

# Model Curriculum

## Lab Technician / Assistant

**SECTOR: LIFE SCIENCES**  
**SUB-SECTOR: PHARMACEUTICAL AND BIOPHARMACEUTICAL**  
**OCCUPATION: RESEARCH AND DEVELOPMENT**  
**REF ID: LFS/Q0509, V1.0**  
**NSQF LEVEL: 3**



## Certificate

### CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

**LIFE SCIENCES SECTOR SKILL DEVELOPMENT COUNCIL**

for the

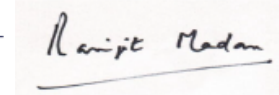
**MODEL CURRICULUM**

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: '**Lab Technician/ Assistant**'  
QP No. '**LFS/Q0509 NSQF Level 3**'

Date of Issuance: **December 28<sup>th</sup>, 2018**

Valid up to: **December 31<sup>st</sup>, 2021**

\* Valid up to the next review date of the Qualification Pack



Authorized Signatory  
(Life Sciences Sector Skill Development Council)

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# Lab Technician / Assistant

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Lab Technician / Assistant”, in the “Life Sciences” Sector/Industry and aims at building the following key competencies amongst the learner

<b>Program Name</b>	<b>Lab Technician / Assistant</b>		
<b>Qualification Pack Name &amp; Reference ID. ID</b>	Lab Technician / Assistant LFS/Q0509, V1.0		
<b>Version No.</b>	2.0	<b>Version Update Date</b>	28.12.2018
<b>Pre-requisites to Training</b>	Minimum qualification – 10+2		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• Explain the salient aspects of the life sciences industry and its pertinent regulations in order to demonstrate performance that is in line with industry standards.</li> <li>• Follow environment, health and safety (EHS) norms at work in the life sciences facility/ laboratory</li> <li>• Inspect and maintain lab area, equipment and lab glassware/plasticware clean and calibrated as per good laboratory practices (GLP) and standard operating procedures (SOP)</li> <li>• Reprocess the instruments before carrying out experiments as per good laboratory practices (GLP) and standard operating procedures (SOP)</li> <li>• Handle, label and store materials/ chemicals as per good laboratory practices (GLP), environment, health and safety (EHS) norms and standard operating procedures (SOP)</li> <li>• Prepare solution and reagent under the guidance and supervision of research/ quality control team and check the working environment for experiments in conformation of good laboratory practices (GLP) and standard operating procedures (SOP)</li> <li>• Set up experiments in lab under the guidance and supervision of research/ quality control team in conformation of good laboratory practices (GLP) and standard operating procedures (SOP)</li> <li>• Perform waste disposal as per good laboratory practices (GLP), environment, health and safety (EHS) norms and standard operating procedures (SOP)</li> <li>• Maintain records, deviation/incident reports and logs in lab as per good laboratory practices (GLP), good documentation practices (GDP) and standard operating procedures (SOP)</li> <li>• Demonstrate professional skills at work, such as decision making, planning and organizing, problem solving, analytical thinking, critical thinking, customer centricity</li> </ul>		

