





Model Curriculum

QP Name: Installation and Commissioning Technician (AM/FM Radio Station)

QP Code: IAS/Q0204

QP Version: 2.0

NSQF Level: 4

Model Curriculum Version: 2.0

Instrumentation Automation Surveillance & Communication Sector Skill Council 201-202 STBP NSIC Complex (Gate No. 02), Okhla Industrial Area, New Delhi-110020

Table of Contents

Training Parameters
Program Overview4
Training Outcomes4
Compulsory Modules4
Module Details
Module 1- Introduction to the role of Installation and Commissioning Technician (AM/FM Radio Station)6
Module 2- Install AM/FM Broadcasting Station7
Module 3- Assist in Testing of AM/FM Radio Broadcasting Station9
Module 4- Soft Skills and Work Ethics10
Module 5- Basic Health and Safety Practices11
Annexure
Trainer Requirements13
Assessor Requirements14
Assessment Strategy15

Training Parameters

Sector	Instrumentation Automation Surveillanceand Communication
Sub-Sector	Broadcast Communication
Occupation	Installation and Commissioning
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL
	10th + 1 year NTC or 1 year NAC in relevant field OR 10th + 1 year experience in relevant field OR Completed 1st year or pursuing 2nd year of 3 years Engineering Diploma (after 10th) in relevant field. OR Previous relevant Qualification of NSQF Level 3 + 1 year experience in relevant field
Pre-Requisite License or Training	NA
Minimum Job Entry Age	19 Years
Last Reviewed On	11/08/2020
Next Review Date	21/01/2025
NSQC Approval Date	11/08/2020
Version	2.0
Model Curriculum Creation Date	21/01/2020
Model Curriculum Valid Up to Date	22/04/2025
Model Curriculum Version	2.0
Minimum Duration of the Course	420 Hours, 0 Minutes
Maximum Duration of the Course	420 Hours, 0 Minutes

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 role, responsibilities, and scope of work of an Installation and Commissioning Technician(AM/FM Radio Station)
- Perform installation of AM/FM Radio Broadcasting Station
- Provide assistance to Radio Broadcast Engineer in testing of AM/FM Radio Broadcasting Station
- Demonstrate working effectively in a team
- Adhere to the health and safety practices at workplace

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 (Recommended)	On-the-Job Training Duration (Mandatory)	Total Duration
IAS/N0215 - Install AM/FM radio broadcasting station NOS Version No. 2.0 NSQF Level 4	30:00	60:00	00:00	30:00	120:00
Module 1 - Install AM/FM Broadcasting Station	30:00	60:00	00:00	30:00	120:00
IAS/N0216 - Assist in testing of AM/FM radio broadcasting station NOS Version No. 2.0 NSQF Level 4	30:00	90:00	00:00	30:00	150:00
Module 2 - Assist in Testing of AM/FM Radio Broadcasting Station	30:00	90:00	00:00	30:00	150:00
IAS/N9001 - Work effectively with teams NOS Version No. 2.0 NSQF Level 4	15:00	15:00	00:00	30:00	60:00
Module 3 - Soft Skills and Work Ethics	15:00	15:00	00:00	30:00	60:00

