Proposed Syllabus for **Core Course** of **BG/UG 4th Semester** offered in the discipline/subject of **Biochemistry** at Cluster University Srinagar.

Course Title: INTERMEDIARY METABOLISM **Credits: 06**

Theory **4 Credits**

Unit I: Carbohydrate Metabolism

Reactions and energetics of glycolysis. Gluconeogenesis, Glycogenesis and Glycogenolysis. Reactions and physiological significance of Pentose Phosphate Pathway. Regulation of Glycolysis.

Unit II: Lipid Metabolism

Introduction. Hydrolysis of Triacylglycerols, transport of fatty acids into mitochondria, β-oxidation of saturated and unsaturated fatty acids, ATP yield from fatty acid oxidation. Biosynthesis of saturated and unsaturated fatty acids. Cholesterol metabolism.

Unit III: TCA Cycle and Oxidative Phosphorylation

Entry of Pyruvate into Mitochondria, TCA cycle, Sequence of Electroncarriers, Sites of ATP Production, Inhibitors of Electron transport chain, Mitochondrial Oxidative Phosphorylation.

Unit IV: Amino Acid & Nucleic Acid Metabolism

Transamination, Oxidative Deamination and Decarboxylation of amino acids, Urea cycle. Biosynthesis and degradation of Purines and Pyrimidines.

Laboratory Course (Practicals) **2 credits**

1. Estimation of protein by Lowry method.

2. Estimation of glucose by Nelson-Somogyi method.

3. Estimation of bilirubin (conjugated and unconjugated) in serum.

4. Estimation of cholesterol.

5. Separation and identification of amino acids/sugars by paper chromatography.

Suggested Readings:

1. Berg, J.M., Tymoczko, J.L. and Stryer L., Biochemistry (2012) 7th ed., W.H. Freeman and Company.
2. Denise R Ferrier, Lippincotts Illustrated Reviews Biochemistry 6th (2013), CBS Publishers.
3. Nelson, D.L. and Cox, M.M Lehninger: Principles of Biochemistry (2013) 6th ed, W.H. Freeman and Company .
4. Plummer D. T., Introduction to Practical Biochemistry, Tata McGraw Hill. (Third Edn.)
5. Deb A. C., Viva & Practical Biochemistry, Central Book Agency
6. Boyer R., Modern Experimental Biochemistry, Pearson.