This course encompasses 8 out of 8 National Occupational Standards (NOS) of “Lab Technician/ Assistant” Qualification Pack issued by “Life Sciences Sector Skill Development Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p><b>Life Sciences Industry and laboratory Related Regulations</b></p> <p><b>Theory Duration</b> (hh:mm) 05:00</p> <p><b>Practical Duration</b> (hh:mm) 00:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<ul style="list-style-type: none"> <li>• Explain the Life Sciences industry and its sub-sectors</li> <li>• Summarize regulatory authorities rules and regulations for quality control lab and research and development lab</li> <li>• Explain typical laboratory functions in a life sciences organization.</li> <li>• Follow good laboratory practices (GLP) and good manufacturing practices (GMP) and good documentation practices (GDP) at work</li> <li>• Explain the organizational structure and employment benefits in Life Sciences Industry</li> <li>• Outline the role of a Lab Technician and practise the required skills as per Qualification Pack</li> </ul>	<p>Participant Manual, Power point presentation, Case Studies, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts, GLP guidelines, WHO guidelines, GMP guidelines</p>
2	<p><b>Health and Safety</b></p> <p><b>Theory Duration</b> (hh:mm) 08:00</p> <p><b>Practical Duration</b> (hh:mm) 10:00</p> <p><b>Corresponding NOS Code</b> LFS/N0101</p>	<ul style="list-style-type: none"> <li>• Follow procedures and guidelines for personal protective equipment (PPE) and other safety regulations in quality control lab</li> <li>• Ensure that work area is clean and safe from hazards</li> <li>• Recall the basic concepts of safety including hazards, accidents, safety signs and signals and Heinrich pyramid and practice all above in lab</li> <li>• Explain functioning of utility systems at plant and laboratory</li> <li>• Use material safety data sheet(MSDS) and follow the process of safety analysis</li> <li>• Follow the fire safety concepts and prepare oneself to act in case of fire emergency in lab</li> <li>• Provide the critical information to concerned team members and supervisor</li> <li>• Follow the emergency procedures and perform first aid in case of accident</li> <li>• Practice professional skills at work such as decision making, planning and organizing, problem solving, analytical thinking, critical thinking, customer centricity</li> </ul>	<p>Participant Manual, Power point presentation, Computer, Microsoft Office Version 2007 and above (including Ms. Word, Ms Excel, Ms PowerPoint, Ms Outlook), Computer work desk with LAN, LCD Projector, White Board, White Board Duster, White Board Marker, Flip Charts, Chemical Resistant Cabinet, Chemical spillage kit , Acid Dispenser, Biosafety Cabinet, Depyrogenation oven, Cleaning Agent (Soap and Alconox), Half Face Mask, Full Face Mask, Various Cartridges, Safety Goggles, Safety Shoes, Gum Boots, Chemical Absorbent Roll, Self-Contained Breathing Apparatus, PVC Apron, Gloves(Nitrile), Gloves({Heat, acid, chemical} resistant), Gloves (washing), Lab Coat, Non sterile Surgical Gloves, Manual bottle eye washer, CO<sub>2</sub> type Fire Extinguisher, ABC Type Fire Extinguisher, Material Safety Data Sheet,</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			Mandatory 14 Chemicals solvents
3	<p><b>Good Laboratory Practices</b></p> <p><b>Theory Duration</b> (hh:mm) 06:00</p> <p><b>Practical Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> LFS/N0530</p>	<ul style="list-style-type: none"> <li>Describe different types of lab equipment and their use in laboratory</li> <li>Follow procedures and guidelines for personal protective equipment (PPE) and other safety regulations in quality control lab</li> <li>Follow the access control procedure for laboratory access</li> <li>Describe the standard operating procedures and good laboratory practices followed in life sciences laboratory</li> <li>Monitor the environmental variables in lab and escalate in case of deviation as per SOP</li> <li>Follow the clean room behaviour in case of laboratory at a manufacturing unit</li> <li>Maintain the utility systems of water, gases and HVAC in laboratory</li> <li>Use material safety data sheet and follow the process of safety analysis for material handling and storage</li> <li>Inspect and maintain lab area, equipment and lab glassware/plasticware</li> <li>Clean and calibrated glassware as per good laboratory practices (GLP) and standard operating procedures (SOP)</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts, GLP guidelines, WHO guidelines, GMP guidelines
4	<p><b>Workplace cleanliness</b></p> <p><b>Theory Duration</b> (hh:mm) 04:00</p> <p><b>Practical Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> LFS/N0103</p>	<ul style="list-style-type: none"> <li>Maintain level of hygiene as required by lab as per SOP</li> <li>Use basic instructions and tools for housekeeping</li> <li>Recall methodology for lab area inspection with best methods and materials required for cleaning variety of surfaces and equipment</li> <li>Recall all types of stains and cleaning material required to remove the specific stain</li> <li>Apply the cleaning procedure including various types of risks, time and efficiency assessment</li> <li>Report affected persons by using “wet floor” or “do’s and don’ts” type of signage or labelling</li> <li>Assess all types of working environment conditions (ventilation, temperature) and required personal protective equipment at the time of cleaning method and material usage</li> <li>Use correct methods as per GLP for various types of soiling and surface.</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>Describe all types of accidental damage at the time of work</li> <li>Assess any out of control situation and report to lab in-charge</li> <li>Examine the workplace for cleanliness after every maintenance activity and update the cleaning status</li> <li>Examine the floor after cleaning activities for oily substance and scrap material around the work area</li> <li>Evaluate accidental damage and reinforce the GLP protocol and workplace SOPs</li> <li>Assess the need of cleaning kit and supplies</li> <li>Initiate the procurement request for replenish the stock of cleaning kit and supplies</li> <li>Maintain stock of cleaning kit and supplies as per GLP and GDP protocols</li> <li>Use personal protective equipment and after use put them at neat and clean place</li> <li>Dispose waste and scrap material</li> <li>Clean all equipment as per SOPs</li> <li>Recall laboratory safety manual and information about autoclave and water wash application</li> </ul>	
5	<p><b>Cleaning of Lab instruments</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 16:00</p> <p><b>Corresponding NOS Code</b> LFS/N0531</p>	<ul style="list-style-type: none"> <li>Follow procedures and guidelines for personal protective equipment (PPE) and other safety regulations</li> <li>Select the detergent which is compatible with area water and leave behind no undesirable residues on the cleansed laboratory ware and equipment.</li> <li>Wash and clean the glassware with the different solution and types of water to ensure complete cleaning and removal of dirt as per SOP</li> <li>Follow standard operating procedures (SOP) and regulatory guidelines for use of solvents and chemicals during cleaning and washing</li> <li>Operate autoclave for sterilization of the washed glassware as per SOP</li> <li>Process the glassware for experimentation</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts, Hot air oven, Glassware drying oven, Cleaning agents (soap/alconox etc), Glassware for Lab, Columns, autoclave, Half Face Mask, Gloves(Nitrile, {Heat, acid, chemical} resistant, washing etc..), Lab Coat, Material Safety Sheet, GLP guidelines, WHO guidelines, GMP guidelines
6	<p><b>Cleaning validation, reprocessing and sterilization</b></p> <p><b>Theory Duration</b> (hh:mm) 4:00</p>	<ul style="list-style-type: none"> <li>Check the instruments and lab glassware and plasticware for any residue or stain</li> <li>Clean the surface, instruments and lab glassware and plasticware as per SOP</li> <li>Perform the cleaning validation and record as per SOP</li> <li>Operate autoclave, water wash appliances and hot air oven</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk,

