

Model Curriculum

Lab Technician /Assistant

Lab Technician / Assistant

SECTOR: **LIFE SCIENCES**
SUB-SECTOR: **PHARMACEUTICAL, BIOPHARMACEUTICAL**
OCCUPATION: **RESEARCH & DEVELOPMENT**
REFERENCE ID: **LFS/ Q 0509 Ver1.0**
NSQF LEVEL: **LEVEL 3**



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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

Program Name	Medical Sales Representative		
Qualification Pack Name & Reference ID.	Lab Technician Assistant LFS/ Q 0509 Ver1.0		
Version No.	1.0	Version Update Date	28-12 – 2015
Pre-requisites to Training	Minimum qualification – Diploma or Any Graduate		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Gain Knowledge about Life Science and Pharmaceutical Industry, its rules, regulations and ethical practices (MCI Code of Conduct/ UCP-MP Guidelines) to enable him for establishing the Industry Standards in his/her performance • Gain knowledge about the methodology for storage area inspection with best methods and materials required for cleaning variety of surfaces and equipments and understand of handling personal protective equipments • Take appropriate measures while opening of chemicals to be used in analysis & Maintain records of lab usage, storage of chemicals, labels, date of opening and closing • Carry out washing, processing and drying of the glassware/plastic ware for experimentation & Reprocess the instruments before carrying out experiments • Gain Complete knowledge of company’s standard operating procedure and guidelines and follow them while carrying out proper reporting and documentation for various types of documentation and recording of data/problem/incidents in secure manner • Help the Lab/QC Chemists/Research associates in performing the experiments and analysis & Carry out inspection and maintenance of equipment and materials • Gain Knowledge about How and where disposal take place and what procedure is to be followed for safety purpose in Life Sciences • Carry out preparation of solution and reagent , and check the working environment for experimentation • Maintain a healthy, safe and secure working environment in the life sciences facility by learning managing emergency procedures • Maintain cleanliness in the work area by doing Pre housekeeping activities , operations & post housing activities • Practice Professional skills at work, like decision making, planning & organizing, customer centricity, problem solving, objection handling, analytical thinking, critical thinking 		

This course encompasses Eight (8) out of Eight (8) National Occupational Standards (NOS) of “Lab Technician Assistant LFS/ Q 0509 Ver1.0” Qualification Pack issued by “Life Sciences Sector Skill Development Council”.

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
1	Orientation Module	05:00	00:00	<ul style="list-style-type: none"> Gain knowledge about Life Sciences Industry in Indian and Global Context. Know about pharmaceutical & biopharmaceutical sub-sector of Life Sciences Industry including relevant Govt. Scheme, social security benefits, and laboratory basics and requirements Know about Regulatory Authorities and Government Policies, rules and Regulations and their impact on laboratory technician activities relevant to Life Sciences Industry Gain Orientation with existing organization in life sciences industry (in context of large/medium/ small enterprises): their organization structure and benefits. Gain Orientation on typical laboratory functions in a life sciences organization. Understand and perform the Role of a Lab Technician, with required skills and knowledge (As per Qualification Pack) and follow its Career Path. Gain detailed orientation on laboratory access 	LFS/NO530 LFS/NO531 LFS/NO532 LFS/NO533 LFS/NO534 LFS/NO560 LFS/NO101 LFS/NO103	Participant Manual, Power point presentation, Case Studies, Computer system, LCD Projector & Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, flip charts

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<p>guidelines, SOP, lab Do's & Don'ts for the job description and responsibilities of lab technician</p> <ul style="list-style-type: none"> • Know about Different types of lab equipment which one have to keep at suitable place in lab. • Understand the Importance of proper Knowledge of testing elements. • Wear suitable clothes with personal protective equipments during work time. • Ensure about the suitability of working environment into lab. 		
2	Help the lab/QC Chemists/Research associates in performing the experiments and analysis.	10:00	10:00	<ul style="list-style-type: none"> • Work in many different fields of science and medicine and work to detect, diagnose and treat issues and problems in experiments and manage scientific issue. • Operate, maintain, and install laboratory instruments as well as monitor experiments as they are performed within labs and Help in set up of the experiment • Assist in recording observation and then calculating results before developing conclusions, and keep accurate and detailed logs of all of their work to ensure adherence to protocol and procedures • Ensure the reagents, glassware, equipment is 	LFS/NO530 LFS/NO101 LFS/NO103	Participant Manual, Power point presentation, Computer System, LCD Projector & 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,

