



Model Curriculum Version: 1.0

Life Sciences Sector Skill Development Council
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Training Parameters

Sector	Life Sciences
Sub-Sector	Pharmaceuticals, Biopharmaceuticals
Occupation	Engineering and Maintenance
Country	India
NSQF Level	Level 3
Aligned to NCO/ISCO/ISIC Code	NCO 2015/ 3132.0400
Minimum Educational Qualification and Experience	10th
Pre-Requisite License or Training	NIL
Minimum Job Entry Age	18 Years
Last Reviewed On	28 September 2020
Next Review Date	28 September 2025
NSQC Approval Date	TBD
QP Version	1
Model Curriculum Creation Date	24 September 2020
Model Curriculum Valid Up to Date	28 September 2025
Model Curriculum Version	1
Minimum Duration of the Course	200 Hours
Maximum Duration of the Course	2504 hours including 2304 hours of recommended OJT / Apprenticeship

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.

- Explain the Life Science industry and its applicable regulations.
- Explain types of machines and basic concepts of maintenance used in a life science facility.
- Discuss how to follow environment, health and safety (EHS) norms at work in the production and GMP controlled areas.
- Demonstrate how to prepare for maintenance activities in compliance with maintenance schedules.
- Demonstrate how to maintain production area, equipment clean and calibrated as per good manufacturing practices (GMP) and standard operating procedures (SOP).
- Demonstrate how to coordinate with supervisor, teammates and cross-functional teams.
- Demonstrate emotional stability and sensitivity towards all genders, cultures and specially-abled persons.
- Demonstrate how to perform maintenance activities on mechanical equipment, as per approved procedures.
- Explain the methods of reporting and documentation for maintenance operation performed.
- Demonstrate how to carry out Maintenance of HVAC, Electric, Gas, Water, Steam Utility system by following GMP and regulatory guidelines as per the SOP.

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
Bridge Module	08:00	04:00	00:00	00:00	12:00
Module 1: Introduction of Life Sciences industry and the job role	04:00	00:00	00:00	00:00	04:00
Module 2: Essential concepts of maintenance in Life Science facility	04:00	04:00	00:00	00:00	08:00
LFS/N0112: Adhere to Environment, health and safety guidelines in a production facility and GMP controlled areas NOS Version No.1 NSQF Level-4	04:00	12:00	00:00	00:00	16:00

Module 3: Comply EHS rules in production and GMP Controlled Area	04:00	12:00	00:00	00:00	16:00
LFS/N0802: Prepare for maintenance in compliance with schedule and job safety guidelines NOS Version No.1 NSQF Level-3	12:00	28:00	00:00	00:00	40:00
Module 4: Maintenance Preparation Activities	08:00	24:00	00:00	00:00	32:00
Module 5: Managing Environmental sustainability	04:00	04:00	00:00	00:00	08:00
LFS/N0113: Ensure a hygienic and clean work area to avoid contamination NOS Version No. 1 NSQF Level-4	08:00	16:00	00:00	00:00	24:00
Module 6: Cleaning and Sanitization at workplace	08:00	16:00	00:00	00:00	24:00
LFS/N0801- Coordinate with reporting manager, teammates, and cross-functional teams NOS Version No.1 NSQF Level-4	08:00	20:00	00:00	00:00	28:00
Module 7: Coordination with Manager, teammates and Cross-Functional Teams	04:00	16:00	00:00	00:00	20:00
Module 8: Sensitivity towards genders and people with disability	04:00	04:00	00:00	00:00	08:00
On The Job Training	00:00	00:00	00:00	00:00	2304:00
Total Duration	40:00	80:00	00:00	00:00	2424:00

Elective Modules

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

Elective 1: Mechanical Machine Maintenance

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
LFS/N0803– Assist Maintenance Technician/Supervisor in	32:00	48:00	00:00	00:00	80:00

mechanical maintenance and fitting activities NOS Version No.1 NSQF Level-3					
Module 9: Mechanical Maintenance Operations	16:00	24:00	00:00	00:00	40:00
Module 10: Reporting and Documentation	16:00	24:00	00:00	00:00	40:00
Total Duration	32:00	48:00	00:00	00:00	80:00

