Model Curriculum

QP Name: Building Management System Project Manager

QP Code: ELE/Q7102

QP Version: 3.0

NSQF Level: 6

Model Curriculum Version: 3.0

Electronics Sector Skills Council of India (ESSC!) ESC House, 2nd Floor ESC House, Okhla Industrial Area-Phase 1lI New Delhi-I I0020

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Training Parameters

Sector	Electronics
Sub-Sector	Industrial Automation
Occupation	Engineering-I&A
Country	India
NSQF Level	6
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7411.0100
Minimum Educational Qualification and Experience	Completed 4 year UG program (Physics/Electronics/Electrical/ Mechanical) with 3 Years of Relevant Experience OR Completed 3 year UG degree (Physics/Electronics/Electrical/ Mechanical) with 3 Years of Relevant Experience OR Completed 3 year diploma after 10th (Electronics/Electrical/ Mechanical) with 4.5 years of Relevant Experience OR Previous relevant Qualification of NSQF Level (5.5) with 1.5 years of Relevant Experience # Relevant Exp in Industrial Automation
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	01.05.2025
Next Review Date	30.04.2028
NSQC Approval Date	08.05.2025
QP Version	3.0
Model Curriculum Creation Date	01.05.2025
Model Curriculum Valid Up to Date	30.04.2028
Model Curriculum Version	3.0
Minimum Duration of the Course	660 Hours
Maximum Duration of the Course	660 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:

- Describe the process of managing the BMS tendering, designing and procurement processes.
- Demonstrate the process of managing the BMS installation, testing, commissioning and handover processes.
- Explain the importance of following inclusive practices for all genders and PwD at work.
- Demonstrate various practices to be followed to maintain health and safety at work.

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
ELE/N6103: Manage the BMS tendering, designing and procurement processes	**96:00**	**114:00**	**00:00**	**120:00**	**330:00**
Module 1: Process of managing the BMS tenders, designs and procurement processes	96:00	114:00	00:00	120:00	330:00
ELE/N6104: Manage the BMS installation, testing, commissioning and handover processes	**90:00**	**90:00**	**00:00**	**90:00**	**270:00**
Module 2: Process of managing the BMS installation, testing, commissioning and handover process management	90:00	90:00	00:00	90:00	270:00
DGT/VSQ/N0102: Employability Skills (60 Hours)	**24:00**	**36:00**	**00:00**	**00:00**	**60:00**
Module 3: Employability Skills (60 Hours)	24:00	36:00	00:00	00:00	60:00
Total Duration	**210:00**	**240:00**	**00:00**	**210:00**	**660:00**

Module Details

Module 1: Process of managing the BMS tenders, designs and procurement processes

Mapped to ELE/N6103

Terminal Outcomes:

- Elaborate how to manage the tendering and BMS designing process.
- Describe the process of carrying out planning for BMS installation.
- Describe the process of obtaining the regulatory approvals.
- Describe the process of managing the procurement process and selecting the installation team.

Duration: 96:00	Duration: 114:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• List various field devices used in building management systems. • Explain basic plumbing and firefighting practices. • Explain the operations of various electrical and HVAC equipment • Elaborate the working principle of analogue and digital input/ output. • Explain different types of building codes and standards such as American and European. • Explain different types of BMS installation projects and the practice of gauging the client requirements according to the scale of the project. • Elaborate different types of software used to create BMS drawing such as AutoCAD. • Explain project finance, cost control and resource allocation practices. • Describe the project management process and methodology. • Explain the use of project management software tools such as MS Project or Primavera. • Elaborate the use of various relevant	• Dramatize how to evaluate the client's BMS related requirements and own enterprise's eligibility for the project by studying the tender documents. • Prepare a sample letter accepting the tender outlining the pricing and schedule along with the company's eligibility for the project. • Perform necessary documentation before the start of the project. • Roleplay how to conduct a site visit along with the design team and record all the necessary measurements and other key details. • Demonstrate how to review the BMS design prepared by the design team. • Perform necessary changes to the design as per the regulatory authority's recommendations. • Perform the quantity take-off process to estimate the requirement of materials and manpower.

computer applications for effective record management such as Microsoft Word, Excel, Visio or CAD, etc.	
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Building's Mechanical and Electrical Equipment Such as Ventilation, Lighting, Power Systems, Fire Systems, and Security Systems.	

Module 2: Process of managing the BMS installation, testing, commissioning and handover processes

Mapped to ELE/N6104

Terminal Outcomes:

- Describe the process of managing the BMS installation process.
- Describe the process of managing the testing and commissioning process.
- Describe the process of managing the handover process.

Duration: 90:00	Duration: 90:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the importance of assigning various responsibilities and tasks to the team members according to their expertise. • Explain the importance of developing and implementing the necessary quality control mechanisms to ensure the quality of the project. • Explain the importance of conducting regular site visits to ensure the installation of BMS is carried out as per the prepared design and project progresses as per the schedule. • Elaborate the third-party vendor's/ providers management practices. • Discuss various practices to ensure the project costs do not exceed the budget. • Elaborate how to monitor the project schedule, slippages and their impact using the appropriate project management software tools. • Explain the importance of investigating any deviations in the project implementation and initiating prompt corrective action. • Explain the importance of conducting regular meetings with the site supervisors and stakeholders to deliberate upon and resolve any issues being experienced. • Explain the importance of maintaining constant communication with the client. • Explain the importance of ensuring compliance with all the legal, regulatory and quality standards during the installation process.	• Role-play how to conduct regular site visits to ensure the installation of BMS is carried out as per the prepared design and project progresses as per the schedule • Demonstrate the use of the appropriate project management software tools to monitor the project schedule, slippages and their impact. • Dramatize how to test the BMS for the correct functioning after completing the installation. • Gain a comprehensive understanding of the full lifecycle of a Building Management System (BMS), from installation and testing through to commissioning and final handover. • Learn to proactively identify common faults or delays in BMS installation and commissioning, and apply troubleshooting strategies to minimize risks and downtime. • Understand the importance of final testing, validation, O&M manuals, and end-user training to ensure a successful and seamless handover to the client or facilities team. • Develop skills in coordinating between MEP contractors, BMS vendors, consultants, and facility managers to align technical requirements, schedules, and documentation.

