

Syllabi for Core Courses (Discipline Centric Course) for Integrated PG Programme in Biochemistry of the Cluster University Srinagar, as per Choice Based Credit System (CBCS) offered to Semester I (First).

Course Code: IGBCH18C101

Course Title: BIOMOLECULES

THEORY

CREDITS: 04

UNIT -I: (Thermodynamics & Amino Acids)

Water, pH, buffer, Henderson–Hasselbach equation, Thermodynamic principles, concept and calculation of free energy, coupled reaction. Structure and/Classification of Amino Acids, Stereoisomerism and RS system, Optical Isomerism, Proteins: Classification, composition and functions, Peptide Bond, Polypeptide Chain (Amino acid sequence) determination, Levels of Protein architecture and forces stabilizing Tertiary/Quaternary Structure. /

UNIT-II: (Carbohydrates)

Introduction, Classification of Carbohydrates, Monosaccharides: Open & Ring Structure, Anomeric forms, Mutarotation, Reactions of monosaccharides (reference to Glucose), Structure & functions of Disaccharides, Polysaccharides, Proteoglycans, Lipopolysaccharides, Mucopolysaccharides.

UNIT-III: (Lipids)

Fatty Acids: Nomenclature, Classification, Structure and Properties, Saturated & Unsaturated Fatty Acids, Essential fatty Acids, Hydrolysis, Saponification value, Reichert-Meissel number, Iodine Number, Rancidity, Triacylglycerols and Cholesterol, Phospholipids, Sphingolipids, Prostaglandins & Leucotrienes.

UNIT-IV: (Nucleic Acids)

Composition of DNA & RNA, features of DNA Double Helix, types of DNA, Central Dogma of Molecular Biology. Types and functions of RNA. DNA and RNA as genetic material

Suggested Readings:

1. Berg, J.M., Tymoczko, J.L. and Stryer L., Biochemistry (2012) 7th ed., W.H. Freeman and Company.
2. Denise R Ferrier, Lippincotts Illustrated Reviews Biochemistry 6th (2013), CBS Publishers.
3. Nelson, D.L. and Cox, M.M Lehninger: Principles of Biochemistry (2013) 6th ed, W.H. Freeman and Company.
4. Donald, Voet. and Judith G.Voet, Biochemistry (2011) 4th ed. John Wiley & Sons Asia Pvt.Ltd.
6. Devlin, T.M , Textbook of Biochemistry with Clinical Correlations (2011) 7th ed. John Wiley & Sons, Inc.
7. Rawn J. D., Biochemistry, John Wiley & Sons, Inc.