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p><b>Practical Duration</b> (hh:mm) 08:00</p> <p><b>Corresponding NOS Code</b> LFS/N0560</p>	<ul style="list-style-type: none"> <li>Reprocess the glassware for experimentation</li> <li>Perform sterilization process</li> <li>Store the cleaned instruments, glassware and plasticware in the secure, dry and sterile area</li> <li>Follow safety rules while cleaning and re-processing activities</li> </ul>	<p>duster, flip charts, Analytical balance with printer, Pipettes (1mL, 2mL, 5 ml/10 ml), Sonicator, Hot air oven, Rotary shaker, water bath, Glassware drying oven, Cleaning agents (soap/alconox etc), Centrifuge, Centrifuge tubes, pH meter, conductivity meter, Scale, Magnetic stirrers, Hot plate with magnetic stirrer, LOD bottles, Desiccator, Droppers, Vortex mixer, Lab equipped with Fume Hoods, Glassware for Lab, Burette stand with white tile, Columns, autoclave, titrator, melting point, Half Face Mask, Full Face Mask, Various Cartridges, Safety Goggles, Safety Shoes, Gum Boots, Chemical Absorbent, Self-Contained Breathing Apparatus, PVC Apron, Gloves(Nitrile, {Heat, acid, chemical} resistant, washing etc..), Lab Coat, Surgical Gloves (in Microbiology), Eye washer with sprinkler/ Manual bottle eye washer, Co2 type Fire Extinguisher, ABC Type Fire Extinguisher, Sample Logs, Material Safety Sheet, GLP guidelines, WHO guidelines, GMP guidelines</p>
7	<p><b>Experimentation and Analysis</b></p> <p><b>Theory Duration</b> (hh:mm) 14:00</p> <p><b>Practical Duration</b> (hh:mm) 14:00</p> <p><b>Corresponding NOS Code</b> LFS/N0530</p>	<ul style="list-style-type: none"> <li>Explain the concepts and application of various testing equipment in life sciences lab</li> <li>Use the fundamentals of organic and analytical chemistry in identifying and handling the testing sample/ chemical element</li> <li>Ensure the reagents, glassware, equipment is available at the right time</li> <li>Operate, maintain, and install laboratory instruments and glassware for setting up of the experiment</li> <li>Set up Testing equipment as per related test methods and know the purpose of tests</li> </ul>	<p>Participant Manual, Power point presentation, Computer System, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, Analytical balance with printer, Pipettes (1mL, 2mL, 5 ml/10 ml), Sonicator, Hot air oven, Rotary shaker, water bath, Glassware drying oven, Cleaning agents (soap/alconox etc),</p>



Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Monitor batch fermentation process or any other experiments to support the chemist and research associates in lab</li> <li>• Record observation and report to chemist/ research associate</li> <li>• Document accurate and detailed logs of work performed to ensure adherence to protocol and procedures</li> <li>• Set up and operate standard equipment in life sciences laboratory</li> <li>• Inspect and maintain running stock of equipment parts, chemicals, solvents and other lab material</li> <li>• Identify non-conforming chemicals and solvents in lab and dispose them as per SOP and guidelines of GLP</li> <li>• Follow the Material disposal procedure</li> <li>• Explain the importance of appropriate disposal of material and implications of not following the material disposal procedure</li> <li>• Report typical instrument faults and related causes, including recognition of signs and symptoms of faulty lab instruments and apparatus /early warning signs of potential problems</li> <li>• Assess risk and impact of deviating from the defined procedures/work instructions and follow the instructions and SOPs</li> <li>• Follow the escalation matrix for reporting identified issues, hazards and breakage</li> </ul>	Centrifuge , Centrifuge tubes, pH meter, conductivity meter, Scale, Magnetic stirrers, Hot plate with magnetic stirrer, LOD bottles, Desiccator, Droppers, Vortex mixer, Lab equipped with Fume Hoods, Glassware for Lab, Burette stand with white tile, Columns, autoclave, titrator, melting point, Half Face Mask, Full Face Mask, Various Cartridges, Safety Goggles, Safety Shoes, Gum Boots, Chemical Absorbent, Self-Contained Breathing Apparatus, PVC Apron, Gloves(Nitrile, {Heat, acid, chemical} resistant, washing etc..), Lab Coat, Surgical Gloves (in Microbiology), Eye washer with sprinkler/ Manual bottle eye washer, CO <sub>2</sub> type Fire Extinguisher, ABC Type Fire Extinguisher, Sample Labels, Sample Lab Notebook, Sample Logs, Sample Analytical Report with graph, Material Safety Sheet, GLP guidelines, WHO guidelines, GMP guidelines
8	<b>Solution and Reagent Preparation</b>  <b>Theory Duration</b> (hh:mm) 16:00 <b>Practical Duration</b> (hh:mm) 28:00  <b>Corresponding NOS Code</b> LFS/N0532 LFS/N0533	<ul style="list-style-type: none"> <li>• Maintain the standard working environment in the testing lab</li> <li>• Explain the properties and uses of chemicals commonly used in life sciences laboratories</li> <li>• Maintain safety standards for handling various solutions and chemicals</li> <li>• Explain various common testing methods and their purpose</li> <li>• Prepare and test reagent water in the laboratory</li> <li>• Prepare specimens and samples as per the guidelines and required for the experiment</li> <li>• Ensure proper procedure is followed in reagent preparation</li> <li>• Ensure proper mixing of chemicals</li> <li>• Ensure safety by ensuring separation of incompatible chemicals and reagents</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts, Analytical balance with printer, Pipettes (1mL, 2mL, 5 ml/10 ml), Sonicator, Hot air oven, Rotary shaker, water bath, Glassware drying oven, Cleaning agents (soap/alconox etc), Centrifuge , Centrifuge tubes, pH meter, conductivity meter, Scale, Magnetic stirrers, Hot plate with magnetic stirrer, LOD

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> <li>• Prepare media and buffer for fermentation experiments</li> <li>• Ensure purified water requirements are specified for clinical laboratory testing procedures</li> <li>• Prepare working solutions from concentrated stock solutions</li> <li>• Use the knowledge of formulae as specified by the lab chemists for solution preparation</li> <li>• Measure the strength of solutions and weigh them as per guidelines</li> <li>• Report Common causes of variation and seek the corrective action required from lab chemist</li> </ul>	bottles, Desiccator, Droppers, Vortex mixer, Lab equipped with Fume Hoods, Glassware for Lab, Burette stand with white tile, Columns, autoclave, titrator, melting point, Half Face Mask, Full Face Mask, Various Cartridges, Safety Goggles, Safety Shoes, Gum Boots, Chemical Absorbent, Self-Contained Breathing Apparatus, PVC Apron, Gloves(Nitrile, {Heat, acid, chemical} resistant, washing etc.), Lab Coat, Surgical Gloves (in Microbiology), Eye washer with sprinkler/ Manual bottle eye washer, Co2 type Fire Extinguisher, ABC Type Fire Extinguisher, Sample Labels, Sample Lab Notebook, Sample Logs, Sample Analytical Report with graph, Material Safety Sheet, GLP guidelines, WHO guidelines, GMP guidelines
9	<b>Handling chemical containers</b>  <b>Theory Duration</b> (hh:mm) (08:00)  <b>Practical Duration</b> (hh:mm) 08:00  <b>Corresponding NOS Code</b> LFS/N0533 LFS/N0101	<ul style="list-style-type: none"> <li>• Take appropriate measures in handling of chemicals, their proper labelling and stocking</li> <li>• Follow the SOP of material handling</li> <li>• Use material safety data sheets to gain knowledge of characteristics of the product material.</li> <li>• Use suitable measuring devices</li> <li>• Transfer the chemicals and solvents from large containers to smaller containers following the GLP and SOPs</li> <li>• Carry out labelling and packaging of chemical containers in accordance with applicable regulations</li> <li>• Label all chemical containers as per SOP</li> <li>• Move the received chemicals to the designated storage area</li> <li>• Place acid-resistant trays under bottles of mineral acids</li> <li>• Wear appropriate personal protective equipment all the time while in the lab</li> <li>• Store incompatible chemicals away from each other</li> <li>• Dispose the expired and waste chemicals as per GLP, SOP and EHS rules</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts, Analytical balance, Pipettes (1mL, 2mL, 5 ml/10 ml), pH meter, Scale, Desiccator, Droppers, Columns, titrator, melting point, Half Face Mask, Full Face Mask, Various Cartridges, Safety Goggles, Safety Shoes, Gum Boots, Chemical Absorbent, Self-Contained Breathing Apparatus, PVC Apron, Gloves(Nitrile, {Heat, acid, chemical} resistant, washing etc.), Lab Coat, Surgical Gloves (in Microbiology), Eye washer with sprinkler/

