Course Code	Course Name	Credits
26BT005	BIOCHEMISTRY	04

Course Objectives

- Outline the basics of biochemistry and its importance in biological system
- Understand the structure of biomolecules and their biological function.
- Apply knowledge to understand Vitamin deficiency diseases.
- To analyse biochemical data, interpret experiments, and solve biological problems.
- Understand the chemical and physical properties of lipid, protein and vitamin

Learning Outcomes

Upon successful completion of this course, it is intended that a student will be able to:

- Understand the significance of Biochemistry.
- Describe the chemistry of carbohydrates, lipids, proteins and amino acids.
- Understand the structure and function of nucleosides and nucleotides.
- Basic knowledge of structure and functions of Vitamins
- Relate the basic function of nucleotides, structure of different classes of lipids and their roles in biological systems

Unit 1 - Carbohydrates (15 Hrs.)

Classification, biological significance of carbohydrates; Oligosaccharides- Disaccharides- structure and importance of Sucrose, Lactose, Maltose, Cellobiose. Polysaccharides- structure and importance of homopolysaccharides and heteropolysaccharides.

Unit 2 – Proteins (13 Hrs.)

Classifications of amino acids, structure and properties of amino acids. Protein classifications. Primary, Secondary, Tertiary and Quaternary structure of Proteins.

Unit 3 - Lipid (12 Hrs.)

Classification, Physical and Chemical properties; Properties of fats and oils; Structure and importance of saturated and unsaturated fatty acids, Phospholipids and sterols.

Unit 4 – Nucleic acid (10 Hrs.)

Structure and classification of Nucleic acids- Structure of Purines and Pyrimidines, Nucleotides, DNA double helical structure, DNA and RNA- types and function.

Unit 5 - Vitamin (10 Hrs.)

Structure, Properties and functions of Vitamins, Vitamin deficiency diseases of fat soluble and water soluble Vitamins.

Reference Books:

1. Smith et al.,Principles of Biochemistry. McGraw Hill International Book Company.8thEdition, 1983.
2. Conn. E: & Stump. P.K. Outlines of Biochemistry. John Willey & Sons, New Delhi.5thEdition. 2009
3. David L. Nelson, Michael M. Cox. Lehninger Principles of Biochemistry. W.H. Freeman and Company, Newyork.7thEdition, 2017.
4. Jeremy M. Berg, John L. Tynoczko, LubertStryer. Biochemistry. Company, Newyork.3rdEdition, 2015.
5. Robert k. Murray, Drayl. K. Granner, Peter. A. Victor. W. Rodwell. Harpers Illustrated Biochemistry. Tata McGraw Hill companies.30thEdition, 2015.
6. David L. Nelson and Michael M. Cox. Lehninger's Principles of Biochemistry, 4th Edition, 2006
7. Donald Voet , Judith G. Voet , Charlott W. and Pratt. Fundamentals of Biochemistry. John Willey & Sons. 4th Edition,2011.
8. LubertStryer. Biochemistry, 4th edition, W.H. Freeman & Co. 1995.
9. Heldt Hans-Walter. Plant Biochemistry. Elsevier Science Publishing Co Inc, 4th Edition.
10. Smith, Emil L. Principles of biochemistry: Mammalian biochemistry. McGraw-Hill, New York. 7th Edition.