

**Program of Systematic Biochemistry**  
**2<sup>nd</sup> year – 1<sup>st</sup> semester**  
**5 CFU**

**1. CELL COMMUNICATION AND SIGNALING**

Hormones and Receptors: classification, kinetic and regulation. Steroid and Thyroid hormones.

**2. REACTIVE OXYGEN SPECIES (ROS)**

Pathophysiological role of ROS. Mechanism of ROS regulation.

**3. REGULATION OF METABOLIC PATHWAY**

Key point in the metabolic regulation. Hormonal regulation of fuel metabolism: insulin and glucagon. Glucose homeostasis: starve-feed cycle.

**4. GASTROINTESTINAL SYSTEM**

Digestion and absorption of basic nutritional constituents.

**5. LIVER**

Liver metabolism. Bile Acids. Detoxification.

**6. ADIPOSE TISSUE**

Adipose tissue metabolism. Adipokines. Thermogenesis.

**7. BLOOD**

Lipoproteins. Cholesterol metabolism. Biochemistry of erythrocytes and other blood cells. Iron homeostasis. Heme metabolism.

**8. MUSCLE**

Skeletal muscle: structural organization. Skeletal muscle contraction. Muscle metabolism. Calcium homeostasis. Nitric oxide metabolism.

**9. NERVOUS SYSTEM**

Nervous system metabolism and functions. Neurotransmitters: characteristic, metabolism and function.

**10. EXTRACELLULAR MATRIX AND CONNECTIVE TISSUE**

Collagen composition. Parathyroid hormone. Calcitonin. Vitamin D: metabolism and function.

**SUGGESTED TEXT BOOK**

- Marks' Basic Medical Biochemistry, 5th Edition. *Michael Lieberman – Alisa Peet*. Wolters Kluwer
- Textbook of Biochemistry with Clinical Correlations, 7th Edition. *Thomas M. Devlin*. Wiley