

1	Name of Course	<b>C. C. IN LABORATORY TECHNICIAN (Testing &amp; Calibration Lab) (W.E.F. 2017-2018)</b>																																																
2	Couse code	<b>308111</b>																																																
3	Max No of Students Per Batch	25																																																
4	Duration	6 Months																																																
5	Type	Part Time																																																
6	No of Days/Week	6 Days																																																
7	No of Hours Per Day	4 Hours																																																
8	Required Space	Class Room – 200 sq.ft. & for Practical MOU with NABL accredited Laboratory having min.Three Parameter																																																
9	Minimum Entry Qualification for Student	HSC OR BSc OR C.C.in Laboratory Asstt. (Testing & Calibration Lab) awarded by MSBVE OR NTC / NAC (Mechanical/Electrical/Electronics/ Chemical Group) OR Diploma in Mechanical/Electrical/Electronics/ Chemical/Instrumentation																																																
10	Objective of Course	To prepare technician to take the job in laboratory as sample testing technician job and perform the duties in accordance with the requirements of standards / accreditation bodies/clents.																																																
11	Employment Opportunity	Competent & qualified laboratory technician can be employed in various testing and calibration laboratories in India.																																																
12	Teacher’s Qualification	Degree in Engineering / Science with minimum 7 years of experience in industry or laboratories.																																																
13	Training System	<b>Training System Per Week</b> <table border="1"><tr><td>Theory</td><td>Practical</td><td>Total</td></tr><tr><td>06 Hrs</td><td>18 Hrs</td><td>24 Hrs</td></tr></table>							Theory	Practical	Total	06 Hrs	18 Hrs	24 Hrs																																				
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	<b>Unit Title : Laboratory Management and its responsibilities Legal and Moral</b>			
	<b>Learning Outcome</b>	<b>Knowledge Evaluation</b>	<b>Performance Evaluation</b>	<b>Teaching and Training Method</b>
Location:	Describe the responsibilities of testing & calibration lab	Describe the role of rehabilitation facility in patient recovery. Differentiate between services provided at various Rehabilitation/Convalescent Centre	Identify the facilities at lab	<b>Interactive Lecture:</b>  Role and responsibilities of Management  <b>Activity:</b>  Visit a testing lab & office and see the functioning of Management
	Describe the legal responsibility and the of lab	Describe the role of Management & responsibility  Enlist the facilities/ which require statutory clearance	Identify the equipment and materials that are under statutory requirement	<b>Interactive Lecture:</b>  Testing equipment requiring permissions  <b>Activity:</b> Visit to lab check equipment's requiring legal permission
	Demonstrate the knowledge of lab	Describe the facilities requiring statutory permission	Assess the need for facilities  Identify the facilities Identify the services	<b>Interactive Lecture:</b>  lab facilities  <b>Activity:</b> legal & moral responsibilities of Good lab

	<b>Unit Title :Sample preparation &amp; Laboratory Records.</b>			
	<b>Learning Outcome</b>	<b>Knowledge Evaluation</b>	<b>Performance Evaluation</b>	<b>Teaching and Training Method</b>
Location :  Classroom/ Laboratory	<p>Identify the records in calibration &amp; testing lab</p> <p>Sample preparation methods</p> <p>actual sample preparation</p> <p>Prepare a sample record</p> <p>Prepare demo sample</p>	<p>· Describe the essential duties and responsibilities of record keeper</p> <p>How to prepare sample, precaution</p> <p>Follow standard methods for sample preparation</p> <p>Describe various activities of patient's daily care routine including bathing, feeding, excreta disposal, transfer of patients, medication, etc.</p>	<p>Demonstrate the knowledge of maintaining records</p> <p>demo sample preparation</p> <p>Prepare a daily receipts of sample record</p>	<p><b>Interactive Lecture:</b></p> <p>Role and functions of record keeping</p> <p>methods of sample preparation</p> <p><b>Activity:</b></p> <p>check records at Lab</p> <p>check records at Calibration lab</p> <p>sample preparation accuracy</p> <p><b>Interactive Lecture:</b></p> <p>Records &amp; retention period</p> <p>sample prepare methods</p> <p><b>Activity:</b></p> <p>Role play</p> <p>record as evidence</p> <p>records for Auditing</p> <p>tell them to Identify and apply the most suitable records for lab</p> <p>Prepare samples of various materials</p>

