> <li>• Describe different smart devices categories such as accelerometers-temperature sensors, etc. along with required features like Connectivity, Analysing, etc.</li> <li>• Explain IoT platforms that connect sensors and devices, controls software communication protocol and hardware giving security.</li> <li>• Discuss use cases of IoT in various industries, IoT markets along with market analysis procedure.</li> <li>• Describe connectivity technologies such as Infrared, etc. and networking protocols such as MQTT, etc.</li> <li>• Discuss radio planning and tools being used such as Aircom Asset Mentum Planet, etc.</li> <li>• Explain optimization engines and network optimization to analyse quality and interference performance.</li> <li>• Describe network dimensioning to identify equipment requirements, coverage capacities, quality etc.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to examine the basic connectivity, network and communication protocols.</li> <li>• Implement steps to inspect basic elements availability needed for installation, set up and connection of the devices.</li> <li>• Demonstrate how to classify the embedded systems, communication hardware and inspect their efficiency for collecting and tracking data.</li> <li>• Perform classification of the microcontrollers required for installation along with their quantity and application in the existing business model.</li> <li>• Demonstrate how to examine the working of different sensors, gyro meter, accelerometer, video surveillance cameras etc. along with their need for the existing business model.</li> <li>• Perform sensors fitment to the business model application assessment.</li> <li>• Employ proper ways to assess advanced features implementation such as Data Distribution Service (DDS), Advanced Message Queuing Protocol (AMQP), etc.</li> <li>• Implement ways to examine short- and long-range protocols application including 3G/4G, 6LowPAN, etc.</li> <li>• Demonstrate how to classify communication protocols application in IoT with the ones needed for existing specification.</li> <li>• Implement steps to confirm fitting of requirements to IoT architecture along with mapping to the business need.</li> </ul>

<b>Classroom Aids:</b>	
Whiteboard and markers, chart paper and sketch pens, LCD Projector and Laptop for presentations	
<b>Tools, Equipment and Other Requirements</b>	
Micro-processor boards, IoT devices, sensors, etc.	

## Module 4: Administer Acceptance Testing and Site Optimization Activities

### Mapped to TEL/N6262 v1.0

#### Terminal Outcomes:

- Supervise acceptance testing (AT) of the integrated IoT solution in the business
- Monitor optimization of devices
- Prepare reports and logs

<b>Duration: 40:00</b>	<b>Duration: 70:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Explain the importance of using personal protection equipment as per organizational protocol.</li> <li>• Discuss electrical safety compliances and EMI/EMC hygiene requirements.</li> <li>• Discuss the risk and impact of not following procedures/work instructions.</li> <li>• Describe escalation matrix for reporting identified incidents, troubles and/ or emergencies.</li> <li>• Discuss equipment weight and size requirement, spare management, repair and return procedure for faulty equipment.</li> <li>• Explain the importance of maintaining records and implications of non-maintenance of the same.</li> <li>• Discuss the benefits of IoT.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement steps to find the requirements to perform acceptance testing for the executed resolution.</li> <li>• Demonstrate how to validate all installed sensors and other IoT devices based on business model.</li> <li>• Implement steps to carry out testing as per expected output from requirement analysis or user specifications.</li> <li>• Demonstrate how to examine system settings, alarms and nodal functionality along with identifying any faults.</li> <li>• Employ proper ways to confirm correct functioning of test tools.</li> <li>• Demonstrate how to assess system test efficiency for IoT application to measure baseline noises, movements and noise sensitivity in order to confirm its effectiveness in the business model.</li> <li>• Implement steps to report test results to site engineers/authorized personnel for confirming IoT solution effectiveness.</li> <li>• Demonstrate how to examine the strength of the existing network security and check its resistance to hacking or any other attacks.</li> <li>• Perform security testing of integrated IoT devices against outsider invasion or other threats.</li> <li>• Implement steps to authenticate IoT solution integrity and data security level of IoT devices in order to take required actions.</li> <li>• Demonstrate how to provide assistance in optimization by carrying out basic walk tests based on engineers’ guidance in order to achieve optimal results.</li> </ul>