Elective 2: Utility Maintenance

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
LFS/N0804– Assist Maintenance Technician/Supervisor to carry out utility maintenance in compliance with GMP and regulatory guidelines NOS Version No.1 NSQF Level-3	20:00	60:00	00:00	00:00	80:00
Module 11: Maintenance of HVAC Utility	04:00	12:00	00:00	00:00	16:00
Module 12: Maintenance of Electric Utility	04:00	12:00	00:00	00:00	16:00
Module 13: Maintenance of Gas Utility	04:00	12:00	00:00	00:00	16:00
Module 14: Maintenance of Water Utility Maintenance of Steam Utility	04:00	12:00	00:00	00:00	16:00
Module 15: Maintenance of Steam Utility	04:00	12:00	00:00	00:00	16:00
Total Duration	20:00	60:00	00:00	00:00	80:00

Module Details

Module 1: Introduction to life sciences industry and the job role

Bridge Module

Terminal Outcomes:

- Explain the overview of the Life Sciences industry in regulation applicable to Maintenance Operations.
- Discuss the importance of a skilled Maintenance Assistant.

Duration: 04:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the Life Sciences industry in Indian and global context. • Explain Good Laboratory Practices (GLP), Good Manufacturing Practices (GMP), and Good Documentation Practices (GDP). • Discuss the quality management systems guidelines from ISO-9000, ISO-14001, OHSAS-18000, ICH Q7 and 21 CFR. • Explain the organizational structure and employment benefits in the Life Sciences Industry. • Explain the basic skills required to perform the job of Maintenance Assistant. • Explain the importance of a Maintenance Assistant. 	
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector/ screen, Scanner, Computer speakers, Pencil	
Tools, Equipment and Other Requirements	
N/A	

Module 2: Essential concepts of maintenance in life science facility

Bridge Module

Terminal Outcomes:

- Discuss good practices to be followed to work on machines.
- Identify common machines and faults related to them in life science facility.

Duration: 04:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basics of mathematical calculations and measurement. • Discuss the implications of delays in the maintenance process. • Explain methods of visual inspection and sound observation during maintenance. • Discuss various common maintenance machines used in life sciences manufacturing facilities. • Explain good practices to work on machines, as per guidelines of 5S and Total Productive Maintenance (TPM). • Discuss the selection and usage of equipment, materials, processes, and procedures for maintenance. 	<ul style="list-style-type: none"> • Demonstrate how to perform visual and sound inspection during maintenance.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector/ screen, Scanner, Computer speakers, Pencil	
Tools, Equipment and Other Requirements	
N/A	

Module 3: Comply with EHS rules in production and GMP controlled area

Mapped to LFS/N0112, v1

Terminal Outcomes:

- Demonstrate how to comply with health and personal hygiene-related protocols.
- Demonstrate how to comply with safety and security policies and procedures.
- Demonstrate how to follow emergency procedures.

Duration: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the relevant legislative requirements and company's procedures for environment, health and safety. • Discuss the workplace hazards and their reporting in a manufacturing facility in the life sciences sector. • Recall the guidelines and procedures for hazards, accidents, safety signs and signals, and Heinrich pyramid used in a manufacturing plant. • Explain health, safety, and accident reporting procedures. • Describe the importance of the gowning, medical assistance and emergency services. • Discuss the procedures for evacuation for employees, contract staff, and visitors in controlled areas. • Discuss the types of safety gears and procedure to use them. • Discuss WHO guidelines for personal hygiene, handling, and storage of hazardous material. • Explain the importance of material segregation and 5S system. 	<ul style="list-style-type: none"> • Demonstrate how to ascertain the breach of EHS protocols. • Demonstrate how to communicate hazards, safety instructions and accidents to teammates and cross-functional teams. • Demonstrate how and when to follow instructions, guidelines, procedures, rules, signage, codings for different situations and processes.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Printouts of WHO guidelines, Flashcards of signages, coding, and instructions, Personal Protective Equipments and Gowning material	

Module 4: Maintenance preparation activities

Mapped to LFS/N0802, v1

Terminal Outcomes:

- Describe types of maintenance procedures and faults.
- Demonstrate how to perform maintenance preparation activities before the start of maintenance operations.

Duration: 08:00	Duration: 24:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain basic maintenance functions and types performed in a manufacturing plant. • Discuss types of faults and maintenance activities for them. • Describe operational characteristics of the materials, equipment and process used to recognize “out of specification” products, process problems and materials faults. • Explain the pre and post cleaning procedures of maintenance. 	<ul style="list-style-type: none"> • Perform pre-maintenance job safety analysis as per the defined checklist. • Demonstrate how to clean the instruments for visible soil or residual debris. • Identify the faults in the instrument. • Show how to use tools and spares/ materials for the repair or preventive maintenance of faulty instruments. • Inspect the maintenance area for proper ventilation, light and safety equipment before the start of the maintenance. • Demonstrate how to place the labels/ signages for the area under and machines under maintenance.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Maintenance and cleaning procedures, Tools and spares used for repair, Samples of labels/ signages used for under maintenance area and machines	

Module 5: Managing environmental sustainability

Mapped to LFS/N0802, v1

Terminal Outcomes:

- Discuss the importance of environmental sustainability.
- Demonstrate the adoption of environmental sustainability methods at work for minimizing pollution, water wastage, and maximizing energy conservation.