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			Manual bottle eye washer, CO <sub>2</sub> type Fire Extinguisher, ABC Type Fire Extinguisher, Sample Labels, Sample Logs, Material Safety Sheet, GLP guidelines, WHO guidelines, GMP guidelines
10	<p><b>Laboratory Documentation</b></p> <p><b>Theory Duration</b> (hh:mm) 15:00</p> <p><b>Practical Duration</b> (hh:mm) 10:00</p> <p><b>Corresponding NOS Code</b> LFS/N0534</p>	<ul style="list-style-type: none"> <li>• Explain the importance of complete and accurate documentation</li> <li>• Use monitoring and measuring devices for recording the environmental variables</li> <li>• Maintain chemical storage and usage records, sample log, registers, quality control data, incident reports and SOPs</li> <li>• Maintain instrument maintenance records</li> <li>• Maintain test specific reports</li> <li>• Practice safe and secure storing and archiving for all relevant documents</li> <li>• Carry out labelling of samples and reagents as per SOPs.</li> <li>• Explain implications of inaccurate measuring and testing instruments and equipment and implications of defective products, materials or components</li> <li>• Record detail of work done using written/typed report or computer-based record/electronics mail.</li> <li>• Follow all SOPs and health and safety instructions.</li> <li>• Interpret the chemical equation diagram, graph and coding system.</li> <li>• Recognize confidential and sensitive information in the lab</li> <li>• Adapt the data integrity rules while entering the information in various types of documents in compliance of GLP, GMP and (good clinical practices) GCP protocol</li> <li>• Demonstrate compliance to the information security procedures while communicating</li> <li>• Follow data integrity while communicating with chemists, associates, lab in-charge, auditors, clients and QA team</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts, Sample Labels, Sample Logs, Material Safety Sheet, sample lab notebook, GDP guidelines, GLP guidelines, WHO guidelines, GMP guidelines, computer lab
11	<p><b>Information Technology Skills at work</b></p> <p><b>Theory Duration</b> (hh:mm) 10:00</p> <p><b>Practical Duration</b> (hh:mm) 20:00</p>	<ul style="list-style-type: none"> <li>• Apply basic computer skills (MS Office, Internet) at work.</li> <li>• Use lab management information system (LMIS) in a QC or R&amp;D Lab.</li> </ul>	Participant Manual, Power point presentation, Computer system, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts, Computer Lab

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<b>Corresponding NOS Code</b> LFS/N0534		
12	<b>On the Job Training</b>  <b>Theory Duration</b> (hh:mm) 00:00  <b>Practical Duration</b> (hh:mm) 00:00  <b>OJT Duration</b> (hh:mm) 60:00  <b>Corresponding NOS Code</b> LFS/N0530 LFS/N0531 LFS/N0532 LFS/N0533 LFS/N0534 LFS/N0560 LFS/N0101 LFS/N0103	<ul style="list-style-type: none"> <li>Assist the lab/QC Chemists/ Research Associates in performing the experiments and analysis.</li> <li>Carry out washing, processing and drying of the glassware/plastic ware for experimentation</li> <li>Carry out preparation of solution and reagents</li> <li>Handle chemicals and solvents in lab</li> <li>Maintain Lab records and perform labelling</li> <li>Reprocess the instruments before carrying out experiments</li> <li>Maintain a healthy, safe and secure working environment</li> <li>Ensure workplace cleanliness</li> </ul>	OJT Monitoring Report
	<b>Total Duration</b>  <b>Theory Duration</b> <b>100:00</b>  <b>Practical Duration</b> <b>130:00</b>  <b>OJT Duration</b> <b>60:00</b>	<b>Unique Equipment Required:</b> Participant Manual, Power point presentation, Computer System, LCD Projector and Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, Analytical balance with printer, Pipettes (1mL, 2mL, 5 ml/10 ml), Sonicators, Hot air oven, Rotary shaker, water bath, Glassware drying oven, Cleaning agents (soap/alconox etc), Centrifuge , Centrifuge tubes, pH meter, conductivity meter, Scale, Magnetic stirrers, Hot plate with magnetic stirrer, LOD bottles, Desiccator, Droppers, Vortex mixer, Lab equipped with Fume Hoods, Glassware for Lab, Burette stand with white tile, Columns, autoclave, titrator, melting point, Half Face Mask, Full Face Mask, Various Cartridges, Safety Goggles, Safety Shoes, Gum Boots, Chemical Absorbent, Self-Contained Breathing Apparatus, PVC Apron, Gloves(Nitrile, {Heat, acid, chemical} resistant, washing etc.), Lab Coat, Surgical Gloves (in Microbiology), Eye washer with sprinkler/ Manual bottle eye washer, CO <sub>2</sub> type Fire Extinguisher, ABC Type Fire Extinguisher, Sample Labels, Sample Lab Notebook, Sample Logs, Sample Analytical Report with graph, Material Safety Sheet, GLP guidelines, WHO guidelines, GMP guidelines	

