Course Details – CMDT Course

Program Name: - Certificate in Microbiology Diagnosis & Techniques (CMDT)

1	Name of the Program	Certificate In Microbiology Diagnosis & Techniques
2	Program Code	CMDT
3	Program Pattern (Semester/Final)	Final
4	Program Duration	3 months
5	Program Level	Certificate
6	Program Type	Full Time for regular students (Offline) & Distance for In service candidates (Online) (with 3 Personal contact program each 5 days)
7	Program Total Credits	Nil
8	Program Total Marks	600
9	Program Passing Marks	270 (45% As per Table B)
10	Mode of Learning (Regular/ Distance Learning)	Regular / Distance for In service candidates/Students
11	Medium of Instructions	English
12	Medium of Examination	English
13	Eligibility	The students with following educational qualification will be eligible for seeking admission to this course : MBBS, DCP (Diploma In Clinical Pathology) BAMS, MD (Ayu – Rognidan & Vikrutivigyan), BSc, MSc (Biochemistry), BSc, MSc (Microbiology or Virology or Mycology) BSc, MSc (Biotechnology), BSc, MSc (Pathology), or Histology or Immunology BSc, MSc (Genetics), or Parasitology BSc, MSc (Molecular biology) or Cell biology, DMLT, PGDMLT, BSc-MLT, BPMT
14	Lecturer/Professor Qualification	The teaching faculties with following educational qualification will be eligible to teach this course : MBBS, MD (Clinical Microbiology) BSc, MSc (Microbiology) MSc (Biotechnology)
15	Program Objectives	The Course aims to provide the advanced hands-on training related to microbiological laboratory Diagnostic procedures and techniques involved in it.
16	Program Outcome	Student will be up-skilled for each & every microbiology related procedure and advanced diagnostic technology
17	No. of Days @ Week	3 Days
18	Internship Duration	15 Days
19	Center of Study	Vishakha Microbiology Laboratory, Nagpur
20	Course Fees	13,500/- (Thirteen Thousand Five hundred Only)

Syllabus & Course Content with Hourly Teaching Plan

Certificate in Microbiology Diagnostic Techniques		
Sr. No.	**SUBJECT CODE**	**SUBJECT TITLE**
1	CMDT - 101	Clinical Bacteriology
2	CMDT- 102	Clinical Mycology & Virology & Specimen Handling
3	CMDT- 103	Immunity & Clinical Serology

Sub Code	Subjects	Teaching hours per week (3 Days @ Week)	Tutorial (*T)/ Practical / Activity(*P/*A) per week		Theory		Practical (Practical/ Diss. / Viva/ Oral/ Test/ Sessional etc.)		Subject Total (in case of joint passing)		No. of Credits
					A		B		A + B		
			T	P/A	Max	Passing	Max	Passing	Max	Passing	
CMDT 101		3	1	2	100	45	100	45	200	90	2
CMDT 102		3	1	2	100	45	100	45	200	90	2
CMDT 103		3	1	2	100	45	100	45	200	90	2
Total		**09**	**03**	**06**	**300**	**135**	**300**	**135**	**600**	**270**	**6**

Question Paper Pattern

EXAMINATION- Theory

PROGRAME NAME- Certificate in Microbiology Diagnostic Techniques

SUBJECT TITLE_____(Course Code-_____)

[TIME: 3 Hours] TOTAL: 100 Marks

Note- 1. Attempt Section A and Section B Only

2. Write answers to each question in proportion to the mark allotted

3. Available both **online** as well as **offline** mode

SECTION – A

Que-1 Explain: Attempt Any one out of 2 questions (20 Marks each)

Que-2 Explain: Attempt Any Two out of 3 questions (15 Marks each)

SECTION – B

Que-1 Explain: Attempt Any one out of 2 questions (20 Marks each)

Que-2 Explain: Attempt Any Two out of 3 questions (15 Marks each)

PRACTICAL

Practical - 1 **(40 Marks)**

Practical - 2 **(40 Marks)**

Viva Voce **(20 Marks)**

Hourly Teaching Plan For CMDT Course

Paper – 1

Clinical Bacteriology

(Theory – 100 Marks + Practical Viva – 100 Marks)

Module No.	Sub Topics	Hours	
Module No. 1	Introduction to Bacteriology	1 hr	
(Theory)	Classification of Bacteria	1 hr	
	Basic Features of Bacteria	1 hr	
	Factors influencing the growth of Bacteria	1 hr	
	Morphology of Bacteria	1 hr	
	Normal Microbial Flora of the body	1 hr	
	Pathogenic microorganisms	1 hr	
	Clinical microbiology laboratory tests	1 hr	
	Bacterial Identification Methods	1 hr	
	Staining reactions	1 hr	
	Gram staining & Acid fast Staining	1 hr	
	Capsule staining, Spirochete staining	1 hr	
	Culture of Bacteria	1 hr	
	Introduction to culture media	1 hr	
	Different types of culture media	1 hr	
	Preparation of culture media	1 hr	
	Inoculation of Culture media	1 hr	
	Culturing of Anaerobes	1 hr	
	Quality control of different culture media	1 hr	
	Biochemical properties of Bacteria	1 hr	
	Fermentation of different sugars	1 hr	
	Study of Gram Negative Bacilli	1 hr	
	Study of Gram Negative Bacilli	1 hr	
	Study of gram negative cocci	1 hr	
	Study of gram negative cocci	1 hr	
	Study of gram positive cocci	1 hr	

