

<b>COURSE</b>	<b>FACULTY OF PHYSIOTHERAPY</b>
<b>PROGRAM</b>	<b>BACHELOR OF PHYSIOTHERAPY</b>
<b>SEMESTER</b>	<b>1</b>
<b>COURSE TITLE</b>	<b>BIOCHEMISTRY</b>
<b>COURSE CODE</b>	<b>17PT0103</b>
<b>COURSE CREDITS</b>	<b>4</b>

**Course Outcomes:** After completion of this course, student will be able to:

- 1 Describe the structure and function of the cell in brief.
- 2 Describe the normal functions of different components of food.
- 3 Describe basal metabolic rate and factors affecting basal metabolic rate with special reference to obesity.
- 4 Describe nutritional aspects of carbohydrates, lipids, proteins, vitamins, and minerals and their metabolism with special reference to obesity.
- 5 Understand the basics and clinical aspects of enzymes and regulation of enzymatic activity and diagnostic use of enzymes.
- 6 Describe in detail the biochemical aspects of muscle contraction.

**Pre-requisite of course:** TO LEARN BIOCHEMISTRY OF LIVING TISSUE

#### Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
80	0	0	25	15	10	0	0

Contents : Unit	Topics	Contact Hours
1	<b>BIOCHEMICAL CHARACTERISTICS IF LIVING MATER</b> Biochemistry, morphology of cell, Membrane structure and function, Functions of intracellular organs	3
2	<b>NUCLEIC ACID</b> DNA definition, structure, RNA definition, structure , catabolism of purines –gout	2
3	<b>PROTEINS AND AMINO ACIDS</b> Chemistry, definition, classification of amino – acids, protein, Metabolism, digestion and absorption, decarboxylation, deamination, transmethylation, transamination and their importance and detoxification of ammonia including urea cycle. , Neurotransmitters & Plasma proteins including immunoglobulins, Hemoglobin, Myoglobin, their functions, Haemoglobinopathies, thalassemas, Structural proteins: Collagen, Elastin	7
4	<b>ENZYMES</b> Definitions, classification, factors, Coenzymes, Inhibition and type of inhibitors, Isoenzymes, Clinical and therapeutic uses of enzymes	8

5	<b>CARBOHYDRATES</b> Chemistry, definition, classification with examples, Function of mucopolysaccharide, Reducing properties of sugars of clinical and diagnostic importance (eg: Benedict's test, Barfoed's test, etc), Metabolism, digestion and absorption of carbohydrates, glycosis – aerobic and anaerobic, energetics and regulation, Krebs's cycle, its energetics regulation Gluconeogenesis, Hormonal regulation of blood sugar level and diabetes mellitus	10
6	<b>LIPIDS</b> Chemistry, definition, classification and function, Metabolism, digestion and absorption of lipids, beta oxidation of fatty acids and its energetics regulation of fat metabolism in adipose tissue, ketone bodies formation and its utilization, cholesterol and importance of lipoproteins.	5
7	<b>VITAMINS</b> Definition, classification, functions, Deficiency symptoms, RDA	5
8	<b>HORMONES</b> HORMONES	5
9	<b>METABOLISM</b> Introduction of metabolism, Metabolism of carbohydrates, Lipid & amino acids	5
10	<b>NUTRITION</b> Importance of nutrition, nutritional aspects of Carbohydrates, Proteins, Fats and Fibers, Classification of fibers, calorimetry, energy values, respiratory quotient, BMR, PEM, Balanced diet	5
11	<b>BC OF CONNECTIVE TISSUE, NERVE, MUSCLE TISSUE</b> Biochemistry of connective tissues, Biochemistry of nerve tissue and muscle	5
12	<b>WATER, ELECTROLYTE, ACID BASE BALANCE, MINERALS</b> Phosphate, calcium and iron. Magnesium fluoride, Zinc, Copper, Selenium, Molybdenum RDA, iodine sources, absorption, transport, excretion, function and disorders., Acid – base balance, water and electrolyte balance	5
13	<b>CHEMISTRY OF BIOLOGICAL MATERIALS</b> Chemistry of biology materials, Biochemistry of connective tissue – Collagen, Glycoprotein, Proteo-glycans	5
14	<b>PHYSIOCHEMICAL PHENOMENON</b> Physicochemical Phenomenon.	5
15	<b>COMMON PROCEDURES</b> Liver function test, Renal function test	5
<b>Total Hours</b>		80

**REFERENCES:**
**Textbooks:**

- Essentials of Biochemistry by U. Satyanarayan, Latest Edition, Books and Allied Publications.
- Medical Biochemistry for Physiotherapy students by Harpreet Kaur, Jagmohan Singh, Latest edition, Jaypee Publications.

Reference books:

1. Textbook of Medical Bio-Chemistry– Dr M. N. Chatterjea, Latest Edition, Jaypee Publication.
2. Textbook of Biochemistry for medical students: DM Vasudevan: Jaypee Publication.
3. Medical Biochemistry by N. Mallikarjuna Rao, Latest Edition, New Age International Publication.