Course contents for Cell Biology

1. **Faculty:** FLSB
2. **Course Code**: LSB502
3. **Course Title**: Cell Biology
4. **Number of Credits**: 5 (2L, 1T, 2P)
5. **Course objectives**:
   Understanding the basic principles of Cell biology–Membrane and its function, Cytoskeleton and its dynamics, intracellular compartments, cell junctions, cell adhesion and extracellular matrix, Cell signaling and cell growth and division.

6. **Minimum prerequisites for taking this course, if any**:
   Bachelor-level of Biology.

7. **Course structure with units, if applicable**:

   The following topics will be covered as part of Cell Biology course:

   a. **Cell Organization:** Plasma Membrane and its Functions in Transport, Exocytosis and Endocytosis, Cytoplasm and its Composition

   b. **Cytoskeleton and Cell Dynamics:** Self Assembly and Dynamic Structures of Cytoskeleton and Regulation, Molecular Motors

   c. **Intracellular Compartments:** Endoplasmic Reticulum, Golgi, Lysosomes, Peroxisomes, Mitochondria, Chloroplast, Nucleus, Nuclear envelope, Nucleolus

   d. **Cell Junctions, Cell adhesion and Extracellular matrix:** Cadherins and Cell-Cell Adhesion, Gap Junctions and Plasmodesmata, Basal Lamina, Integrin, Extracellular Matrix

   e. **Cell Signaling:** Primary and Secondary Messengers, Ions, steroids, G-protein, Enzyme linked cell surface receptors

8. **Practical's:**

a. Study of different stages of mitosis in onion root tip cells
b. Study of the effect of colchicine on mitosis in onion root tip cells
c. Chromosome preparation from cell line
d. Cell counting using haemocytometer
e. Cell culture using cell line (Counting, maintenance, freezing, thawing)
f. Cell viability-MTT assay

9. **Suggested Readings:**

   a. **Molecular Biology of the Cell** By Bruce Alberts
   b. **Molecular Cell Biology** by Harvey Lodish

10. Evaluation:

Theory:	Mid-semester Written Examination	: 40% Marks
	End-semester Written Examination	: 40% Marks
	Quiz / Assignment/Presentation (oral / poster)/other)	: 20% Marks