Grand Total Course Duration: **290 Hours (230 hours for class room and skill lab training + 60 hours of mandatory OJT)**

(This syllabus/ curriculum has been approved by Life Sciences Sector Skill Development Council)

## Trainer Prerequisites for Job role: “Lab Technician / Assistant” mapped to Qualification Pack: “LFS/Q0509, V1.0”

Sr. No.	Area	Details
1	<b>Description</b>	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “LFS/Q0509, V1.0”.
2	<b>Personal Attributes</b>	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	<b>Minimum Educational Qualifications</b>	10+2 (with Chemistry and Biology Subject) or Graduate (Preferably B. Sc. / B. Pharma)
4a	<b>Domain Certification</b>	Certified for Job Role: “Lab Technician / Assistant” mapped to QP: “LFS/Q0509, V1.0”. Minimum accepted score is 80% as per LSSSDC guidelines.
4b	<b>Platform Certification</b>	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q0102”. Minimum accepted score is 80% as per LSSSDC guidelines.
5	<b>Experience</b>	<p>Minimum Three (3) years’ experience in life sciences (Pharmaceutical/ Biopharmaceutical) Research and Development/ Quality occupation as Lab Technician out of total Min. Six (6) years’ experience for non-trained and non-qualified talent with 12<sup>th</sup> Class education</p> <p>Or</p> <p>Minimum Two (2) years’ experience in life sciences (Pharmaceutical/ Biopharmaceutical) Research and Development/ Quality occupation as Lab Technician out of total Min. Four (4) years’ experience for non-trained and non-qualified talent with B. Sc. With Chemistry/ Biotechnology/ Biochemistry/ Microbiology subject</p> <p>Or</p> <p>Minimum One (1) years’ experience in life sciences (Pharmaceutical/ Biopharmaceutical) Research and Development/ Quality occupation as Lab Technician out of total Min. Three (3) years’ experience for non-trained and non-qualified talent with M. Sc. With Chemistry/ Biotechnology/ Biochemistry/ Microbiology subject</p> <p>Or</p> <p>Minimum Two (2) years’ experience in life sciences (Pharmaceutical/ Biopharmaceutical) Research and Development/ Quality occupation as Lab Technician/ Assistant post Lab Technician/ Assistant-Life Sciences (LFS/Q0509) Level-3 qualification</p>

## Annexure: Assessment Criteria

<b>Assessment Criteria</b>	
<b>Job Role</b>	<b>Lab Technician / Assistant</b>
<b>Qualification Pack</b>	<b>LFS/Q0509, V1.0</b>
<b>Sector Skill Council</b>	<b>Life Sciences Sector Skill Development Council</b>

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria laid out in Qualification Pack)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on the assessment criteria laid out in qualification pack
5	To pass the Qualification Pack, every trainee should score a minimum of 50% aggregate in all NOS
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessment Outcome	Assessment Criteria for Outcome	Total Marks (800)	Marks Allocation		
			Out of	Theory	Practical
<b>1.LFS/N0531</b> <b>Carry out washing, processing and drying of the glassware/plastic ware for experiment ation</b>	PC1.washing and cleaning the glassware with different solutions and types of water to ensure complete cleaning and removing of dirt	100	10	5	5
	PC2. ensure glass and plastic ware used for experimentation to be scrupulously clean		10	5	5
	PC3. use deionized distilled water as the final rinse in the cleansing process		10	5	5
	PC4. sterilize contaminated laboratory ware before cleansing		10	5	5
	PC5. monitor proper operation and supply of the distilled and deionized water sources		10	5	5
	PC6. select detergent which is compatible with area water and leaves behind no undesirable residues on the cleansed laboratory ware and equipment		10	5	5

