Proposed Syllabus for **Core Course** of **BG/UG 3rd Semester** offered in the discipline/subject of **Biochemistry** at Cluster University Srinagar.

Course Title: ENZYMOLOGY **CREDITS: 06**

Theory **Credits: 04**

UNIT-I Thermodynamics, Enzyme Structure & Classification

Water, pH, buffer, Henderson–Hasselbach equation, bioenergetics and Thermodynamic principles, concept and calculation of free energy, coupled reaction.
Enzyme: Classification, nomenclature. Parts of enzyme: Holoenzyme, Apoenzyme, Co-enzymes, Role of vitamins, Co-Factors.

UNIT-II Enzyme Catalysis

Active site, Catalytic Triad, Enzyme Specificity, Mechanisms of Enzyme Action.
Catalysis- Acid Base Catalysis, Covalent Catalysis, Substrate Strain, Non Protein Enzymes, Isozymes Multi Enzyme Complexes.

UNIT-III Enzyme Kinetics

Measurement & Expression of Enzyme activity, enzyme assays, Factors affecting activity, Michaelis-Menten equation, Km value & its significance, Lineweaver Burk plot, Transition state analogues
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UNIT-IV Inhibition & Regulation

Reversible inhibitions: Competitive, Non-competitive, Un-competitive inhibition, Detremination of Km & Vmax in Enzyme Inhibition.
Irreversible, Allosteric modulations, feedback mechanism

Suggested Readings:

1. Palmer T.& Bonner P. Enzymes: Biochemistry, Biotechnology, Clinical Chemistry. 2nd Edn, Woodhead Publishing.
2. Copeland R.A.. Enzymes: A Practical Introduction to Structure, Mechanism, and Data Analysis, 2nd Edn. Wiley-VCH New York
3. Price N & Stevens L. Fundamentals of Enzymology. Oxford University Press.(3rd Edn)
4. Devasena T. Enzymology. Oxford University Press.
5. Nelson, D.L. and Cox, M.M Lehninger: Principles of Biochemistry (2013) 6th ed, W.H. Freeman and Company.

Laboratory Course **Credits: 02**

1. Principles of Colorimetry: Verification of Beer's law.
2. Estimation of SGPT & SGOT in serum.
3. Assay of Alkaline Phosphatase activity.
4. To study the effect of pH, temperature on the activity of enzyme/s.
5. Cell fractionation and determination of enzyme activity in organelles using suitable source like Liver tissue etc.

Suggested Readings:

1. Plummer D. T., Introduction to Practical Biochemistry, Tata McGraw Hill. (Third Edn.)
2. Deb A. C., Viva & Practical Biochemistry, Central Book Agency
3. Boyer R., Modern Experimental Biochemistry, Pearson.