Duration: 04:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the concept and importance of energy conservation • Describe the possible actions to optimize energy consumption and minimize energy wastage. • Explain the concept of environmental pollution and its impact on the health of self, community, and planet. • Describe the possible actions to minimize environmental pollution at work • Explain various guidelines to be followed for hazardous waste management. 	<ul style="list-style-type: none"> • Create a checklist of energy conservation practices during and post-work. • Classify waste into recyclable, non-recyclable, and hazardous.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Colour-coded waste bin bag, Colour-coded waste container	

Module 6: Cleaning and sanitization at workplace

Mapped to LFS/N0113, v1

Terminal Outcomes:

- Demonstrate how to perform cleaning and sanitation activities before, during, and after work.

Duration: 08:00	Duration: 16:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the hygiene standards required in the production area and the importance of maintaining the same. • Explain the methods, materials, and checks required for cleaning a variety of surfaces and equipment. • Explain the list of various equipment, machines, instruments, different materials, and chemicals used in cleaning and sanitation of production area. • Explain the essential GMP and WHO guidelines and rules for cleaning, sanitation, and hygiene activity. • Explain waste disposal guidelines as per WHO and GMP and relevant organizational SOPs. • Discuss the concept of cleaning validation and its importance. 	<ul style="list-style-type: none"> • Demonstrate how to clean surfaces, equipment, and instruments by applying appropriate methods and materials. • Demonstrate how to clean and sanitize production area by using various equipment, machines, instruments, different materials, and chemicals by following regulatory guidelines. • Perform disposal of waste as per regulatory guidelines and SOPs. • Demonstrate how to handle different types of hazards.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Handouts for SOPs procedures and guidelines	

Module 7: Coordination with manager, teammates and cross-functional teams

Mapped to LFS/N0801, v1

Terminal Outcomes:

- Demonstrate the effective coordination and collaboration with manager, cross-functional teams.

Duration: 04:00	Duration: 16:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the functional and cross-functional stakeholders for Maintenance Assistant. • Explain the reporting structure and escalation policy of the organization. • Explain efficient and clear communication methods for reporting incidents/ deviations. • Explain the techniques for gaining emotional stability. • Discuss various ways of conflict resolution. • Explain the best strategies for collaborating with others. • Describe the problem-solving techniques for routine work-related issues. • Recall the regulatory/ statutory guidelines for the process of handover and takeover, documentation and data integrity. 	<ul style="list-style-type: none"> • Demonstrate how to effectively communicate and collaborate with various stakeholders (e.g. manager, groups etc.) for multiple scenarios. • Perform shift takeover/ handover as per defined guidelines in a mock situation. • Demonstrate how to resolve conflict in multiple scenarios.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
N/A	

Module 8: Display sensitivity towards all genders and people with disability

Mapped to LFS/N0801, v1

Terminal Outcomes:

- Discuss the Prevention of Sexual Harassment (POSH) Act.
- Demonstrate how to respect all genders and cultures.
- Explain the importance of sensitivity towards people with disability.

Duration: 04:00	Duration: 04:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the rules laid by the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act and the provided penalties for violation. • Explain the importance of gender-sensitive behaviour. • Explain the procedure to report inappropriate behaviour e.g. sexual harassment. • Describe the importance of an equal opportunity work culture. • Discuss the importance of respecting other's cultures, religion, and caste. • Explain the need for sensitivity towards people with disabilities. • Explain the correct ways of communication and collaboration with people with disabilities in compliance with the legal framework. • Identify stereotypes and prejudices associated with people with disabilities and their negative consequences. 	<ul style="list-style-type: none"> • Demonstrate appropriate verbal and nonverbal communication that is respectful of gender, religion, disability, etc. • Prepare a list of gender-neutral communication terms.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speakers, flip charts	
Tools, Equipment and Other Requirements	
N/A	

Module 9: Mechanical maintenance operations

Mapped to LFS/N0803, v1

Terminal Outcomes:

- Discuss the different types of mechanical devices used in machines.
- Demonstrate how to perform various mechanical maintenance operations.