	Study of gram positive cocci	1 hr	
	Study of gram positive anaerobic bacteria	1 hr	
	Study of Genus – Bacilus	1 hr	
	Study of genus -Cornybacterium	1 hr	
	Study of Mycobacteria	1 hr	
	Study of Spirochetes	1 hr	
	Study of Rickettsia	1 hr	
	Antimicrobial Sensitivity Test	1 hr	
	Automation in Bacteriology	1 hr	
A	**Hours And Credit**	**34 hrs**	2
Module No. 2	Microscopy	1 hr	
(Practical)	Sterilization in Autoclave	1 hr	
	Preparation of Media – Nutrient Agar media	1 hr	
	Preparation of culture plates	1 hr	
	Isolation of Bacteria on nutrient Agar plate	1 hr	
	To study the motility of Bacteria	1 hr	
	Inoculation of Bacteria in liquid medium	1 hr	
	Inoculation of Bacteria from solid media to liquid media	1 hr	
	Cultural Study of Bacteria	1 hr	
	Cultural Study of Bacteria	1 hr	
	Biochemical Study – fermentation of sugars	1 hr	
	Biochemical Study – fermentation of sugars	1 hr	
	Z. N. Staining	1 hr	
	Albert's staining	1 hr	
	Hiss's Staining	1 hr	
	Loeffler's staining	1 hr	
	Ringer's Staining	1 hr	
B	**Hours And Credit**	**17 hrs**	**0.5**
A + B	**Total Hours And Credit**	**47 hrs**	**2.5**

Paper – 2

Clinical Mycology & Virology & Specimen Handling

(Theory – 100 Marks + Practical Viva – 100 Marks)

Module No.	Sub Topics	Hours	Credit
Module No. 1 **(Theory)**	Introduction to Mycology	1 hr	
	Morphological Classification of Fungi	1 hr	
	Clinically important Fungi	1 hr	
	Parasitic Fungi	1 hr	
	Some fungal diseases	1 hr	
	Laboratory Diagnosis of Mycotic infections	1 hr	
	Introduction to Viruses	1 hr	
	Classification of Viruses	1 hr	
	Important Viruses	1 hr	
	Important Viral Diseases	1 hr	
	Transmission of Viruses	1 hr	
	Laboratory Diagnosis of Viral Infections	1 hr	
	Collection and Transport of specimens	1 hr	
A	**Total Hours And Credit**	**13 hrs**	0.5
Module No. 2 **(Practical)**	Collection of specimen from skin scraping, nails etc	1 hr	
	Lactophenol cotton blue for staining & wet mount	1 hr	
	Fungal slide preparation & Microscopy	1 hr	
	Demonstration of common fungal media	1 hr	
	Instrument used in viral diagnostic laboratory	1 hr	
	Examination of urine specimen	1 hr	
	Examination of urogenital specimen	1 hr	
	Examination of Sputum	1 hr	
	Examination of throat and mouth Specimen	1 hr	
	Examination of blood specimen	1 hr	
	Examination of CSF specimen	1 hr	
	Examination of Ear discharge	1 hr	
	Examination of feces	1 hr	
B	**Total Hours And Credit**	**13 hrs**	**0.5**
A + B	**Total Hours And Credit**	**26 hrs**	**1**

Paper – 3

Immunity & Clinical Serology

(Theory – 100 Marks + Practical Viva – 100 Marks)

Module No.	Sub Topics	Hours	Credit
Module No. 1 (Theory)	The Immune system	1 hr	
	Major Histocompatibility complex	1 hr	
	Antigen	1 hr	
	Immunoglobulins	1 hr	
	Immune response	1 hr	
	Immunity – General Considerations	1 hr	
	Immunity – Types	1 hr	
	Measurement of Immunity	1 hr	
	Immunodiagnostics - Introduction, antigen-antibody binding interactions and assays; antibodies polyclonal and monoclonal antibodies,	1 hr	
	Immunoassays – types [RIA, ELISA, FIA]	1 hr	
	Serological Diagnosis of microbial diseases	1 hr	
	Important serological tests -A	1 hr	
	Important serological tests – B	1 hr	
	Automation in Serology	1 hr	
A	**Total Hours And Credit**	**14 hrs**	0.5
Module No. 2 (Practical)	ASO Quantitative slide test	1 hr	
	ASO Qualitative tube test	1 hr	
	VDRL Quantitative slide test	1 hr	
	VDRL Qualitative tube test	1 hr	
	Widal slide agglutination test	1 hr	
	Widal tube agglutination test	1 hr	
	HBV surface antigen slide test	1 hr	
	HBV surface antigen (ELISA)	1 hr	
	RA slide test	1 hr	
	Pregnancy slide test	1 hr	
	C Reactive Protein	1 hr	
	Well Felix Test	1 hr	
	Automatic Methods	1 hr	
B	**Total Hours And Credit**	**12 hrs**	0.5
A + B	**Total Hours And Credit**	**25 hrs**	**1**

Hours And Credits Summary of The Course

Sr.	Course Details	Hours	Credits
1	Theory	60	4
2	Practical	30	1
3	Internship	30	2
	Total	**135**	**7**