	<ul style="list-style-type: none"> <li>• Implement steps to inspect existing network traffic and data being used by IoT devices and improve data transfer and monitoring by applying optimization techniques.</li> <li>• Demonstrate how to detect and control IoT traffic from installed devices and its services.</li> <li>• Implement steps for device integration optimization to the IoT application(s) to attain projected results even in case of higher volume of traffic.</li> <li>• Demonstrate how to use effective mechanism to improve the control plane messaging from IoT devices in order to attain IoT devices/network optimization.</li> <li>• Implement steps to evaluate site safety and emergency readiness compliance as per organisation.</li> <li>• Employ proper ways to work while taking environmental conditions and hazards like Earth Potential Rise (EPR) into consideration.</li> <li>• Demonstrate how to carry out data transfer over a network without any human-to-human or human-to-computer communication.</li> <li>• Implement steps to document all data/monitoring events from sensors, test results in prescribed online logs/formats along with their timely maintenance and reporting them to authorized personnel.</li> <li>• Demonstrate how to examine installation and functioning of all active/passive equipment along with maintaining their status in a log book.</li> <li>• Implement steps to verify validation of all records in order to find any anomalies in working of IoT devices.</li> </ul>
--	---

**Classroom Aids:**

Whiteboard and markers, chart paper and sketch pens, LCD Projector and Laptop for presentations

**Tools, Equipment and Other Requirements**

Personal protection equipment (PPE), escalation matrix, logs/formats, prescribed reports, sensors, IoT devices, test tools, etc.

## Module 5: Communication and Interpersonal skills

Mapped to TEL/N9103 v1.0

### Terminal Outcomes:

- Communicate effectively and develop interpersonal skills
- Develop sensitivity towards differently abled people.

<b>Duration:</b> 10:00	<b>Duration:</b> 20:00
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>• Identify roles and responsibilities and understand organisation’s policies.</li> <li>• List organisational guidelines for dress code, time schedules, language and other soft skill aspects.</li> <li>• List the different methods of communication.</li> <li>• Explain the importance of effective communication and interpersonal skills.</li> <li>• Analyse the common reasons for interpersonal conflicts and ways of managing them effectively.</li> <li>• Identify types of information needed by colleagues and its importance.</li> <li>• Identify the need for implementing standards, guidelines and practices pertaining to gender sensitivity, including work ethics and workplace etiquettes.</li> <li>• Explain the work ethics, workplace etiquettes as well as standards and guidelines for all genders and PwD.</li> <li>• List health and safety requirements for persons with disability.</li> <li>• List the rights, duties and benefits available at workplace for person with disability.</li> <li>• Identify the process of recruiting people with disability for a specific job.</li> <li>• Analyse the specific ways to help persons with disability overcome the challenges.</li> </ul>	<ul style="list-style-type: none"> <li>• Demonstrate how to interact with superiors in terms of escalating problems, reporting work completion and receiving feedback.</li> <li>• Apply team building skills to assist colleagues in maximizing effectiveness and efficiency of carrying out tasks.</li> <li>• Demonstrate appropriate communication skills and etiquettes while interacting with others.</li> <li>• Resolve conflicts with colleagues and adhere to commitment.</li> <li>• Demonstrate ideal workplace ethics while interacting with colleagues with respect to sharing information, co-ordinating work and showing respect.</li> <li>• Follow organisation’s policy for working with team members.</li> <li>• Illustrate importance of team goals over individual goals.</li> <li>• Use inclusive language irrespective of the gender/ disability of the person.</li> <li>• Demonstrate appropriate behaviour towards all genders and differently abled people.</li> </ul>
<b>Classroom Aids:</b>	
White board/ black board marker / chalk, duster, computer or Laptop attached to LCD projector	
<b>Tools, Equipment and Other Requirements</b>	
Sample of escalation matrix, organisation structure.	