IAS/N9002 - Health and safety in workplace NOS Version No. 2.0 NSQF Level 4	15:00	15:00	00:00	00:00	30:00
Module 5 - Basic Health & SafetyPractices	15:00	15:00	00:00	00:00	30:00
Employability Skill 60 Hours Mapped to DGT/VSQ/N0102	30:00	30:00	00:00	00:00	60:00
Module 6 - Introduction to Employability Skills	01:50	00:00	00:00	00:00	01.50
Module 7 - Constitutional values - Citizenship	01:50	00:00	00:00	00:00	01.50
Module 8 - Becoming a Professional in the 21st Century	02:50	00:00	00:00	00:00	02:50
Module 9 - Basic English Skills	05:00	05:00	00:00	00:00	10:00
Module 10 - Career Development & Goal Setting	01:00	01:00	00:00	00:00	02:00
Module 11 - Communication Skills	02:00	03:00	00:00	00:00	05:00
Module 12 - Diversity & Inclusion	02:50	00:00	00:00	00:00	02:50
Module 13 - Financial and Legal Literacy	02:00	03:00	00:00	00:00	05:00
Module 14 - Essential Digital Skills	04:00	06:00	00:00	00:00	10:00
Module 15 - Entrepreneurship	03:00	04:00	00:00	00:00	07:00
Module 16 - Customer Service	02:00	03:00	00:00	00:00	05:00
Module 17 - Getting ready for apprenticeship & Jobs	03:00	05:00	00:00	00:00	08:00
Total Duration	120:00	210:00	00:00	90:00	420:00

Module Details

Module 1: Install AM/FM Broadcasting Station Mapped to IAS/N0215

Terminal Outcomes:

- Identify the scope of work
- Perform installation of AM/FM Radio Broadcasting Station

Duration: 30:00	Duration: 60:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Define the role and responsibilities of Installation and Commissioning Technician (AM / FM Radio Station) Define radio broadcasting and the difference between AM / FM radiobroadcasting Explain the workflow of radio broadcasting transmission chain Describe the technologies involved in radio broadcasting Explain the basics of electronics, electrical communication equipment, electrical panel, and wiring w.r.t. radio broadcasting. List the basics of computers, human machine interface and application software Describe the significance of applicable rules and regulations, including emergencies Identify the layout of the station, the facilities, their condition, and their effect on installation / maintenance work. Identify the areas for positioning of power supply equipment, air-conditioning equipment, server rack, cable harness, transmitter, coaxial switch, etc. at studio and transmitter site Interpret drawing as well as technical and installation manuals Plan the cable routing / conduiting for the floor and wall at the studio and transmitterstation site List the types of tools, accessories, measuring instrument, to be used in installation and commissioning Identify the connection of earth strips with all high power equipment Ensure that the electrical installation is carried out as per the plan and proper arrangements are made to keep captivepower source 	 Demonstrate the functioning of the equipment and operating conditions for the maintenance Perform installation of raceways, cable trays, audio, and networking cables as per the drawing, at both centers Perform the laying of rigid lines, RF feeder cables, etc. at the transmitter station site Demonstrate termination of all the cableswith appropriate lugs, ferrules, etc. and label them as per the drawing Execute the plan to fix connectors for power supply cables and microphonecables Inspect the polarity of audio connectors in conformity with the standard notation Demonstrate sealing of the conduit ends with approved material such as glass wood buds, etc. Execute plan for installation of LT distribution kiosk, cabling, earthing and other LT power supply works at both sites Install UPS and its power back up for all equipment including computer, audio, etc. at both sites Demonstrate the wiring and installation of all equipment such as computers, studio transmitter link, mixers, audio, etc. along with earthing Perform installation of studio automation software with all functionalities in place Install RF rigid line / RF change over output, cable dehydrator and the associated plumbing for FM transmitter site / transmitter centre

and guidelines to be followed during installation	• Perform installation and wiring of broadcast processor, the codec for STL link, AM / FM Demodulator, monitoring equipment, etc.
Classroom Aids:	
Laptop, white board, marker, projector	

Tools, Equipment and Other Requirements

Cables, cable trays, raceways, conduits, connectors, lugs, ferrules, power supply cables, microphone cables, LT distribution kiosk, UPS, audio equipment, earth wires, mixers, telephone hybrid, studio transmitter link, transmitter, cable dehydrator, AM/FM demodulator, monitoring equipment, high power RF equipment DG/Solar Panel, glass wool buds, Studio automation software Drawings, manuals, floor plan

Module 2: Assist in Testing of AM/FM Radio Broadcasting Station Mapped to IAS/N0216