Duration: 16:00	Duration: 24:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Discuss the cleanroom behaviour and the importance of using appropriate personal protection equipment (PPE) during maintenance operations. • Describe the different types of mechanical fastening and locking devices used in machines. • Discuss the application of cutting fluids and compounds • Discuss the generic protocols to be adopted for the dismantling/re-assembly of various types of equipment. • Explain the importance of storing sterile packages of tools and spares properly to reduce potential contamination. • Discuss the hazards associated with mechanical maintenance activities and how they can be minimized. 	<ul style="list-style-type: none"> • Demonstrate cleanroom behaviour and how to use appropriate PPE during maintenance operations. • Demonstrate the dismantling processes of machine/ equipment to replace defective components. • Demonstrate how to set up the equipment correctly by following operating specifications and parameters. • Perform the reassembling of the components using appropriate methods as per operating specifications. • Demonstrate how to replace or refit basic hydraulic and pneumatic components.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
PPE, Mechanical fastening and locking devices	

Module 10: Reporting & documentation

Mapped to LFS/N0803, v1

Terminal Outcomes:

- Explain the methods of reporting and documentation for maintenance operations.
- Discuss how to perform the documentation for maintenance operations in compliance with Good Manufacturing Practices (GMP).

Duration: 16:00	Duration: 24:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the method of reporting and documentation as per Good Documentation Practices and other regulatory guidelines. • Describe the Attributable, Legible, Contemporaneous, Original, and Accurate Plus (ALCOA +) principle and its importance. • Describe the critical documents to be prepared by the maintenance assistant. 	<ul style="list-style-type: none"> • Perform sample documentation for every job activity in the regional language or English. • Demonstrate how to maintain proper and concise written sample records as per given format and in compliance with ALCOA principle.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
GDP guidelines, Sample reporting and recording formats	

Module 11: Maintenance of heating, ventilation, and air conditioning (HVAC) utility

Mapped to LFS/N0804, v1

Terminal Outcomes:

- Demonstrate how to perform maintenance of HVAC Utility.

Duration: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basic principles of HVAC. • Discuss different parts of HVAC Utility and their functions. • Discuss the various tools and equipment required for the maintenance of HVAC Utilities. • Describe the basic maintenance functions performed in HVAC Utility. 	<ul style="list-style-type: none"> • Demonstrate how to tighten up nut bolts/screw of HVAC and VU cabinet. • Perform the tagging of HVAC Unit/ relevant section as “under maintenance”. • Prepare preventive maintenance checklists as per the maintenance and equipment manuals.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Setup of a HVAC Utility	

Module 12: Maintenance of electric utility

Mapped to LFS/N0804, v1

Terminal Outcomes:

- Demonstrate how to perform maintenance of Electric Utility.

Duration: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basic principles of Electric Utilities. • Discuss different parts of Electric Utilities and their functions. • Discuss the various tools and equipment required for the maintenance of Electric Utilities. • Describe the basic maintenance functions performed in Electric Utilities. 	<ul style="list-style-type: none"> • Demonstrate how to verify the voltage and phases of electricity in the main Power Control Centre (PCC). • Demonstrate how to identify defect/problem in the Electric Utility.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Setup of the Electric Utility	

Module 13: Maintenance of gas utility

Mapped to LFS/N0804, v1

Terminal Outcomes:

- Demonstrate how to perform maintenance of Gas Utility.

Duration: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basic principles of Gas Utility. • Discuss different parts of Gas Utility and their functions. • Discuss various tools and equipment required for the maintenance of Gas Utility. • Describe the basic maintenance functions performed in Gas Utility. 	<ul style="list-style-type: none"> • Demonstrate how to handle, unload, and store gas cylinders. • Demonstrate how to monitor compressed air and gases in different plant/R&D facilities. • Demonstrate how to test the frequency of various gases and its utility • Demonstrate how to identify any type of gas leakage in different plant/R&D facilities during mock trainings.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Setup of the Gas Utility	

Module 14: Maintenance of water utility

Mapped to LFS/N0804, v1

Terminal Outcomes:

- Demonstrate how to perform maintenance of the Water Utility system.