## Module 6: Working effectively and optimizing resources for a safe workplace

Mapped to NOS TEL/N9104 v1.0

### Terminal Outcomes:

- Plan work effectively, implement safety practices and optimize use of resources

<b>Duration: 10:00</b>	<b>Duration: 20:00</b>
<b>Theory – Key Learning Outcomes</b>	<b>Practical – Key Learning Outcomes</b>
<ul style="list-style-type: none"> <li>List the importance of following the standard operating procedures of the company w.r.t. privacy, confidentiality and security.</li> <li>List the key performance indicators for the new tasks.</li> <li>Identify the opportunities for team building workshops and motivational trainings.</li> <li>List and explain work requirements to be followed by the team.</li> <li>Identify the issues with and handle them.</li> <li>Discuss correct way to show emotions at workplace.</li> <li>Describe the importance of timely completion of tasks.</li> <li>Explain the importance of escalation matrix.</li> <li>Explain the importance of providing and receiving feedback constructively.</li> <li>Analyse ways to optimize usage of resources.</li> <li>List the importance, cause and effect of greening of jobs.</li> <li>Identify different types of hazards such as illness, accidents, fires etc.</li> <li>List the causes of risks and potential hazards in a work area and ways to prevent them.</li> <li>List the steps to report accident and health related issues as per SOP.</li> <li>Explain the concept of waste management.</li> <li>List the methods of waste disposal.</li> <li>Identify the different categories of waste for the purpose of segregation.</li> <li>Differentiate between recyclable and non-recyclable waste.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate techniques to save on cost and time.</li> <li>Demonstrate routine cleaning of tools, equipment and machines to ensure team follows the same.</li> <li>Use resources such as water judiciously.</li> <li>Check for malfunctions in equipment and report as per SOP.</li> <li>Report any breaches in safety and security to the concerned person.</li> <li>Illustrate ways to keep work area clean such as mopping spills and leaks, cleaning grease stains etc.</li> <li>Check for spills and leaks and plug the same.</li> <li>Demonstrate segregation of types of hazardous waste.</li> <li>Illustrate steps to minimise waste.</li> <li>Illustrate proper waste disposal procedures and how to dispose-off hazardous waste.</li> <li>Illustrate ways to find exact cause of a problem and validate the same in case done by a team member.</li> </ul>

<ul style="list-style-type: none"> <li>List electronic waste disposal procedures.</li> </ul>	
<b>Classroom Aids:</b>	
White board/ black board marker / chalk, duster, computer or Laptop attached to LCD projector	
<b>Tools, Equipment and Other Requirements</b>	
Personal Protection Equipment: safety glasses, head protection, rubber gloves, safety footwear, warning signs and tapes, fire extinguisher and first aid kit	



## Module 7: On-the-Job Training

### Mapped to IoT Installation Solution Architect (TEL/Q6216 v1.0)

<b>Mandatory Duration:</b> 120:00	<b>Recommended Duration:</b> 00:00
<b>Location:</b> On-Site	
<b>Terminal Outcomes</b>	
<ol style="list-style-type: none"> <li>1. Perform steps for surveying sites for layout, planning and designing for installation.</li> <li>2. Demonstrate deployment of IoT sensors/devices, IoT gateways in IoT ecosystem.</li> <li>3. List some of the best IoT solution for the business model.</li> <li>4. Collate the data pertaining to the changing technologies in the industry trends from various reliable sources.</li> <li>5. Evaluate the selected supplier.</li> <li>6. Test the IoT devices for real-time data optimization as per requirements and specifications.</li> <li>7. Monitor and improvise the business strategies for selling and integrating IoT devices.</li> <li>8. Test the sensors and other IoT devices within different fields like agriculture, etc.</li> <li>9. Perform checks for basic connectivity, network and communication protocols.</li> <li>10. Evaluate the implementation of advanced features including Data Distribution Service (DDS), Advanced Message Queuing Protocol (AMQP), Constrained Application Protocol (CoAP), etc.</li> <li>11. Use sensors, actuators and embedded microcontrollers.</li> <li>12. Record warning notifications and diagnosis of equipment provided by predictive analytics software and analyse these to perform maintenance.</li> <li>13. Troubleshoot and fix the faults on site.</li> <li>14. Run test security of integrated IoT devices against outsider invasion or other threats.</li> <li>15. Record data in various formats (PDF/XML/HTML/DOC) to generate required diagnostic and other reports.</li> </ol>	

