Syllabus for Skill development course

Title of course- Certificate in Basics of Biochemical and microbiological laboratory techniques	
Paper Title: Fundamentals of Clinical Biochemistry & Microbiology	
Nodal Department of HEI to run course	Department of Vocational studies
Broad Area/Sector-	Health care
Sub Sector-	Medical lab
Nature of course - Independent / Progressive	Progressive
Name of suggestive Sector Skill Council	NSDC
Aliened NSQF level	
Expected fees of the course –Free/Paid	As decided by College/University
Stipend to student expected from industry	
Number of Seats-…30…….	
Course Code-……..ML-02	Credits- 03 (1 Theory, 2 Practical)
Max Marks…25…… Minimum Marks……10…	
Name of proposed skill Partner (Please specify, Name of industry, company etc for Practical /training/ internship/OJT	
Job prospects-Expected Fields of Occupation where student will be able to get job after completing this course in (Please specify name/type of industry, company etc.)	Student will be able to get job in medical laboratories working privately or medical labs in Govt/private hospitals.

Syllabus

Unit	Topics	General/ Skill component	Theory/ Practical/ OJT/ Internship/ Training	No of theory hours (Total-15 Hours=1 credit)	No of Practical Hours (Total-60 Hours=2 credits)
I	Introduction to Clinical Biochemistry	**Skill**	**Theory/Practical**	**3**	**10**
II	Introduction to Microbiology	**Skill**	**Theory/Practical**	**3**	**10**
III	General characters and classification of Bacteria	**Skill**	**Theory/Practical**	**5**	**10**
IV	Culture and Staining	**Skill**	**Theory/Practical**	**2**	**15**
V	Liver, Kidney function test	**Skill**	**Theory/Practical**	**2**	**15**

Suggested Readings:

S.No.	Title	Author	Publisher
1.	Text book of medical laboratory technology	Praful Godkar; Bhalani	Bhalani Publishing House
2.	Text book of biochemistry for medical students	D M Vasudevan	Jaypee
3.	Practical Clinical Biochemistry	Ranjana Chawla	Jaypee
4.	Textbook of Microbiology	Anantha Narayan and Paniker's	Universities Press

Suggested Digital platforms/ web links for reading-

Suggested OJT/ Internship/ Training/ Skill partner

Suggested Continuous Evaluation Methods:

Total Marks: 25

House Examination/Test: 10 Marks **Written Assignment/Presentation/Project / Term Papers/Seminar**: 10 Marks **Class performance/Participation**: 5 Marks
Course Pre-requisites: • Student of science stream with biology • To study this course, a student must have the subject Biology in class/12th/ certificate/diploma • If progressive, to study this course a student must have passed previous courses of this series.
Suggested equivalent online courses:
Any remarks/ suggestions:
Notes: • Number of units in Theory/Practical may vary as per need • Total credits/semester-3 (it can be more credits, but students will get only 3credit/ semester or 6credits/ year • Credits for Theory =01 (Teaching Hours = 15) • Credits for Internship/OJT/Training/Practical = 02 (Training Hours = 60)

Syllabus for Fundamentals of Clinical Biochemistry & Microbiology		
Unit	**Topics**	**Syllabus**
I	Introduction to Clinical Biochemistry	• Elementary knowledge of Carbohydrates, proteins and lipids • Elementary knowledge of Enzymes and hormones • Elementary knowledge of Clinical enzymology
II	Introduction to Microbiology	• To understand about Microbiology • To understand about Gram-negative and Gram-positive bacteria
III	General characters and classification of Bacteria	• Characteristics of Bacteria: Morphology - Shape, Capsule, Flagella, Inclusion, Granule, Spore • Growth and Maintenance of Microbes: Bacterial division, Batch Culture, Continuous culture • Bacterial growth- total count, viable count, bacterial nutrition, oxygen requirement, CO2 requirement, temperature, pH, light.
IV	Culture and Staining	• Culture Media: Definition, uses, basic requirements, classification, Agar, Peptone, Transport Media, Sugar Media, Anaerobic Media, Containers of Media, Forms of Media • Staining Methods: Simple, Grams staining, Ziehl-Neelsen staining or AFB staining, Negative Impregnation
V	Liver, Kidney function test	• Liver Functions & their Assessment- Based on: Carbohydrate metabolism; Protein metabolism; Lipid metabolism. • Measurements of serum enzyme levels • Bile pigment metabolism, Jaundice, its types and their biochemical findings. • Renal Function Tests- Various Tests, GFR & Clearance