CLUSTER UNIVERSITY SRINAGAR

SYLLABUS (FYUP UNDER NEP 2020)

Offered By Department Of BIO-TECHNOLOGY

Semester 1st (Major Course)

Course Title: Biomolecules

Course Code: UGBTC22J101 **Max. Marks 100**
Credits: 4 (Theory: 3, Practical: 1) **Theory External: 60; Min Marks: 24**
Contact Hrs: 75 (Theory 45, Practical 30) **Theory Internal (Continuous Assessment): 15 Marks, Min Marks: 06**
Practical Experimental Basis= 15, Min. Marks: 06
Practical Experimental (Continuous assessment) = 10, Min. Marks: 04

Objective:
Introduce students to basic concepts of Biomolecules.

Course Outcome:
On completion of the course the students will be able to:
1. Distinguish different biomolecules based on structure and function
2. Prepare buffers and solutions
3. Detect biomolecules by different qualitative methods
4. Handle different laboratory Instruments

Unit-I: **15 Hrs**

Carbohydrates

Introduction and Classification of Carbohydrates, Configuration; Structure and Function of Mono, Di and Polysaccharides: Homo and Heteropolysaccharides (Glucose, Mannose, Fructose, Galactose, Lactose, Sucrose, Glycogen, Starch and Cellulose, Heparin and Hyaluronic Acid); Isomerism of Carbohydrates; Mutarotation.

Unit-II: **15 Hrs**

Amino Acids and Proteins

Amino acids: Structure and classification, Peptide bond, Primary, Secondary, Tertiary and Quaternary structure of Proteins, Ramachandran Plot, Forces stabilizing Protein Structure. Overview of Non protein amino acids

Unit-III: **15 Hrs**

Lipids and Nucleic Acids

Introduction and Classification of Lipids (Overview); Fatty acids: structure, function and classification; Triglycerides and Cholesterol: General structure and function; Introduction to nucleosides and nucleotides

Unit IV: PRACTICALS **30 Hrs**

1. Good Lab Practices.
2. Introduction to various Equipment used in Biotechnology Laboratory.
3. Preparation of solutions based on Molarity, Molality, Normality and Percentage.
4. Standardization of solutions.
5. Preparation of buffers.
6. Qualitative tests for Carbohydrates, Lipids and Proteins.

Books Recommended:

1. 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. Introduction to practical Biochemistry, Sawhney and Sinha
5. Principles of Biochemistry, J.L Jain