	<b>Unit Title : Implementation of 5's in Laboratory &amp; Environmental controls in Laboratory .</b>			
	<b>Learning Outcome</b>	<b>Knowledge Evaluation</b>	<b>Performance Evaluation</b>	<b>Teaching and Training Method</b>
Location:  Classroom/ Laboratory	Identify basic necessity required for laboratories	Describe basic components of 5s & Lab controls	Identify and list various aspects that can help in implementing 5s environment controls for Lab records	<b>Interactive Lecture:</b>  5s Schedule in Lab Lab temp controls <b>Activity:</b>  Role Play  Provide different situations to the students and then tell them to the students and then tell them to Identify and apply 5s & temp control in Lab
	Understand importance of 5s in Lab	Describe the various elements of 5s Describe the importance of environment condition in Lab.	Identify labs environment and its effects	<b>Interactive Lecture:</b>  Facility for 5s advantages of 5s  Control of temp & RH <b>Activity:</b> Visit to a lab to study 5s ,temp control
	Provide for the lab daily 5s schedule		Prepare 5s checklist	<b>Interactive Lecture:</b>  5s in calibration lab temp control in calibration lab <b>Activity:</b> Preparation of check list for 5s in calibration lab their understanding and tell them to compare with standard checklist. temp control check list

	<p>Identify the qualities of a good 5s implemented Lab</p> <p>Identify lab wastes and disposal procedure.</p> <p>Instruments for Lab temp control</p>	<p>Describe the good qualities of maintaining 5s</p> <p>Describe the characteristics of various types of wastes in Lab</p>	<p>List the do's and don'ts in Labs setup</p> <p>Demonstrate the knowledge of 5s &amp; temp control</p> <p>Demonstrate the knowledge of wastes Identify the colour code for disposal of waste temp &amp; effect on test result.</p>	<p><b>Interactive Lecture:</b></p> <p>elimination &amp; disposal of Waste</p> <p><b>Activity:</b></p> <p>Visit to lab to study waste generated &amp; 5s implementation</p>
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	Unit Title: laboratory equipment and calibration schedule			
	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Location : Classroom/ Laboratory	Demonstrate lab equipment calibration	Describe equipment accuracy, calibration	Practice equipment accuracy calibration systems	<b>Interactive Lecture:</b> equipment selection  maintenance  calibration
		Describe the importance of calibration	Enlist the calibration schedule to be followed to ensure correct results	<b>Activity:</b>  Demonstrate calibration methodology
	Identify factors affecting test equipment	Describe the factors that affect test equipment	Demonstrate in house calibration Demonstrate the knowledge of maintaining test equipment	<b>Interactive Lecture:</b>  test equipment maintenance calibration <b>Activity:</b> Preparation of checklist of equipment maintenance
	Perform calibration of sample instrument	Describe the method of calibration	Prepare a plan for maintaining equipment	<b>Interactive Lecture:</b>  equipment record <b>Activity:</b> equipment selection calibration
	Demonstrate personal grooming	Describe the importance of good appearance and grooming in life and work place.	Demonstrate good grooming habits as per norms of healthcare industry.	<b>Interactive Lecture:</b>  How to prepare and follow daily equipment maintenance plan? <b>Activity:</b> schedule accuracy temperature condition

	Unit Title: Facility management of laboratory.			
	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Location:  Class room,          Laboratory	Identify components of LAB Facility management power supply house keeping temp control          Demonstrate chain of survival	Describe the importance of facility management in lab          Describe the various emergency situations in lab	Identify the need of FMS in a given scenario Enlist the essential components of LAB FMS in a          FMS	<b>Interactive Lecture:</b>  Facility management in LAB    <b>Activity:</b>  Visit to Lab study facility management    <b>Interactive Lecture:</b>  FMS in lab   <b>Activity:</b> LIST FMS facility in lab





