

BACHELORS WITH CLINICAL BIOCHEMISTRY AS MAJOR FOR 2023

SEMESTER	COURSE CODE	COURSE TITLE	CREDITS
I	CBC123J1	Fundamentals of Clinical Biochemistry	4 + 2 = 6
II	CBC223J1	Clinical Physiology and Diagnostics-I	4 + 2 = 6
III	CBC323J1	Clinical Physiology and Diagnostics-II	4 + 2 = 6
IV	CBC423J1	Medical Microbiology	3 + 1 = 4
	CBC423J2	Cell Biology and associated Disorders	4 + 2 = 6
	CBC423J3	Biomolecules: Metabolism and Clinical relevance-I	4 + 2 = 6
V	CBC523J1	Immunology and Immunopathology	3 + 1 = 4
	CBC523J2	Cell Signaling and Disorders	4 + 2 = 6
	CBC523J3	Biomolecules: Metabolism and Clinical relevance-II	4 + 2 = 6
VI	CBC623J1	Molecular Diagnostics	3 + 1 = 4
	CBC623J2	Bioanalytical Techniques and Instrumentation	4 + 2 = 6
	CBC623J3	Molecular Biology	4 + 2 = 6
VII	CBC723J1	Clinical Pathology	3 + 1 = 4
	CBC723J2	Organ system and associated disorders –I	4 + 2 = 6
	CBC723J3	Enzymes: Function, regulation and diagnostics	4 + 2 = 6
VIII	CBC823J1	Maternal and Fetal Health	3 + 1 = 4
	CBC823J2	Organ system and associated disorders –II	4 + 2 = 6
	CBC8J3	Medical Genetics	4 + 2 = 6

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1st SEMESTER

CBC123J CLINICAL BIOCHEMISTRY _ FUNDAMENTALS OF CLINICAL BIOCHEMISTRY

CREDITS: THEORY: 4; PRACTICAL: 2

Objectives and Expected Learning Outcomes

The course is designed to give a general insight into clinical biochemistry as a subject and to acquaint the students with the basic ethics of laboratory, essentials of lab management, quality control and impart awareness about hazards and safety measures in the clinical laboratory. The students will also learn about basics of specimen collection and handling for diagnostic investigations.

(THEORY: 4 Credits)

Unit-1 Introduction to Clinical Biochemistry

(15 Hours)

History and scope of clinical biochemistry, Basic concept of core laboratories, Point of care testing, Automation in clinical laboratories, Ethics of laboratory practice

Unit-2 Quality Control

(15 Hours)

Quality control in clinical biochemistry-Pre-analytical, analytical and post-analytical, Internal and external quality control, Quality control charts, Measures of diagnostic accuracy-precision, accuracy, sensitivity, specificity and predictive values

Unit-3 Laboratory Hazards and Safety

(15 Hours)

Laboratory hazards- Biological, chemical, radiation and fire hazards; Bio-safety in clinical laboratory- biological safety, chemical safety and radiation safety, Safety equipment, Disposal of hazardous materials

Unit-4 Body Fluids and Specimens

(15 Hours)

Specimen collection of blood, urine, feces and other body fluids, Tube additives for blood- usage and mechanism, Handling of specimens- preservation, storage and transport, Pre-analytical variations, Concept of reference values

PRACTICAL (2 Credits: 60 Hours)

1. Biochemical calculations- Molarity, molality, normality and percent solution
2. Preparation of standard buffers and determination of pH of solution
3. Working, principle and maintenance of common laboratory equipments
4. Methods of collection and preservation of blood samples-Colour coding of tubes
5. Fractionation of blood samples

Recommended Books:

1. Teitz, Fundamentals of Clinical chemistry and Molecular Diagnostics by Nader Rifai. Publisher: Elsevier Publications
2. Clinical Chemistry: Techniques, Principles, Correlations by Michael L. Bishop, Edward P. Fody, Larry E. Schoeff. Publisher: Lippincot Williams & Wilkins
3. Henry's Clinical Diagnosis Management by Laboratory medicine by Richard McPherson, Matthew Pincus. Publisher: Elsevier Publications
4. Medical Laboratory Science · Theory and Practice by J Ochei and A Kolhatka. Publisher: Mc Graw Hill.