

Biological Sciences-II: Biomolecules

1. **Faculty:** FLSB
2. **Course Code:** LSB102
3. **Course Title:** Biomolecules
4. **Number of Credits:** 4 (2+1+1)
5. **Course objectives:** To introduce structures and properties of all the biomolecules.
6. **Minimum prerequisites for taking this course, if any:** Higher secondary education qualified from any government-approved education board
7. **Course structure with units, if applicable:**

- i. Building blocks and structural diversity of proteins, nucleic acids, carbohydrates, and lipids.
- ii. Proteins: Evolution of protein structure, structure-function Relationships; myoglobin and adaptations in myoglobin structure in deep diving mammals; allostery in hemoglobin; Bohr effect (for pH and carbon dioxide); adult and fetal hemoglobin.
- iii. Carbohydrates: Sources of structural diversity; structure-function relationship in glycogen and cellulose,
- iv. Lipids: Structure and properties of storage and membrane lipids; biomembrane organization and function; membrane-bound proteins: structure, properties and function; transport phenomena.
- v. Nucleic acids: Historical perspective leading up to the proposition of DNA double helical structure

Lab Tech

- Amino acid estimation by spectroscopy
- Amino acid estimation by Ninhydrin
- Protein estimation by Bradford
- Protein Estimation by the Lawry method
- Carbohydrate: Reducing sugar estimation
- DNA estimation by Diphenylamine (DPA) method
- RNA estimation by Orcinol method
- Nucleic acid estimation by spectrochemistry

8. Reading suggestions:

1. Handbook of Biomolecules: Fundamentals, Properties and Applications by Verma & Verma.
Publisher: Elsevier
2. Principals of Biochemistry by Voet, Pratt, & Voet, Latest Edition

9. Evaluation:

Theory:	Mid-semester Written Examination	: 40% Marks
	End-semester Written Examination	: 40% Marks
	Quiz / Assignment/Presentation (oral / poster)/other	: 20% Marks