

SEMESTER 2ND

MAJOR/MINOR COURSE

Subject: Clinical Biochemistry

Title: HUMAN PHYSIOLOGY AND CLINICAL DIAGNOSTICS Code: BCB22C201

CREDIT: (4+2) THEORY: 04; PRACTICAL: 02

Contact Hours: 64(T) + 64 (L)

Course Objectives:

- *To acquaint the students with structure, function and interrelationship of important organ systems of the human body.*
- *The students will learn structural-functional relation between human organ systems and the disorders associated with their malfunctioning.*

Learning outcomes: On completion of the course, the student should be able to:

- *To describe the diagnostic significance of the main laboratory investigations,*
- *Understand the principles of analytical measurement in clinical biochemistry*
- *identify the meaning and use of laboratory investigations in connection with diseases of the major organ systems*

Unit I: Basics of Clinical Physiology - I

(16 Contact hours)

Liver function - Physiology and disorders (Jaundice, Hepatitis); Renal Function -Physiology of excretion and urine formation, Disorders (Glomerulonephritis, Renal calculi)

Unit II: Basics of Clinical Physiology - II

(16 Contact hours)

Blood system: Composition, cellular components and their functions. Hemoglobin, blood groups & coagulation, Disorders (anemia, leukemia & hemophilia); Endocrine function: Introduction to hormones. Physiological role of hormones (Pancreatic & Thyroid hormones) and disorders (Diabetes Mellitus & Grave,s disease)

Unit III: Fundamentals of Clinical Biochemistry

(16 Contact hours)

Definition, history and scope of Clinical Biochemistry; Concept of Core laboratories, Quality Control in clinical labs (Pre-analytical, analytical and post-analytical control), Laboratory safety & safety equipments; Infectious hazards, Collection, preservation, handling and processing of body fluids – blood, urine, CSF for testing.

Unit IV: Clinical Diagnostics

(16 Contact hours)

Liver Function Test, Kidney Function Test, Glucose estimation (FG, PP, HbA1c), Thyroid Function Tests, Haematology- CBC, Erythrocyte indices (HCT, HB, MCV), ESR & PT, Blood Grouping, Molecular Diagnosis of diseases (SARS CoV-19)

Laboratory Course (Practicals: 2 Credits)

- 1) Blood Grouping
- 2) Haemoglobin estimation
- 3) Liver Function Tests
- 4) Kidney Function Tests
- 5) Thyroid Profiling.

Recommended Books:

1. Harold Varley, Practical Clinical Biochemistry, CBS. 10th edition, 2018
2. Principles of Biochemistry by Geoffrey Zubay. Publisher: McGraw Hill College. Biochemistry by LubertStryer. WH Freeman and Co.
3. Biochemistry: The Molecular Basis of Life by Trudy McKee and James R McKee. Publisher: McGraw-Hill Higher education.
4. Biochemistry and Molecular biology by William H. Elliott and Daphne C. Elliott. Oxford University Press.
5. Fundamentals of Biochemistry: Life at the Molecular Level 5th Ed. By Donald Voet, Judith G. Voet and Charlotte W. Pratt. Publisher: Wiley.
6. Devlin: Textbook of Biochemistry (with clinical correlation) (John Wiley and Sons Publishers).

Government Degree College Baramulla

SEMESTER: 2ND

SKILL ENHANCEMENT COURSE

Subject: Clinical Biochemistry

TITLE: Fundamentals of Biochemistry and Microbiology

CREDIT: (2+2) THEORY: 02; PRACTICAL: 02

Course Code:BCB22S201

Learning Objectives and Outcome: On the completion of course the student should

- *Basic understanding of characteristics, properties and biological significance of the biomolecules of life.*
- *Understand the structure of microorganisms and detailed function*
- *Know various techniques for the growth of microbial culture*

UNIT:1 BIOCHEMISTRY

Glucose and Glycogen Metabolism, Classification of proteins and functions, Lipids: Classification of lipids and functions, Enzymes Definition – Nomenclature, Classification, Factors affecting enzyme activity, Isoenzymes – Enzyme pattern in diseases.

UNIT: II MICROBIOLOGY

Introduction and brief history of Microbiology Historical Aspect -Branches of Microbiology-Prokaryotic Organisms - Prokaryote Vs Eukaryote-Cell Wall, Structures external to Cell Wall, Growth and cultivation of Microorganisms, Nutritional requirement of microorganisms-Types of media-Microbial growth and growth curve.

Practicals:

1. Sterilization: Using of autoclave hot air oven, other common laboratory equipment etc.
2. Preparation of media
3. Techniques of cultivation of bacteria
4. Gram staining
5. Antibiotic sensitivity test
6. Isolation of bacteria from clinical specimens

Suggested readings:

1. Fischbach, 2005. Manual of lab and diagnostic tests, Lippincott Williams Wilkins, New York.
2. Gradwohls, 2000. Clinical laboratory methods and diagnosis. (ed) Ales C. Sonnenwirth and leonard jarret, M.D.B.I., New Delhi.
3. J Ochei and Kolhatkar, 2002. Medical laboratory science theory and practice, Tata McGraw-Hill, New Delhi.
4. Kanai L. Mukherjee, 2007, Medical laboratory technology Vol.1.Tata McGraw Hill.