Duration: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basic principles of Water Utility. • Discuss different parts of Water Utility and their functions. • Discuss various tools and equipment required for the maintenance of Water Utility. • Describe the basic maintenance functions performed in Water Utility. 	<ul style="list-style-type: none"> • Demonstrate how to maintain purified water, distilled water, tap water and water for injection as per the required specifications. • Demonstrate how to inspect the water system for leakage, rusting, contamination etc. during mock trainings.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speaker, Pencil	
Tools, Equipment and Other Requirements	
Setup of the Water Utility system	

Module 15: Maintenance of steam utility

Mapped to LFS/N0804, v1

Terminal Outcomes:

- Demonstrate how to perform maintenance of Steam Utility.

Duration: 04:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the basic principles of Steam Utility. • Discuss different parts of Steam Utility and their functions. • Discuss various tools and equipment required for the maintenance of Steam Utility. • Describe the basic maintenance functions performed in Steam Utility. 	<ul style="list-style-type: none"> • Demonstrate how to operate and clean the steam sterilizer • Demonstrate how to check the connectivity of all the utilities such as compressed air, water with the boiler. • Demonstrate how to check the cleaning status of Steam Utility, and water level in the boiler of the autoclave.
Classroom Aids:	
Whiteboard, Marker Pen, Computer or Laptop attached to LCD projector, Scanner, Computer speakers, flip charts	
Tools, Equipment and Other Requirements	
Setup of the Steam Utility	

Mandatory Duration: 00:00

Recommended Duration: 2304:00

Module Name: On The Job Training

Location: On-Site

Terminal Outcomes

- Prepare for maintenance in compliance with maintenance schedule and job safety guidelines.
- Maintain a healthy, safe and secure working environment in a production facility and GMP controlled area.
- Ensure a hygienic and clean work area to avoid contamination.
- Coordinate with reporting manager, teammates, and cross-functional teams
- Assist the Maintenance Technician/supervisor to carry out specialized maintenance by following GMP and regulatory guidelines as per the SOP.
- Assist the Maintenance Technician/Supervisor in performing maintenance activities on mechanical equipment, as per approved procedures

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training Experience		Remarks
		Years	Specialization	Years	Specialization	
12 th Class	Polytechnic Diploma	5	Maintenance operations	0	NA	
Graduate	Polytechnic Diploma/ Engineering Graduate	3	Maintenance operations	0	NA	

Trainer Certification	
Domain Certification	Platform Certification
Certified for the job role: “Maintenance Assistant – Life Sciences” mapped to the Qualification Pack: “LFS/Q0801, v1.0” with minimum accepted score of 80%.	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q2601,v1.0” with minimum score of 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	Specialization	Relevant Industry Experience		Training/Assessment Experience		Remarks
		Years	Specialization	Years	Specialization	
12 th Class	Polytechnic Diploma	6	Maintenance operations	1	On the job assessment/ Training experience/ Vocational assessment/ Academic assessment	
Graduate	Polytechnic Diploma/ Engineering Graduate	4	Maintenance operations	1	On the job assessment/ Training experience/ Vocational assessment/ Academic assessment	

Assessor Certification	
Domain Certification	Platform Certification
Certified for the job role: “Maintenance Assistant – Life Sciences” mapped to the Qualification Pack: “LFS/Q0801, v1.0” with minimum score of 80%.	Recommended that the Assessor is certified for the Job Role: “Assessor”, mapped to the Qualification Pack: “MEP/Q2701, v1.0” with minimum score of 80%.

Assessment Strategy

This section includes the processes involved in identifying, gathering, and interpreting information to evaluate the learner on the required competencies of the program.

The assessment for the Training will be conducted toward the end of the training duration.

Assessment Process:

For Execution of the assessment for training, LSSSDC will be engaging more than one assessment agency/ body.

1.1 Criteria of selection of assessment body/agency:

The assessment body/agency is selected based on

- Prior experience and understanding of Life Sciences or similar sector.
- Experience in conducting assessments for similar job roles.
- Manpower and Technical capabilities.
- Geographical reach
- Existing Network in the Life Sciences Sector
- Agencies internal policies to maintain standards, quality & professional Integrity
- Agencies policy in assessor management

1.2 Assessment tool for Training:

For the Training assessment, the assessment instrument development is done by the selected assessment body with close monitoring and support of LSSSDC at every stage.

1.2.1 Digital Written test for knowledge assessment:

Scope – Is used to test the knowledge component of the QP.

Tools –computer or tab based online or offline.

Method – objective type questions, match the columns, fill in the blanks, tick the odd man out, choose the correct option, choose the best answer, True or false, Identify the object, tool or machinery, arrange in proper sequence, case study, scenario-based responses.

