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

Course Title: CELL & MOLECULAR BIOLOGY CREDITS: 06

Theory Credits: 04

UNIT-I Membranes & Cell Cycle

Structure & function of Cell Membranes, Transport across Membranes,
Cell Adhesion & Communication (Signaling). Cell Cycle, Mitosis & Meiosis.

UNIT-II Cell Organelles

Structural Organisation & features of Nucleus, ER, Ribosomes, Golgi Apparatus, Lysosomes, Choloroplast, Mitochondria, Peroxisomes, Cytoskeleton.

UNIT-III Genetic Material & Replication

DNA as genetic Material, Structural organization of genetic material. Various forms of DNA.
DNA Replication (emphasis on Prokaryotic), Origin, Primer synthesis, Initiation, Elongation Termination. DNA repair in brief.

UNIT-IV Transcription & Translation

Fine structure of Gene, Exon & Intron, Operon concept,
Trancription factors & machinery, Mechanism of Transcription. Types of RNA & RNA processing.
Translation, Genetic Code, Wobble Hypothesis, Mechanism of Translation, Post Translational Modifications.

Suggested Readings:

1. Nelson, D.L. and Cox, M.M Lehninger: Principles of Biochemistry (2013) 6th ed, W.H. Freeman and Company.
2. Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley & Sons. Inc
3. Lodish H. et al, Molecular Cell Biology 6th Edn. W H Freeman & Co.
4. Alberts B. et al, Molecular Biology of the Cell (2014) WW Norton & Company
5. Hartle & Jones , Genetics, John Wiley & sons.
6. Cooper, G.M. and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
7. Krebs, Goldsrein, Kilpatrick. Lewin's Gene 11th Edn, Jones & Bartlett Pub. Inc.

Laboratory Course **Credits: 02**

1. DNA isolation from blood.
2. Qualitative & quantitative estimation of DNA.
3. Qualitative & quantitative estimation of RNA.
4. Demonstration of PCR.
5. Demonstration of ELISA.

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.