Terminal Outcomes:

• Provide assistance to Radio Broadcast Engineer in testing of AM/FM Radio Broadcasting Station

Duration: 30:00	Duration: 90:00			
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes			
 List the steps of final testing and commissioning Identify ways to perform physical inspection of all electric, audio (polarity of hot, cold and ground points), RF, data connectivity, power supply line, etc. Explain ways to assist Radio Broadcast Engineer in testing the equipment, which includes measuring and recording the performance of audio / RF equipment List the parameters and procedures of testing the equipment and entire chain Maintain record of all parameters as per transmitter's front panel Organize training of the station staff on operation and maintenance of the set up 	 Demonstrate inspecting the power supply voltage equipment voltage, AC voltage, and earth connectivity (if needed) using the appropriate equipment Illustrate troubleshooting the error with the recommendation of consultant in case of any deviation Demonstrate balancing the power by distributing the load on all three phases Execute the plan to maintain conditions, such as air flow, temperatures, humidity, etc., for optimum working of air conditioning plants Demonstrate assisting Radio Broadcast Engineer ir measuring all imp. parameters of sound recording studio and carrying outRF measurements Perform verification of the whole set up, including listening tests of chain / broadcast, to ensure its normal functioning 			
Classroom Aids:				
Laptop, white board, marker, projector				
Tools, Equipment and Other Requirements				

Multimeter, clip-on ammeter, measuring tools and equipment, SPL meter, RT60 measurementand STI

Module 3: Soft Skills and Work Ethics Mapped to IAS/N9001

Terminal Outcomes:

• Work effectively at the workplace

Tools, Equipment and Other Requirements

Sample of escalation matrix, organization structure.

Module 4: Basic Health and Safety Practices Mapped to IAS/N9002

Terminal Outcomes:

• Apply health and safety practices at the workplace

Duration: 15:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Explain the importance of health and safety guidelines List the components of a basic first-aid kit, safety tools and equipment Identify the practices for maintaining safe and secure workplace List the precautions for handling different types of cables and electrical equipment List the daily safety instructions and the other recommended safety procedures for work—before starting work, while working, after finishing work Describe the safety drills and health related activities scheduled in the organization. Identify the types of fire and use correct fire extinguishers Identify the general safety procedures and standard safety procedures for handling tools, equipment and hazardous materials Identify the importance of good postures for lifting heavy objects Explain the importance of efficient utilization of material and water Identify common practices of conserving electricity List the common sources of pollution andways to minimize it Describe the concept of waste management and methods of wastedisposal List the different categories of waste for the purpose of segregation 	 Apply methods of accident prevention in the work environment Demonstrate using proper techniques for disposal of hazardous chemicals, tools and materials by following prescribed environmental norms or as per company policy. Report any abnormal situation/behavior of any equipment/system to relevant authorities. Apply emergency rescue techniques during fire hazard Apply first aid and bandage to victims Illustrate the steps to free a person from electrocution, and artificial respiration and the CPR Process Demonstrate correct use of fire extinguishers at the time of emergency Illustrate the administration of basic first-aid at the time of emergency Use defined emergency procedures such as raising alarm, safe/efficient, evacuation, correct means of escape and so on Use protective equipment suitable to tasks and work conditions Demonstrate correct posture while sitting, standing, and handling heavy materials Comply with the procedures for minimizing waste and processes specified for disposal of hazardous waste
Classroom Aids:	
White board/ black board marker / chalk, duster, comp	uter or Laptop attached to LCD projector

Personal Protection Equipment: safety glasses, head protection, rubber gloves, safety footwear, warning signs and tapes, fire extinguisher and first aid kit

Module 6: Introduction to Employability Skills Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Discuss the Employability Skills required for jobs in various industries
- List different learning and employability related GOI and private portals and their usage

Duration:1.5 Hours (1.5 Theory + 0 Practical)

