

BIOMOLECULES AND BIOCHEMISTRY

LESSON PLAN

Branch: B.Tech in Biotechnology

Semester: 3rd Sem

Subject: BTPC2001 – Biomolecules and Biochemistry

No. of Days/Week: 3

No. of Weeks: 15

Name of the Teaching Faculty: Dr. Gayatri Nahak

WEEKLY BREAKDOWN:

Week	Class Day	Topics to be Covered
1st	1st	Introduction to Biomolecules
	2nd	Classification of Carbohydrates
	3rd	Configuration & Conformation of Monosaccharides
2nd	1st	Oligosaccharides & Polysaccharides: Starch, Glycogen, Cellulose
	2nd	Glycolysis – Pathway & Regulation
	3rd	TCA Cycle – Reactions & Energetics
3rd	1st	Oxidative Phosphorylation
	2nd	Electron Transport
	3rd	ATP Synthesis and Energy Yield
4th	1st	Pentose Phosphate Pathway
	2nd	Introduction to Amino Acids – Classification & Properties
	3rd	Introduction to Amino Acids – Classification & Properties
5th	1st	Acid-Base Properties
	2nd	Non-Standard Amino Acids
	3rd	Peptide Bonds & Biologically Active Peptides
6th	1st	Ramachandran Plot
	2nd	Ramachandran Plot & Protein Conformation
	3rd	Enzymes: Nomenclature & Classification
7th	1st	Properties of Enzymes
	2nd	Enzyme Kinetics: Michaelis-Menten Equation
	3rd	Briggs-Haldane Modification
8th	1st	V _{max} & K _m Determination
	2nd	Mechanism of Enzyme Action
	3rd	Introduction to Lipids – Classification
9th	1st	Structure of Fatty Acids, TAGs, Phospholipids
	2nd	Sphingolipids, Waxes, Sterols
	3rd	Biological Functions of Lipids
10th	1st	Introduction to Nucleotides & Nucleic Acids
	2nd	Introduction to Nucleotides & Nucleic Acids

	3rd	DNA & RNA Structure
11th	1st	DNA & RNA Structure
	2nd	Watson-Crick Double Helix Model
	3rd	DNA Denaturation & Renaturation
12th	1st	Vitamins – Types, Structure & Functions
		Vitamins – Types, Structure & Functions
	2nd	Fat-Soluble & Water-Soluble Vitamins
	3rd	Minerals – Classification & Functions
13th	1st	Case Studies & Applications of Biomolecules
	2nd	Enzyme Assays – Examples & Application
	3rd	Practice Questions & MCQs
14th	1st	Protein Structure Levels – Overview
	2nd	Coenzymes, Cofactors & Isoenzymes
	3rd	Integration of Metabolic Pathways
15th	1st	Nutritional & Metabolic Disorders
	2nd	Question/Answer