

**Curriculum Plan of Dr. Kapil Mohan Saini
(Odd Semester 2024-2025)
Semester-V**

Name of Paper & Code: CHEMISTRY –DSE: Nucleic Acids, Amino Acids, Proteins and Enzymes (2 Periods Per Week), UPC: 2172013502

Contents	Allocations of Lectures	Month wise Schedule to be followed	Tutorials/ Assignment/ Presentation
Unit-1: Nucleic Acids (Hours: 8) Structure of components of nucleic acids: Bases, Sugars, Nucleosides and Nucleotides. Nomenclature of nucleosides and nucleotides, structure of polynucleotides (DNA and RNA) and factors stabilizing them, biological roles of DNA and RNA; Concept of heredity: Genetic Code, Replication, Transcription and Translation.	8	1 st Week of August – 3 rd week of August	- Syllabus Overview - Reference Books - Problem Solving - Class Test,
Unit-2: Amino Acids, Peptides and Proteins (Hours: 14) Amino acids and their classification; α -amino acids - Synthesis, ionic properties, and reactions. zwitterions, pKa values, isoelectric point, and electrophoresis; Study of peptides: determination of their primary structure-end group analysis; Synthesis of peptides using Nprotecting, C-protecting and C-activating groups, Solid-phase synthesis; Overview of primary, secondary and tertiary structures of proteins, protein denaturation.	14	4 th Week of August – 1 st Week of October	- Problem Solving - Class Test,
Unit-3: Enzymes (Hours: 8) Introduction, classification, and characteristics of enzymes. Salient features of active site of enzymes. Mechanism of enzyme action (taking trypsin as an example), factors affecting enzyme action, coenzymes, and cofactors (including ATP, NAD, FAD), specificity of enzyme action (including stereospecificity). Enzyme inhibitors and their importance, phenomenon of inhibition (competitive, uncompetitive, and non-competitive inhibition including allosteric inhibition).	8	2 nd Week of October- 2 nd week of November	- Problem Solving - Class Test,