	PC7. check cleansed laboratory ware and equipment for acid / reagent residues		10	5	5
	PC8. inspect washed laboratory ware and equipment for cleanliness.		10	5	5
	PC9. code all laboratory ware and equipment to cleansing specifications required for laboratory studies.		7	4	3
	PC10. use autoclave for drying and sterilization of the glassware before further use.		7	3	4
	PC11. support seniors in monitoring batch fermentation process		6	3	3
	<b>Total</b>		<b>100</b>	<b>50</b>	<b>50</b>
<b>2.LFS/ N0530</b> <b>Help the lab/QC Chemists/ Research Associates in performing the experiments and analysis</b>	PC1. to ensure the reagents, glassware, equipment is available at the right time.	100	10	5	5
	PC2. to assist in laboratory tests in order to produce reliable and precise data to support scientific investigations		10	5	5
	PC3. to prepare specimens and samples as per the guidelines and required for the experiment		10	5	5
	PC4. to set up and operate standard laboratory equipment, for example centrifuges, titrators, pipetting machines and pH meters		10	5	5
	PC5. to carry out routine tasks accurately and maintain strict adherence to sops		10	5	5
	PC6. to follow and ensure strict safety procedures and safety checks are followed		10	5	5
	PC7. keeping up to date with technical developments, especially those which can save time and improve reliability		10	5	5
	PC8. maintaining and repairing equipment and laboratory apparatus as a part of routine activities		10	5	5
	PC9. coordinating work in the laboratory to ensure efficient use is made of expensive pieces of equipment.		10	5	5
	PC10. ensuring the laboratory is well-stocked and resourced		10	5	5
	<b>Total</b>		<b>100</b>	<b>50</b>	<b>50</b>

<b>3.LFS/N0532</b> <b>Carry out preparation of solution and reagents</b>	PC1. to be well informed about the various reagents and associated specifications to be used in the laboratory	100	10	5	5
	PC2. ensure proper procedure is followed in reagent preparation		12	5	7
	PC3. ensure proper mixing of chemicals		11	5	6
	PC4. ensure safety by ensuring separation of incompatible chemicals and reagents		10	5	5
	PC5. preparation of media and buffer for fermentation experiments		10	5	5
	PC6. ensure purified water requirements are specified for clinical laboratory testing procedures		11	5	6
	PC7. ensure the solution is prepared as a percentage by weight, volume or moles and knowledge of all formulae respectively as specified by the lab chemists		11	5	6
	PC8. prepare working solutions from concentrated stock solutions		12	5	7
	PC9. measure the strength of solutions and weigh them as per guidelines		13	5	8
	<b>Total</b>		<b>100</b>	<b>45</b>	<b>55</b>
<b>4.LFS/N0533</b> <b>Ensure appropriate measures are taken while opening of chemicals to be used in analysis</b>	PC1. display commitment to handle and use the chemical properly from initial receipt to ultimate disposal.	100	9	4	5
	PC2. new chemicals shall be obtained only if the supervisor has determined that the use of the new chemical is necessary		9	4	5
	PC3. carry out labelling and packaging of chemical containers in accordance with applicable regulations		9	4	5
	PC4. ensure all chemical containers are dated		9	4	5
	PC5. move the received chemicals to the designated storage area		9	4	5
	PC6. store large bottles of acids and other hazardous substances on a shelf that is no more than three feet above floor level		9	4	5
	PC7. acid-resistant trays should be placed under bottles of mineral acids		10	5	5
	PC8. ensure appropriate safety eyewear and other personal protective equipment to be used while transferring chemicals one must		9	4	5



	ensure containers are properly labelled and know what to do in the event of a release or spill				
	PC9. while transferring chemicals one must ensure containers are properly labelled and know what to do in the event of a release or spill.		9	4	5
	PC10. wear appropriate Personal Protective Equipment (PPE)		9	4	5
	PC11. ensure incompatible chemicals are kept away from each other.		9	4	5
	<b>Total</b>		<b>100</b>	<b>45</b>	<b>55</b>
<b>5.LFS/N0534</b> <b>Maintain records of lab usage, storage of chemicals, labels, date of opening and closing</b>	PC1. cataloguing recordings and making them available when requested (if the department houses audio-visual resources)		12	5	7
	PC2. to ensure that all the quality manuals are readily available for reference		10	5	5
	PC3. to ensure that SOPs for each of the experiments is available		12	5	7
	PC4. to ensure document control by maintaining master log, effective archiving and constant updating of laboratory log.		12	5	7
	PC5. maintain various records sample log book, registers, quality control data, incident reports, results of internal and external audits etc.		12	5	5
	PC6. maintain instrument printouts of maintenance records		10	5	7
	PC7. maintain test specific reports		12	5	7
	PC8. ensure proper storing and archiving practices for all relevant documentation.		10	5	5
	PC9. carry out labelling of samples and reagents as per SOPs.		10	5	5
	<b>Total</b>		<b>100</b>	<b>45</b>	<b>55</b>
<b>6.LFS/N0560</b> <b>Reprocess the instruments before carrying out experiments</b>	PC1. to carry out manual cleaning		9	4	5
	PC2. to observe correct protocols for instrument cleaning		9	4	5
	PC3. carry out CIP and SIP for ultrasonic equipment/ fermenter and other equipment		9	4	5
	PC4. use automatic washer for complex instruments		9	4	5
	PC5. to replace damaged instrument		9	4	5

