Government Degree College Baramulla

SEMESTER 8th **MAJOR COURSE**

Subject: Clinical Biochemistry

Title: Organ Systems and associated Disorders **Code: CBCC1822M**

CREDIT: (4+2) THEORY: 04; PRACTICAL: 02 **Contact Hours: 64(T) + 64 (L)**

Course Objectives:

- *To understand the the physiological function of musculoskeletal, Gastrointestinal, cardiovascular and nervous system*
- *To identify the common disorders affecting each major body system and their pathophysiological mechanisms*
- *To correlate clinical signs and symptoms underlying the physiological changes in these systems.*
- *To explore diagnostic methods and laboratory findings associated with a specific organ system disease.*

Learning outcome: upon s*uccessful completion of this course, students will be able to:*

- *Explain the normal physiology of musculoskeletal, Gastrointestinal, cardiovascular and nervous systems*
- *Describe the pathophysiology and clinical manifestations of major disorders affecting these systems.*
- *Understand diagnostic findings and laboratory results in relation to system disorders.*
- *Apply knowledge of organ system disorders to clinical case scenarios.*

Unit I: Musculo-Skeletal system: Physiology and Disorders (16 Hours)

Structure and Physiology of cardiac, smooth, and skeletal muscles. Molecular mechanism of muscle contraction; Joints: Structure and physiology; Synovial fluid and its properties; Pathophysiology, clinical features and laboratory findings of Musculo-Skeletal disorders: Tetany, Osteoporosis, Osteoarthritis and Rheumatoid Arthritis.

Unit II- Gastrointestinal System- Physiology & Disorders (16 Hours)

Structure, anatomy and physiology of digestive system: Digestion and absorption of Carbohydrates, proteins and fats. Phases of digestion. Digestive hormones. Digestive system disorders: Irritable bowel syndrome, Peptic ulcers, lactose intolerance, Crohn's disease. Small bowel malabsorption tests, Xylose test.

Unit III- Cardiovascular System - Physiology & Disorders (16 Hours)

Structure, anatomy and physiology of heart, cardiac cycle (cardiac output, venous return and their regulation), Disorders of cardiovascular system: Myocardial Infarction, congestive heart failure, Atherosclerosis, Shock and Hypertension.

Unit IV: Nervous system: Physiology and Disorders (16 Hours)

Structure, anatomy and physiology of CNS & PNS, Structure of neuron, Physiology of nervous system: Mechanism of Nerve impulse conduction. Neurotransmitters: Excitory and Inhibitory neurotransmitters, Neurological disorders: Alzheimer's, Parkinson's disorders, and Multiple sclerosis.

Practical (2 credits: 64 Hours)

- Demonstration of principle, handling and working of BP Apparatus
- Blood pressure monitoring by Sphygmomanometer
- Pulse rate measurement

- Demonstration of the microscopic structure of muscles with permanent slides.
- Demonstration of ECG (During hospital visit)
- Lab visit: The students will be taken to different diagnostic labs of various hospitals within the state.

Books Recommended:

1. Harrison's Principles of Internal Medicine, 18thEdition McGrawhills publishers
2. Textbook of Medical Physiology by John E. Hall, Guyton and Hall, Saunders.
3. Principles of Anatomy & Physiology by Tortora, G.J. & Grabowski, S. John wiley & sons,Inc.
4. Clinical Biochemistry: Metabolic And Clinical Aspects. Elsevier Science Health Science
5. Fundamentals of clinical chemistry – Teitz, W.B.Saunders company
6. Practical clinical biochemistry, volume I and II, 5th Edition –CBS Publishers

Clinical Chemistry – principles, procedures and correlations, Bishop, Lipppincott