• Explain the importance of following the applicable health, safety and environment protection practices. • Describe the process of testing, commissioning and handover of BMS to the client.	

Classroom Aids
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop
Tools, Equipment and Other Requirements
Building's Mechanical and Electrical Equipment Such as Ventilation, Lighting, Power Systems, Fire Systems, and Security Systems.

Module 3: Employability Skills (60 Hours)

Mapped to DGT/VSQ/N0102

Terminal Outcomes:

- Discuss about Employability Skills in meeting the job requirements
- Describe opportunities as an entrepreneur.
- Describe ways of preparing for apprenticeship & Jobs appropriately.

Duration: 24:00	Duration: 36:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain constitutional values, civic rights, responsibility towards society to become a responsible citizen • Discuss 21st century skills • Explain use of basic English phrases and sentences. • Demonstrate how to communicate in a well-behaved manner • Demonstrate how to work with others • Demonstrate how to operate digital devices • Discuss the significance of Internet and Computer/ Laptops • Discuss the need for identifying business opportunities • Discuss about types of customers. • Discuss on creation of biodata • Discuss about apprenticeship and opportunities related to it.	• List different learning and employability related GOI and private portals and their usage • Show how to practice different environmentally sustainable practices. • Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, etc. • Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone • Demonstrate how to communicate in a well -mannered way with others. • Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette • Utilize virtual collaboration tools to work effectively • Demonstrate how to maintain hygiene and dressing appropriately. • Perform a mock interview
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
Computer, UPS, Scanner, Computer Tables, LCD Projector, Computer Chairs, White Board OR Computer Lab	

Module 4: On-the-Job Training

Mapped to Building Management System Project Manager

Mandatory Duration: 210:00	Recommended Duration: 00:00
Location: On Site	

Terminal Outcomes

1. Evaluate the client's BMS related requirements and own enterprise's eligibility for the project.
2. Demonstrate how to coordinate with the client to take their approval for the prepared BMS design.
3. Perform quantity take-off process to estimate the requirement of materials and manpower.
4. Demonstrate how to develop and implement the necessary quality control mechanisms.
5. Demonstrate how to coordinate with the third-party vendor's/ equipment providers for the installation of necessary equipment.
6. Implement various solutions to add value to the project such as enhancing quality while reducing the costs.
7. Manage the commissioning process as per the agreed procedure and client's satisfaction.
8. Perform handover to the client along with the necessary documents such as the software test results.

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E/ B.Tech/ Certified in relevant CITS Trade	Electrical/ Electronics/ Mechanical	5	BMS Project Management	2	Electronics	

Trainer Certification	
Domain Certification	**Platform Certification**
"**Building Management System Project Manager**", "ELE/Q7102, v3.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the **Building Management System Project Manager** "Trainer (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2601, V2.0", with minimum score of 80%

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E/ B.Tech/ Certified in relevant CITS Trade	Electrical/ Electronics/ Mechanical	7	BMS Project Management	2	Electronics	

Assessor Certification	
Domain Certification	**Platform Certification**
"**Building Management System Project Manager**", "ELE/Q7102, v3.0", Minimum accepted score is 80%	Recommended that the Assessor is certified for the "**Building Management System Project Manager"** Assessor (VET and Skills)", mapped to the Qualification Pack: "MEP/Q2701, V2.0", with minimum score of 80%

Assessment Strategy

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

    To ensure a conducive environment for conducting a test, the trainer will:
    - Confirm that the center 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 10 a.m. and 5 p.m. respectively
    - Ensure there are 2 Assessors if the batch size is more than 30.
    - 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
    - The assessor must be ToA certified and the trainer must be ToT Certified
    - The 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
    - Centre 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:

    To verify the details submitted by the training center, the assessor will undertake:

- A surprise visit to the assessment location
- A random audit of the batch
- A random audit of any candidate

6. Method for assessment documentation, archiving, and access

   To protect the assessment papers and information, the assessor will ensure:

   - 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 on the Hard drive

References

Glossary

Term	Description
Declarative knowledge	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.
Key Learning	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).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
BMS	Building Management System
ISO	International Organization for Standardization
NCO	National Occupational Standards
NOS	National Skills Qualification Committee
NSQF	National Skills Qualification Framework
OJT	On-the-Job Training
OMR	Optical Mark Recognition
PC	Performance Criteria
PwD	Persons with Disabilities
QP	Qualification Pack
SDMS	Skill Development & Management System
SIP	Skill India Portal
SME	Small and Medium Enterprises
SOP	Standard Operating Procedure
SSC	Sector Skill Council
TC	Trainer Certificate
ToA	Training of Assessors
ToT	Training of Trainers
TP	Training Provider