

Branch Name:	Bachelor of Science Medical Laboratory Technology (B.Sc MLT)
Program Code:	AS101
Course Title:	Biochemistry-II
Course Code:	1AS1010202
Pre-requisite Course:	NONE

Course Objectives:

Students must understand the fundamental principles of Biochemistry and the key biochemical processes occurring in the human body. They should also grasp the significance of biological markers in disease diagnosis and prognosis. Additionally, students are expected to acquire practical skills in essential biochemical techniques.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
03	-	02	04	50	50	25	25	150

Course Contents:

Unit No	Topic	Total Hours
I	Nucleotides Describe purines and pyrimidines Metabolism of purines and pyrimidines The disorders associated with hyperuricemia and gout And the laboratory tests used and interpret their results	04
II	Molecular Biology Structure & Function of DNA Structure & Function of DNA Replication Translation Transcription	12
III	Genetics Principles of heredity Describe cell cycle and its regulation Explain operon concept of gene regulation Differentiate induction repression and de-repression Describe the replication of viruses and mechanism of action of antiviral drugs	10
IV	Hormones Explain the mechanism of signal transduction Indicate the role of cyclic AMP and G proteins in the hormone action Describe biological effects of various hormones	4
V	Vitamins - Clinical aspect of various Vitamin Deficiency Minerals - Clinical aspect of various Mineral Deficiency	8

VI	Water and Electrolyte balance Explain the regulation of sodium and water balance by Renin-Angiotensin system Classify the derangements in fluid and electrolyte balance in terms of tonicity List the causes and features of Isotonic/ hypotonic/ hypertonic contraction and expansion of ECF Organ Function Tests Thyroid Pancreas	7
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Practicals

Unit No	Topic	Total Hours
I	Quantitative Estimation and Clinical Significance of: Serum Calcium Serum Phosphorus Glucose Tolerance Test	6
II	Hormonal Assays	6
III	Quantitative Tests for Vitamins -Chemiluminescent Immunoassay	4
IV	Estimation of Electrolytes (Na ⁺ , K ⁺ , Cl ⁻) Using ISE	6
V	Automated Biochemistry Analyzer Demonstration	4
VI	Demonstration of ELISA	4

Text Books/Reference Books:

1. Text book of Medical Laboratory Technology: Paraful B. Godkar
2. Textbook of Biochemistry for Medical students: Vasudevan and Sreekumari
3. Biochemistry for Medical Laboratory Technology Students: Harbans Lal
4. Biochemistry for Medical students: Dr. SK Gupta
5. Manual of Practical Biochemistry: Rafi MD
6. Textbook of Biochemistry: U Satyanarayana

Reference Books:

1. Harper's Biochemistry: R. K. Murray and Grannor
2. Textbook of Clinical chemistry: Teitz
3. Medical Laboratory Technology: Kanai L. Mukherjee

Course Learning Outcomes (CLO):

Upon completion of a course, students will understand the basic principles of biochemistry and the biochemical processes in the human body. They will be able to interpret and use biological markers for disease diagnosis and prognosis. Additionally, they will develop practical laboratory skills to analyze and address biological problems effectively.