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

### Mapped to IoT Installation Solution Architect

<b>Mandatory Duration: 60:00</b>			
<b>Location: On-Site</b>			
<b>S.No.</b>	<b>Module Name</b>	<b>Key Learning Outcomes</b>	<b>Duration (hours)</b>
1.	Introduction to Employability Skills	<ul style="list-style-type: none"> <li>Discuss the Employability Skills required for jobs in various industries.</li> <li>List different learning and employability related GOI and private portals and their usage.</li> </ul>	1.5
2.	Constitutional values - Citizenship	<ul style="list-style-type: none"> <li>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.</li> <li>Show how to practice different environmentally sustainable practices.</li> </ul>	1.5
3.	Becoming a Professional in the 21st Century	<ul style="list-style-type: none"> <li>Discuss importance of relevant 21st century skills.</li> <li>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.</li> <li>Describe the benefits of continuous learning.</li> </ul>	2.5
4.	Basic English Skills	<ul style="list-style-type: none"> <li>Show how to use basic English sentences for every day conversation in different contexts, in person and over the telephone.</li> <li>Read and interpret text written in basic English</li> <li>Write a short note/paragraph / letter/e -mail using basic English.</li> </ul>	10
5.	Career Development & Goal Setting	<ul style="list-style-type: none"> <li>Create a career development plan with well-defined short- and long-term goals.</li> </ul>	2
6.	Communication Skills	<ul style="list-style-type: none"> <li>Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.</li> <li>Explain the importance of active listening for effective communication.</li> <li>Discuss the significance of working collaboratively with others in a team.</li> </ul>	5
7.	Diversity & Inclusion	<ul style="list-style-type: none"> <li>Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD.</li> <li>Discuss the significance of escalating sexual harassment issues as per POSH act.</li> </ul>	2.5
8.	Financial and Legal Literacy	<ul style="list-style-type: none"> <li>Outline the importance of selecting the right financial institution, product, and service.</li> <li>Demonstrate how to carry out offline and online financial transactions, safely and securely.</li> <li>List the common components of salary and compute income, expenditure, taxes, investments etc.</li> <li>Discuss the legal rights, laws, and aids.</li> </ul>	5

9.	Essential Digital Skills	<ul style="list-style-type: none"> <li>Describe the role of digital technology in today's life.</li> <li>Demonstrate how to operate digital devices and use the associated applications and features, safely and securely.</li> <li>Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely.</li> <li>Create sample word documents, excel sheets and presentations using basic features.</li> <li>Utilize virtual collaboration tools to work effectively.</li> </ul>	10
10.	Entrepreneurship	<ul style="list-style-type: none"> <li>Explain the types of entrepreneurship and enterprises.</li> <li>Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan.</li> <li>Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement.</li> <li>Create a sample business plan, for the selected business opportunity.</li> </ul>	7
11	Customer Service	<ul style="list-style-type: none"> <li>Describe the significance of analyzing different types and needs of customers.</li> <li>Explain the significance of identifying customer needs and responding to them in a professional manner.</li> <li>Discuss the significance of maintaining hygiene and dressing appropriately.</li> </ul>	5
12	Getting Ready for Apprenticeship & Jobs	<ul style="list-style-type: none"> <li>Create a professional Curriculum Vitae (CV).</li> <li>Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively.</li> <li>Discuss the significance of maintaining hygiene and confidence during an interview.</li> <li>Perform a mock interview.</li> <li>List the steps for searching and registering for apprenticeship opportunities.</li> </ul>	8

**LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS**

S 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) (all software should either be latest version or one/two version 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.*

# Annexure

## Trainer Requirements (IoT Installation Solution Architect)

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
B.E./B.Tech/ BCA/B.Sc.	Electronics/Telecom /IT and other relevant domains	1	Active Networks/IoT Domain	0	NA	Eligible for ToT program

Trainer Certification	
Domain Certification	Platform Certification
Job Role “IoT Installation Solution Architect” “TEL/Q6216, v2.0”, Minimum accepted score is 80%	Job Role: “Trainer (VET and Skills)”, “MEP/Q2601 v2.0”, Minimum Accepted score is 80%

## Assessor Requirements (IoT Installation Solution Architect)

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
B.E./B.Tech/ BCA/B.Sc.	Electronics/Telecom /IT and other relevant domains	1	Active Networks/IoT Domain	0	NA	Eligible for ToA program

Assessor Certification	
Domain Certification	Platform Certification
Job Role “IoT Installation Solution Architect” “TEL/Q6216, v2.0”, Minimum accepted score is 80%	Job Role: “Assessor (VET and Skills)”, “MEP/Q2701 v2.0”, Minimum Accepted score is 80%

## Trainer Requirements (Employability Skills 60 hours)

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate/CITS	Any discipline			2	Teaching experience	Prospective ES trainer should:
Current ITI trainers	Employability Skills Training (3 days full-time course done between 2019-2022)					<ul style="list-style-type: none"> <li>• have good communication skills</li> <li>• be well versed in English</li> <li>• have digital skills</li> <li>• have attention to detail</li> <li>• be adaptable</li> <li>• have willingness to learn</li> </ul>
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 60-hour Employability NOS (2022), with a minimum score of 80% OR Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of 80%	NA

## Master Trainer Requirements (Employability Skills 60 hours)

Master Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
Graduate/CITS	Any discipline			3	Employability Skills curriculum training experience with an interest to train as well as orient other peer trainers	Prospective ES Master trainer should: <ul style="list-style-type: none"> <li>• have good communication skills</li> <li>• be well versed in English</li> <li>• have basic digital skills</li> </ul>
Certified Master Trainer	Qualification Pack: Master Trainer (MEP/Q2602)			3	EEE training of Management SSC (MEPSC) (155 hours)	<ul style="list-style-type: none"> <li>• have attention to detail</li> <li>• be adaptable</li> <li>• have willingness to learn</li> <li>• be able to grasp concepts fast and is creative with teaching practices and likes sharing back their learning with others</li> </ul>

Master Trainer Certification	
Domain Certification	Platform Certification
Certified in 60-hour Employability NOS (2022), with a minimum score of <b>90%</b> .  <b>OR</b> Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of <b>90%</b>	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, 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 Subject Matter Experts (SME)
  - Question papers created by the SME verified by the other subject Matter Experts
  - Questions are mapped with NOS and PC
  - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
  - 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

### Assessment Strategy (Employability Skills 60 hours)

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements.



## References

## Glossary

Term	Description
<b>Declarative Knowledge</b>	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
<b>Key Learning Outcome</b>	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
<b>OJT (M)</b>	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
<b>OJT (R)</b>	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
<b>Procedural Knowledge</b>	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
<b>Training Outcome</b>	Training outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of the training.</b>
<b>Terminal Outcome</b>	Terminal outcome is a statement of what a learner will know, understand and be able to do <b>upon the completion of a module.</b> A set of terminal outcomes help to achieve the training outcome.

## Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
SOP	Standard Operating Procedures
CRM	Customer Relationship Management
CX	Customer Experience
AWS	Amazon Web Services
DDS	Data Distribution Service
AMQP	Advanced Message Queuing Protocol
EPR	Earth Potential Rise
OHS	Occupational Health and Safety
PwD	Persons with Disabilities
ICT	Information and Communication Technology
AT	Acceptance Testing
ES	Employability Skills