	<b>Unit Title: Identification and traceability from receipt of sample to final report</b>			
	<b>Learning Outcome</b>	<b>Knowledge Evaluation</b>	<b>Performance Evaluation</b>	<b>Teaching and Training Method</b>
Class room	Identify elements of traceability	Describe different elements of traceability & its importance	Identify elements of traceability  Describe the knowledge of effective sample routing	<b>Interactive Lecture:</b>  Traceability & its importance receipt storage  <b>Activity:</b> sample receipt to report
	Demonstrate effective traceability  sample collection & storage	Describe the factors affecting effective traceability & storage of sample	identify traceability issues	<b>Interactive Lecture:</b>  Factors affecting Effective traceability  <b>Activity:</b> Follow up of sample from receipt to report confidentiality

	<b>UNIT TITLE: laboratory STRUCTURE AND FUNCTIONS</b>			
Location:	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Class room / laboratory	Demonstrate the knowledge of roles and functions of various departments, professionals and supportive staff of the laboratory	1 Describe the roles and functions of various departments and professionals in the laboratory	1 Identify the various types of laboratorys  Distinguish between General laboratory and Specialized laboratory Draw a chart depicting the roles of departments, professionals and supporting staff of the laboratory	<b>Interactive Lecture:</b> Roles and Functions of laboratorys  <b>Activity:</b> · Visit nearby laboratory and study the roles and functions of the various departments, lab technician & staff of lab staff of the laboratory  · Prepare a chart depicting the roles and functions of departments/ professionals/ supporting staff  <b>Interactive Lecture:</b> The roles and functions of various supporting departments in the laboratory
	Demonstrate the knowledge of roles and functions of supporting departments in laboratory	1. Describe the role and functions of various supporting departments	Draw a chain of command in the various department and laboratories of	

		<p>of laboratory State the services provided by the Medical Record Department and Outpatient Department</p> <p>Explain the activities performed by the laboratory housekeeping department</p>	laboratory	<p><b>Activity:</b></p> <ul style="list-style-type: none"> <li>· Visit nearby laboratory and study the roles and functions of the various supporting departments in laboratory</li> <li>· Prepare a chart showing the chain of commands in various departments</li> </ul>
	Classify the laboratories on the basis of different criteria	<p>State the criteria used for of classifying the laboratories</p> <p>Describe the different levels of Testing</p>	Classify the laboratories on the basis of approvals	<p><b>Interactive Lecture:</b> Classifying laboratory</p> <p><b>Activity:</b> and classify them on the basis of testing lab, calibration lab, reference lab, national lab</p>
	Demonstrate the knowledge of the qualities of a Good lab technician	Describe the qualities of a Good technician	Identify the activities performed by technician in performance of lab	<p><b>Interactive Lecture:</b> Qualities of a competent lab technician</p> <p><b>Activity:</b> Visit a laboratory and enlist the qualities of a component lab technician</p>

	UNIT TITLE: INTRODUCTION TO TESTING METHODOLOGY			
Location:	Learning Outcome	Knowledge Evaluation	Performance Evaluation	Teaching and Training Method
Class room / laboratory	<p>Identify the role of lab technician</p> <p>various types of testing undertaken by laborator &amp; role of lab technician</p>	<p>1. Describe the objectives of lab technician</p> <p>2. Describe the role of lab technician preparation of samples &amp; testing</p>	<p>Enlist the various steps involved in testing</p> <p>Identify role of lab technician in sample preparation &amp; testing</p>	<p><b>Interactive Lecture:</b> Role of lab technician in preparation and implementation of SOP for sample testing</p> <p><b>Activity:</b> · Visit a nearby laboratory and study the technician methodology Prepare a testing plan for one sample</p>

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