Analysis – Question paper is divided into sections. Each Section intends to assess a particular knowledge field of the trainee. Thus, section-wise calculation of marks gives a clear idea of the areas of improvement or expertise of the trainee. While a consolidated mark gives the overall rating of the trainee.

2.2.2 Digital Written test for skill assessment:

Scope – Is used to test primarily the Skill component of the QP. Trainee's expertise in handling and managing the situation is tested.

Tools – computer or tab based online or offline questions

Method – A situation is narrated or created in the question posed to the trainee and he is asked objective type questions to select the correct reaction to the situation. The selected situations are based on real situations.

Analysis – Question paper is divided into sections. Each Section intends to assess a particular skill field of the trainee. Thus, section-wise calculation of marks gives a clear idea of the areas of improvement or expertise of the trainee. While a consolidated mark gives the overall rating of the trainee.

2.3 Steps for assessment development:

- The selection of assessment tool(s) is done as per the assessment criteria prescribed in Qualification Pack.
- For Maintenance Assistant - Life Sciences assessment a blueprint of the question paper is part of the assessment tool for training.
- Development of layout of Question paper is such that the entire PCs (Performance Criteria) of that QP are covered.
- Score per question maps with the weightage given to that PC, in the assessment criteria, and the level of difficulty of the question.
- An expert from industry is selected who is called “Subject Matter Expert” (SME). This SME must have over 13-15 years of experience in the industry in manufacturing occupation.
- SME is screened and approved by LSSSDC. He is oriented by both LSSSDC and Assessment agency on – creating question Bank, level of questions, end the desired outcome of the assessment.

2.4 Execution of Training Assessment:

- Once LSSSDC receives the OJT assessment results, the assessment date for training is decided with common agreement of Industry and LSSSDC, and turn is directed to an assessment body/agency.
- Assessment agency ensures the availability of required infrastructure, tools for the assessment.
- The assessment is executed in two possible ways depending on the choice of the industry:

2.4.1 Tab based assessment using physical proctoring

2.4.2 Smartphone-based assessment using e-proctoring

2.4.1 Tab-based assessment using physical proctoring

- A representative from the Assessment agency is present on the day of assessment to executing the assessment at the venue in case of physical proctoring.
- The assessment agency representative carries an identity card and letter from the council authorizing to conduct the assessment.
- Assessment agency representative ensures the authenticity of Trainee’s identity by verifying the documents (any document issued by GOI, such as Ration card, Aadhaar Card, Driving Licence, Passport, Election card, etc)

- The assessment agency representative maintains the records of attendance, verified documents, and tablet instruments used in the assessment.
- Assessment agency representative collects evidence of the assessment in the best possible way (videos, pictures, voice recordings, etc)
- Assessment agency representative transfers the assessment scores from tab to assessment agency server, using a secure, encrypted web-based program.
- The assessment agency after processing the results and putting them in standard format hands over to LSSSDC within 7 days of assessment.

2.4.2 Smartphone-based assessment using e-proctoring

- All trainees due for assessments are registered on an assessment tool application using their unique mobile number and e-mail ID along with a Govt. ID issued proof.
- An assessment link is sent to the mail ID of each trainee with a defined expiry date of the link.
- Trainee at any location can click on the link using his/her smartphone or a web camera-enabled computer system
- Using the unique credentials and Govt ID number, the trainee logs in for the start of assessment and completes the assessment.
- The authenticity of Trainee's identity is done by assessment application by verifying the documents (any document issued by GOI, such as Ration card, Aadhaar Card, Driving Licence, Passport, election card, etc.) and a live photo capture
- A live video of the candidate during the assessment is captured to collect the evidence of the assessment
- Once the assessment is complete, the assessment application automatically assessment scores to the assessment agency server, using a secure, encrypted web-based program.
- The assessment agency after processing the results and putting them in standard format hands over to LSSSDC within 7 days of assessment.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts, and principles that need to be known and/or understood to accomplish a task or to solve a problem.
Key Learning Outcome	The key learning outcome is the statement of what a learner needs to know, understand, and be able to do 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 task. It is the ability to work or produce a tangible work output by applying cognitive, affective, or psychomotor skills.
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	The 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 helps 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
EHS	Environment Health Safety
GLP	Good Laboratory Practices
GMP	Good Manufacturing Practices
WHO	World Health Organization
SOP	Standard Operating Procedure
PPE	Personal protective Equipment
ALCOA	Attributable, Legible, Contemporaneous, Original and Accurate
TPM	Total Productive Maintenance
HVAC	Heating, Ventilation, and Air Conditioning
PCC	Power Control Centre