



| Code | Subject Title | Cr. Hrs | Semester |
|----------|-----------------|---------|----------|
| CHEM-323 | Bio Chemistry | 4 | VI |
| Year | Discipline | | |
| 3 | Chemistry-I, II | | |

SYLLABUS OUTLINE:**1. LIPIDS:**

Lipid Classification, Structures and functions. Chemical Properties of triglycerides. Phospholipids. Sterol/steroids. Lipid with specific biological activities. Prostaglandins: Structure and function. Properties of lipid aggregates: Micelles and Bilayers. Biological membranes. Membrane proteins, Membrane structure and Assembly. Fluid Mosaic model. The erythrocyte membrane.

2. PROTEINS:

Amino acids: their Structure, Chiral Center, and stereoisomerism. Classification of amino acids. Acid base properties, their titration curve and its importance. . Amino acid sequence. Peptides and their biological importance. Proteins: classification, Covalent structure and biological significance including Primary. Secondary, Tertiary and Quaternary structure of proteins, as Keratins, Collagens and elastin. Conformation and function of globular proteins with special reference to structure and function of Hemoglobin and Myoglobin. Biological significance of Proteins.

3. ENZYMES:

Chemical nature, nomenclature and classification of enzymes. Cofactors and Coenzymes. Concepts of Active site. Substrate specificity. Affect of different factors on enzyme activity. Kinetics of single substrate reactions. Quantitative assay of enzymatic activity. Enzyme inhibition: Competitive, non-competitive and irreversible inhibition. Regulatory enzymes, allosteric enzymes, Multienzyme system, Zymogens, isoenzyme. Immobilized enzymes.

4. NUTRITION:

Introduction to the science of nutrition: Nutrients and their functions Biological evaluation of proteins, carbohydrates and lipids. Sources and forms of Energy. Energy value of foods. Energy requirements under different living and physiological conditions. Direct and indirect Calorimetry. Basal metabolic Rate, Respiratory quotient and their measurements. Assessment of nutritional status in Pakistan. Thermogenic effects of food.

RECOMMENDED BOOKS:

1. Principles of Biochemistry by Lehninger AL, Nelson DL and Cox MN, 2000 Pub: worth Publishers
2. Biochemistry by Lubert Stryer(2006) Pub: Freeman and Company
3. Lippincott's Biochemistry by Champe.P C; Harvey. R. A and Ferrier. D. R. 3rd ed., 2004 Pub: J. b. Lippincott Company
4. Nutritional biochemistry by T. Brody 1994, Pub: Acadmic Press
5. Harpers Biochemistry, 27th ed. 2006 Pub: McGraw Hill Inc.