SHREE MANIBHAI AND SMT NAVALBEN VIRANI SCIENCE COLLEGE, AUTONOMOUS

AFFILIATED TO SAURASHTRA UNIVERSITY, RAJKOT

Department of Biochemistry

Part III Skill Enhancement Course (SEC) – II – Co-Curricular Courses (CoC) For the students admitted from A.Y. 2021-2022 & onwards		
Offered by: Department of Biochemistry	Offered to: (Please mark √ as applicable)	
	[√] Students across the University **other than** the offering department.	
	[√] Students across the University **including** the offering department. (The course should not be a part of regular curriculum of the offering department.)	
Semester : III – IV (3 year programs)		
Course Code	Course Title	Course Credit and Hours
	Medical Laboratory Techniques (MLT)	**2 Credit - 4 hrs / wk**

Objective of the course:

1. Become proficient in the collection of blood samples
2. Know the exciting and rewarding world of the medical laboratory.
3. Use laboratory equipments and get fluency in medical terminology
4. Have opportunities for full- and part-time employment in both clinics and hospital laboratories
5. Get career opportunities in government, research and veterinary laboratories.

Target Skills (Course outcomes) :

1. Skill development to medical laboratory techniques
2. Skill development to interpret the results

Justification and references for the course (Mapping with NSDC/NSQF/Sector Skill Council/Regional needs/any other) :

- The Co curricular course based on Health Care Sector Skill Council
- Course is at NSQF Level 4 and 5

Reference:
Link from https://nqr.gov.in/sites/default/files/NSQF-%20Medical%20Laboratory%20Technician_0.pdf

Course Description:

- A course in Medical Laboratory Technology is career-oriented and highly demanding in the paramedical science realm. The course involves teaching students how to handle equipment, conduct tests, collect information, make reports, and document these reports. Coursework, therefore, involves plenty of practical, hands-on training and enough experience.

Course Content	Hours
Module-I: Hematology	8 hrs
• Intracellular, extracellular and interstitial fluid. • Introduction to blood • Phlebotomy • Hb –types and functions • Synthesis of Hb • Fate of Hb and its clinical significance • Blood grouping • Rh incompatibility	
Module-II : Different types of Blood cells	12 hrs
• Different types of Blood cells • Structure and function of RBC • Process of erythropoesis • Anemia and Thalasemia • Classification and Functions of WBCs • Clinical and pathological significance of WBC • Differential count of WBC • Platelet structure and functions • Coagulation cascade • Bleeding disorder • Disorders of RBC and its counting	
Module-III : Clinical Biochemistry Instrumentation and Lipid profile	10 hrs
• Importance of clinical biochemistry • Various types of Analyzer • Importance of analyzer • Different types of analyzer used in labs • Various modes to operate the analyzer • Building blocks of lipids - fatty acids and glycerol • Lipoproteins and their clinical significance • Atherosclerosis, Hyperlipidemia and Hypertriglycerdemia • Lipid Profile Tests and Its Importance	

Module-IV : Cardiac and Liver Function Tests	10 hrs
• Basic anatomy of heart and blood vessels. • Cardiac disorders: Myocardial Infarction, Hypertension, • Cardiac disorders: Congestive heart disease. • Prevention of Cardiac disorders • Importance of Cardiac function test: CK-MB and SGOT • Types and Clinical Significance of Bilirubin • Liver disorders: fatty liver and Jaundice • Types of Jaundice • Prevention of Liver disorders	
Module-V : Renal Function Tests & Diabetes Mellitus	10 hrs
• Basic anatomy & Physiology of Kidney • Kidney disorders and dialysis. • Prevention of Kidney diseases • Renal Function Tests and its Clinical Significance • Physical and chemical Examination of Urine • Microscopic Examination of Urine • Clinical Significance of blood sugar level • Types of Diabetes • Preventive actions for diabetes	

Suggested laboratory experiments / other activities:

1. Introduction to Hematology
2. Phlebotomy
3. Blood grouping
4. Hemoglobin Estimation
5. Measurement of blood pressure
6. Introduction to Neubaur Chamber
7. Total Count of RBC
8. Total Count of WBC
9. Introduction to differential WBC count
10. Bleeding Time and Clotting Time
11. Packed cell volume
12. Principle & Working of Semi Auto Analyzer
13. Estimation of Blood glucose
14. Estimation of bilirubin
15. Estimation of SGPT
16. Estimation of cholesterol
17. Estimation of Triglyceride
18. Estimation of CK-MB
19. Estimation of urea
20. Estimation of uric acid
21. Physical and chemical analysis of urine

Pedagogic tools:

1. Chalk and Talk
1. PPT and Videos.

2. Hands-on activities
3. Assignment
4. Group discussion

Reference Books:

1. Waugh, A., & Grant, A. (2014). Ross & Wilson anatomy and physiology in health and illness. Elsevier Health Sciences.

2. Sembulingam, K., & Sembulingam, P. (2012). Essentials of medical physiology. JP Medical Ltd.

Suggested reading / E-resources

Godkar, P. B., & Godkar, D. P. (2006). Textbook of medical laboratory technology. Bhalani publishing house.

Suggested MOOCs:

https://onlinecourses.nptel.ac.in/noc21_hs62/preview

Methods of Assessment & Tools:

(Though the credit has to be awarded at the end of the course i.e. two semesters, it is recommended to consolidated assessment in two stages one at end of each semester. Components used for assessment can be different as per the nature of the course)

S.N.	Component	Content	Duration	Sub Total	Marks
1	**Attendance**	--	--	10	10
2	**Assignments**	--	--	20	10
3	**Practical Skill Assessment** (Assessment at the end of semester -III)	Practical No.1 to 11	One Hour	20	20
4	**Practical Skill Assessment** (Assessment at the end of semester IV)	Practical No.1 to 21	Two Hours	40	20 (Set for 40)
5	**Course Mid Examination**	Unit 1 & 2	One Hour	20	20
6	**Course End Examination**	5 Units	Two Hours	40	20 (Set for 40)
			Total	**100**	**100**

At the end of the course no marks are given, only remarks are given as follows:
REMARKS:

Range of Marks	Remarks
90-100	Excellent
75-89	Very Good
60-74	Good
40-59	Fair
< 40	Not Completed