Module 7: Constitutional values - Citizenship

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- 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
- Show how to practice different environmentally sustainable practices

Duration:1.5 Hours (1.5 Theory + 0 Practical)

Module 8: Becoming a Professional in the 21st Century

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Discuss importance of relevant 21st century skills.
- Exhibit 21st century skills like Self-Awareness, Behaviour 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.
- Describe the benefits of continuous learning

Duration: 2.5 Hours (2.5 Theory + 0 Practical)

Module 9: Basic English Skills

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
- Read and interpret text written in basic English
- Write a short note/paragraph / letter/e -mail using basic English

Duration: 10 Hours (5 Theory + 5 Practical)

Module 10: Career Development and Goal Setting

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

• Create a career development plan with well-defined short- and long-term goals

Duration: 2 Hours (1 Theory + 1 Practical)

Module 11: Communication skills

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
- Explain the importance of active listening for effective communication

• Discuss the significance of working collaboratively with others in a team

Duration: 5 Hours (2 Theory + 3 Practical)

Module 12: Diversity and Inclusion

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD.
- Discuss the significance of escalating sexual harassment issues as per POSH

Duration: 2.5 Hours (2.5 Theory+ 0 Practical)

Module 13: Financial and Digital Literacy

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Outline the importance of selecting the right financial institution, product, and service
- Demonstrate how to carry out offline and online financial transactions, safely and securely

Duration: 5 Hours (2 Theory+ 3 Practical)

Module 14: Essential Digital Skills

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Describe the role of digital technology in today's life
- Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
- Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely
- Create sample word documents, excel sheets and presentations using basic features
- utilize virtual collaboration tools to work effectively

Duration: 10 Hours (4 Theory+ 6 Practical)

Module 15: Entrepreneurship

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Explain the types of entrepreneurship and enterprises
- Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
- Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
- Create a sample business plan, for the selected business opportunity

Duration: 7 Hours (3 Theory+ 4 Practical)

Module 16: Customer Service

Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Describe the significance of analyzing different types and needs of customers
- Explain the significance of identifying customer needs and responding to them in a professional manner.
- Discuss the significance of maintaining hygiene and dressing appropriately

Duration: 5 Hours (2 Theory+ 3 Practical)

Module 17: Getting Ready for Apprenticeship and Jobs Mapped to NOS 60 Hours (Version No. 1)

Key Learning Outcomes:

- Create a professional Curriculum Vitae (CV)
- Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
- Discuss the significance of maintaining hygiene and confidence during an interview
- Perform a mock interview
- List the steps for searching and registering for apprenticeship opportunities

Duration: 8 Hours (3 Theory+ 5 Practical)

Annexure

Trainer Requirements

Trainer Prerequisites							
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks	
		Years	Specialization	Years	Specialization		
I.T.I (Electronics or similar trades)	of Electronics or of similar trades	2	Electronics or of similar trades	1	Electronics or of similar trades	NA	
Diploma (Electronics Radio or similar trades)	/ Electronics or of similar trades	2	Electronics or of similar trades	1	Electronics or of similar trades	NA	

Trainer Certification						
Domain Certification Platform Certification						
Certified for Job Role: "Installation and Commissioning Technician (AM/FM Radio Station)" mapped to QP: "IAS/Q0204". Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601". Minimum accepted score is 80%					

Assessor Requirements

Assessor Prerequisites							
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks	
		Years	Specialization	Years	Specialization		
I.T.I (Electronics or of similar trades)	Electronics or of similar trades	3	Electronics or of similar trades	0	Electronics or of similar trades	NA	
Diploma (Electronics / Radio or similar trades)	Electronics or of similar trades	3	Electronics or of similar trades	0	Electronics or of similar trades	NA	

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Installation and Commissioning Technician (AM/FM Radio Station)" mapped to QP: "IAS/Q0204".	
Minimumaccepted score is 80%	Minimum accepted score is 80%

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