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<p>available at the right time.</p> <ul style="list-style-type: none"> Assist in laboratory tests in order to produce reliable and precise data to support scientific investigations Set up and operate standard laboratory equipment, for example centrifuges, titrators, pipetting machines and PH meters Maintain and repair equipment and laboratory apparatus as a part of routine activities Coordinate work in the laboratory to ensure efficient use is made of expensive pieces of equipment. Carry out inspection and maintenance of equipment and materials and ensure the laboratory is well-stocked and resourced Follow the Material disposal procedure, understand importance of appropriate disposal of material and implications of not following the material disposal procedure Understand Importance of identifying non-conforming products and storage of the same and follow the guidelines of GLP Understand and evaluate Risk and impact of not following defined 		<p>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</p>

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<p>procedures/work instructions and follow the instructions and SoPs</p> <ul style="list-style-type: none"> Know about and follow the Escalation matrix for reporting identified issues, hazards and breakage 		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
3	Carry out preparation of solution and reagent	20:00	20:00	<ul style="list-style-type: none"> Prepare the working environment into the lab for testing. Maintain standards for handling various solutions and ensuring safety. Prepare specimens and samples as per the guidelines and required for the experiment Maintain knowledge of Chemicals used in the 	LFS/NO532 LFS/NO533 LFS/NO101 LFS/NO103	Participant Manual, Power point presentation, Computer System, LCD Projector & Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				industry and their function <ul style="list-style-type: none"> • Ensure proper procedure is followed in reagent preparation • Ensure proper mixing of chemicals • Ensure safety by ensuring separation of incompatible chemicals and reagents • Preparation of media and buffer for fermentation experiments • Ensure purified water requirements are specified for clinical laboratory testing procedures • 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 • Prepare working solutions from concentrated stock solutions • Measure the strength of solutions and weigh them as per guidelines • Set up Testing equipment as per related test methods and know the purpose of tests • Evaluate Quality requirements of materials and effect of variation on process performance • Report typical instrument faults and related causes, including recognition of signs and symptoms of 		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

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				faulty lab instruments and apparatus /early warning signs of potential problems. <ul style="list-style-type: none"> Understand and Report Common causes of variation and corrective action required 		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

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
4	Carry out washing, processing and driving of the glassware/plastic-ware for experiment	10:00	05:00	<ul style="list-style-type: none"> Process the glassware for experimentation Wash and clean the glassware with the different solution and types of water to ensure complete cleaning and removal of dirt. Ensure glass and plastic were used for experimentation are scrupulously clean. Used distilled water as the final rinse in the cleaning process. Select the detergent which is compatible with area water and leave behind no undesirable residues on the cleansed laboratory ware and equipment. Check cleansed laboratory ware and equipment for acid /reagent residues. Inspect washed the laboratory ware and equipment for cleanliness. Use autoclave for drying and sterilization of the glassware before further use. Support Chemist and research associates in monitoring batch fermentation process. Gain and apply Knowledge of autoclave and water wash applications Gain and apply Knowledge of standard 	LFS/NO531 LFS/NO101 LFS/NO103	Participant Manual, Power point presentation, Computer System, LCD Projector & 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,

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<p>operating procedures for laboratory chemicals</p> <ul style="list-style-type: none"> • Gain and apply Knowledge of pharmaceutical gulps and regulatory requirements • Gain and apply Knowledge of preparation and testing of reagent water in the laboratory • Gain knowledge about Testing equipment and related test methods and purpose of tests 		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

