

THE CLUSTER UNIVERSITY OF SRINAGAR  
Syllabus for B.Sc. 1<sup>st</sup> Year (Semester -I)  
**Subject: Biotechnology**  
(Session- 2017-2018)

**Semester-I**

**Course title: BIOMOLECULES**

**Unit-I**

Definition and Properties of Carbohydrates; Structure and Function of Mono, Di and polysaccharides (Glucose, Mannose, Fructose, Galactose, Lactose, Sucrose, Glycogen, Starch and Cellulose); Isomerism of Carbohydrates; Mutarotation; Glycoproteins, Peptidoglycans, Lipopolysaccharides.

**Unit-II**

Amino acids: Structure and classification. Non-protein Amino Acids., Physical and Chemical Properties of Amino Acids. Peptide bond. Primary structure, Secondary structure, & Ramachandran Plot, Tertiary Structure of Proteins. Forces stabilizing protein structure.

**Unit-III**

Classification of Lipids and Fatty Acids; Structure and Function of Saturated and Unsaturated Fatty Acids, Triglycerides and Cholesterol; Structure & function of Phospholipids, Sphingolipids, Cerbrosides

**Unit-IV**

Vitamins: Structure and function of water soluble (B1, 2, 6, 12, C) & lipid soluble (A,D, E, K). Hormones: properties and function of Peptide hormones, steroid hormones & Amino-acid derivatives.

Structure of Purines, Pyrimidines, Nucleosides and Nucleotides; Structure of Biologically important Nucleotides and their function (FADH, NADH, NADPH, Co-A).

Dr. Imran  
Khan

Ehtisham

Dr. Aftab Yousuf

Dr. Aftab Yousuf

Dr. Ehtisham

Dr. Ehtisham

Dr. Sadia May

### **PRACTICALS:**

1. Good Lab Practices. Do's and Don't in Laboratory.
2. Introduction to the use of various Equipments used in Biotechnology Laboratory.
3. Different Sterilization Techniques.
4. Preparation of solutions and buffers with different concentrations based on Molarity, Molality and Normality.
5. Preparation of LB Media.

### **Books Recommended:**

1. Lehninger Principles of Biochemistry by David L. Nelson, Michael M. Cox
2. Biochemistry by Jeremy M. Berg, John L. Tymoczko and Lubert Stryer
3. Biochemistry by U. Satyanarayan.
4. Molecular Cloning: A Laboratory Manual (Fourth Edition) by Michael R. Green, Joseph, Sambrook.

Fha-

Book

~~Star~~

Lehninger

Sambrook