	PC6. return any instrument with visible soil or residual debris for further cleaning		9	5	4
	PC7. perform Sterile packaging to maintain the sterility of processed instruments and allow for aseptic opening at point of use		9	4	5
	PC8. to perform steam sterilization for sterilizing instruments, trays, and cassettes		8	4	4
	PC9. to store sterile packages in a manner that reduces the potential for contamination		11	5	6
	PC10. to routinely verify sterility assurance of processed instruments		10	5	5
	PC11. to use physical, chemical and biological indicators for quality assurance		8	4	4
	<b>Total</b>		<b>100</b>	<b>47</b>	<b>53</b>
<b>7.LFS/N0101 Maintain a healthy, safe and secure working environment in the life sciences facility</b>	PC1. observe and comply with your company's current health, safety and security policies and procedures	100	10	5	5
	PC2. while carrying out work, use appropriate safety gears like head gear, masks, gloves and other accessories as mentioned in the guidelines		10	5	5
	PC3. report any identified breaches in health, safety, and security policies and procedures to the designated person		10	5	5
	PC4. responsible for maintaining discipline at the shop-floor area		10	5	5
	PC5. identify and correct any hazards that you can deal with safely, competently and within the limits of your authority		10	5	5
	PC6. adhere and comply to storage and handling guidelines for hazardous material		10	5	5
	PC7. identify and recommend opportunities for improving health, safety, and security to the designated person		10	5	5
	PC8. complete any health, safety and security records legibly and accurately		10	4	6
	PC9. report any hazards that you are not competent to deal with to the relevant person in line with organizational procedures and warn other people who may be affected		10	4	6

	PC10. follow your company's emergency procedures promptly, calmly, and efficiently		10	5	5
	<b>Total</b>		<b>100</b>	<b>48</b>	<b>52</b>
<b>8.LFS/N0103 Ensure cleanliness in the work area</b>	PC1. inspect the area while taking into account various surfaces	100	4	2	2
	PC2. identify the material requirements for cleaning the areas inspected, by considering risk, time, efficiency and type of stain		5	2	3
	PC3. ensure that the cleaning equipment is in proper working condition		5	2	3
	PC4. select the suitable alternatives for cleaning the areas in case the appropriate equipment and materials are not available and inform the appropriate person		4	2	2
	PC5. plan the sequence for cleaning the area to avoid re-soiling clean areas and surfaces		4	2	2
	PC6. inform the affected people about the cleaning activity		4	2	2
	PC7. display the appropriate signage for the work being conducted		4	2	2
	PC8. ensure that there is adequate ventilation for the work being carried out		5	2	3
	PC9. wear the personal protective equipment required for the cleaning method and materials being used		4	2	2
	PC10. use the correct cleaning method for the work area, type of soiling and surface		4	2	2
	PC11. deal with accidental damage, if any, caused while carrying out the work		4	2	2
	PC12. report to the appropriate person any difficulties in carrying out your work		4	2	2
	PC13. identify and report to the appropriate person any additional cleaning required that is outside one's responsibility or skill		4	2	2
	PC14. ensure that there is no oily substance on the floor to avoid slippage		4	2	2
	PC15. ensure that no scrap material is lying around		4	2	2
PC16. maintain and store housekeeping equipment and supplies	4	2	2		

	PC17.follow workplace procedures to deal with any accidental damage caused during the cleaning process		4	2	2
	PC18.ensure that, on completion of the work, the area is left clean and dry and meets requirements		4	2	2
	PC19.return the equipment, materials and personal protective equipment that were used to the right places making sure they are clean, safe and securely stored		5	2	3
	PC20.dispose the waste garnered from the activity in an appropriate manner		5	2	3
	PC21.dispose of used and un-used solutions according to manufacturer's instructions, and clean the equipment thoroughly		5	2	3
	PC22.maintain schedules and records for housekeeping duty		5	2	3
	<b>Total</b>		<b>100</b>	<b>44</b>	<b>56</b>