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
						Extinguisher, Sample Labels, Sample Lab Notebook, Sample Logs, Sample Analytical Report with graph, Material Safety Sheet
5	Handling of chemicals before, after experiments, transferring them in smaller containers and labeling them	10:00	05:00	<ul style="list-style-type: none"> Ensure appropriate measures are taken in Handling of chemicals, their proper labeling and stocking. Gain Knowledge about the lab and its SoP of material handling Follow the Easy process for selecting the material/product and performing quality check without affecting the materials as per SoP. Gain knowledge of Characteristics of the product material. Use suitable measuring devices. Use suitable testing instrument. Measure, steps, and possible solutions that have been taken/identified to address the previous problems. Follow the correct methods for carrying out corrective action for each problem. 	LFS/NO533 LFS/NO101 LFS/NO103	Participant Manual, Power point presentation, Computer System, LCD Projector & 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),

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<ul style="list-style-type: none"> • Display commitment to handle and use the chemical properly from initial receipt to ultimate disposal • Carry out labelling and packaging of chemical containers in accordance with applicable regulations • Ensure all chemical containers are dated • Move the received chemicals to the designated storage area • Place Acid-resistant trays under bottles of mineral acids • Wear appropriate personal protective equipment • Ensure incompatible chemicals are kept away from each other. 		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,

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
						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
6	Maintain records of lab usage, storage of chemicals, labels, date of opening and closing	15:00	05:00	<ul style="list-style-type: none"> • Understand the importance of complete and accurate documentation • Follow proper procedure for selecting the material/product and performing quality checks without affecting the material • Read and Understand Characteristics of the product/material from material safety sheet • Ensure Availability and use of monitoring and measuring devices • Maintain various records sample log book, registers, 	LFS/NO534 LFS/NO560 LFS/NO101 LFS/NO103	Participant Manual, Power point presentation, Computer System, LCD Projector & Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, Computer Lab, Sample Labels,

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<p>quality control data, incident reports, results of internal and external audits etc.</p> <ul style="list-style-type: none"> • Maintain instrument printouts of maintenance records • Maintain test specific reports • Ensure proper storing and archiving practices for all relevant documentation. • Carry out labeling of samples and reagents as per SOP's. • Understand implications of inaccurate measuring and testing instruments and equipment & implications of defective products, materials or components • Learn and practice Reading/ writing/ Generic Skills like Record detail of work done using written/typed report or computer based record/electronics mail. Read the all manuals, health and safety instruction. Understand the diagram, graph and coding system. Disclose the information only to those who have to right and need to know it. Communicate confidential and sensitive information discretely to authorized person as per SOP. 		<p>Sample Lab Notebook, Sample Logs, Sample Analytical Report with graph, Material Safety Sheet</p>
7	Clean and Reprocess the instruments before carrying out experiment and	10:00	05:00	<ul style="list-style-type: none"> • Carry out manual cleaning of instruments before carrying out the experiment 	LFS/NO560 LFS/NO101 LFS/NO103	Participant Manual, Power point presentation, Computer

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
	sterile packaging, sterilization and storage			<ul style="list-style-type: none"> • Observe correct protocols for instrument cleaning • Carry out CIP and SIP for ultrasonic equipment/fermented and other equipments • Use automatic washer for complex instruments • Inspect instrument post cleaning • Replace damaged instrument • Perform steam sterilization for sterilizing instruments, trays, and cassettes • Store sterile packages in a manner that reduces the potential for contamination • Routinely verify sterility assurance of processed instruments • Use physical, chemical and biological indicators for quality assurance 		System, LCD Projector & 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,

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
						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,

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
						Sample Logs, Sample Analytical Report with graph, Material Safety Sheet
8	Maintain a healthy, safe and secure working environment in the life sciences facility	15:00	08:00	<ul style="list-style-type: none"> Learn the Basic Concepts of Safety including Hazards, Accidents, Safety Signs and Signals and Henrich Pyramid and follow and practice same at shop floor Know about Water Systems at Plant/ Lab, Engineering related tools and techniques to operate the equipment safely. Use Material Data Safety Sheet, and follow the Process of Safety Analysis. Know and follow the Fire Safety concepts and prepare oneself to act in case of Fire Emergency at Laboratory. Know about various PPEs used in different laboratory operations and do Job Safety Analysis for Various laboratory equipment and provide these critical information to concerned team members. Learn and follow the Basic Concepts and practical skills for managing Emergency Procedures and how to do first aid Learn and practice Related Core Skills and Professional Skills: Reading, writing, listening, speaking, Plan and organize, Critical thinking, problem solving, 	LFS/NO101 LFS/NO103	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

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				decision making, customer centricity		
9	Ensure cleanliness in the work area	15:00	05:00	<ul style="list-style-type: none"> Learn about level of hygiene required by storage/ working area/ manufacturing/ lab Know the importance of housekeeping or hygiene maintenance at workplace Learn and Follow Basic instructions and tools used for housekeeping Learn and follow Methodology for storage area inspection with best methods and materials required for cleaning variety of surfaces and equipments Gain and apply Knowledge of types of stains and cleaning material required to remove the specific stain Learn and apply Way to execute the cleaning procedure including various types of risks, time and efficiency Use alternate solution in case of unavailability of remover at that particular time Know, how and when to inform the appropriate person by following right procedure Understand the responsibility to inform affected persons by using “under maintenance” or “do’s & don’t” type of signage or labelling Check all types of working environment conditions 	LFS/NO103 LFS/NO101	Participant Manual, Power point presentation, Computer System, LCD Projector & 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

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<p>like proper ventilation, temperature and way to wear out personal protective equipments (safety mask etc) at the time of cleaning method & material usage.</p> <ul style="list-style-type: none"> • Gain and apply knowledge of correct methods and various types of soiling & surface. • Maintain Awareness about all types of accidental damage at the time of work • Identity and report to supervisor in case of out of control situation immediately • Check the workplace is clean and ready to reuse. • Ensure about the cleaning of floor regarding no oily substance and no scrap material is lying around • Understand workplace procedures to deal with accidental damage • Maintain and store housekeeping kit and supplies • Handle personal protective equipment and after use put them at proper place neat and clean • Gain and apply Knowledge of proper dispose of waste and clean all equipments and follow manufacturer's instructions • Maintain Organizational and Technical knowledge like 		<p>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</p>

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				<p>Familiarity with laboratory safety manual.</p> <p>Information about autoclave and water wash application.</p> <p>Full information about chemicals' use.</p> <p>Equipment and related test and purpose of testing.</p> <p>Suitable quality requirements of materials and its effects.</p> <p>Typical instruments faults and related causes, including recognition of signs and symptoms of faulty lab instruments and apparatus /early warning signs of potential problems.</p> <p>Common causes of variation and corrective action required</p> <p>Practice Related Core Skills and Professional Skills at work like :</p> <ul style="list-style-type: none"> • Reading, writing, listening and speaking, Critical thinking, problem solving, decision making, customer centricity, plan and organizing, Analytical thinking and meet the desired work specifications • Able to use computer and internet for record maintenance and reporting. 		<p>Extinguisher, ABC Type Fire Extinguisher, Sample Labels, Sample Lab Notebook, Sample Logs, Sample Analytical Report with graph, Material Safety Sheet</p>
10	Information Technology Skills	12:00	24:00	<ul style="list-style-type: none"> • Apply Basic Computer Skills (Ms Office, Internet) at Work. Use Lab Management Information 		<p>Participant Manual, Power point presentation, Computer</p>

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				System in a Production plant		Lab, LCD Projector & Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster
11	Internship	00:00	56:00	<ul style="list-style-type: none"> • Help the lab/QC Chemists/ Research Associates in performing the experiments and analysis. • Carry out washing, processing and drying of the glassware/plastic ware for experimentation • Carry out preparation of solution and reagents • Ensure appropriate measures are taken while opening of chemicals to be used in analysis • Maintain records of lab usage, storage of chemicals, labels, date of opening and closing • Reprocess the instruments before carrying out experiments • LFS/N0101: Maintain a healthy, safe and secure working environment in the life sciences facility • LFS/N0103: Ensure cleanliness in the work area 	LFS/N0530, LFS/N0531, LFS/N0532, LFS/N0533, LFS/N0534, LFS/N0560, LFS/N0101, LFS/N0103	Internship Monitoring Report
Grand Total		122:00	143:00	Unique Equipment Required: 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,		

Sr. No.	Module	Theory Duration (hh:mm)	Practical Duration (hh:mm)	Key Learning Outcomes	Corresponding NOS Code	Equipment Required
				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, Participant Manual, Power point presentation, Computer System, LCD Projector & Screen/ LCD Monitor, Mike, Sound System, Laser Pointer, White/ Black Board, White Board Marker/ chalk, duster, Computer Lab, Sample Labels, Sample Lab Notebook, Sample Logs, Sample Analytical Report with graph, Material Safety Sheet		

Grand Total Course Duration: **265 Hours 00 Minutes**

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

Annexure1: Assessment Criteria

Assessment Criteria for Lab Technician /Assistant	
Job Role	Lab Technician /Assistant
Qualification Pack	LFS/ Q 0509 Ver1.0
Sector Skill Council	Life Sciences Sector Skill Development Council

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 and a minimum of 40% in every 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

		Marks Allocation			
		Total Marks (800)	Out of	Theory	Practical
<u>LFS/N0531</u> (Carry out washing, processing and drying of the glassware/plastic ware for experimentation)	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
	Total		100	50	50
LFS/ N0530 (Help the lab/QC Chemists/ Research Associates in performing the experiments and analysis)	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



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	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
	Total		100	50	50
LFS/N0532 (Carry out preparation of solution and reagents)	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



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	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
	Total		100	45	55
LFS/N0533 (Ensure appropriate measures are taken while opening of chemicals to be used in analysis)	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 labeling 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 ensure containers are properly labeled and know what to do in the event of a release or spill		9	4	5
	PC9. while transferring chemicals one must ensure containers are properly labeled 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
	Total		100	45	55
LFS/N0534 (Maintain records of lab usage, storage of	PC1. cataloguing recordings and making them available when requested (if the department houses audiovisual resources)		12	5	7

chemicals, labels, date of opening and closing)	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 labeling of samples and reagents as per SOPs.		10	5	5
	Total		100	45	55
LFS/N0560 (Reprocess the instruments before carrying out experiments)	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
	Total		100	47	53
LFS/N0101 (Maintain a healthy, safe and secure working environment in the life sciences facility)	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
	Total		100	48	52

LFS/N0103 (Ensure cleanliness in the work area)	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
	Total		100	46	54
	Grand Total	800	800	376	424
	Percentage Weightage			47%	53%
	Minimum Pass Percentage to Qualify				50%

Annexure2: Trainer Prerequisites for Job role: “Lab Technician /Assistant” mapped to Qualification Pack: “LFS/ Q 0509 Ver1.0”

Sr. No.	Area	Details
1	Job Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ <u>LFS/Q0509 Ver1.0</u> ”.
2	Personal Attributes	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	Minimum Educational Qualifications	10+2 (Preferably in Science subjects)
4a	Domain Certification	Certified for Job Role: “Lab Technician / Assistant” mapped to QP: “ <u>LFS/Q 0509 Ver1.0</u> ”. Minimum accepted score is 70% as per LSSSDC guidelines.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/1402”. Minimum accepted score is 70% as per LSSSDC guidelines.
5	Experience	Preferably Minimum Four (4) years’ experience in life sciences (Pharmaceutical/ Biopharmaceutical) Research & Development/ Quality occupation as Lab Technician for non-trained and non-qualified talent Or Minimum Two (2) years’ experience with Lab Technician/ Assistant Level-3 qualified



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' OP No. 'LFS/O.0509 NSQF Level 3'

Date of Issuance: December 28th, 2015

Valid up to: December 27th, 2016

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

Authorized Signatory
(Life Sciences Sector Skill Development Council)



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