

B.Sc. Biotechnology: Semester-I BST102: Cell Biology	
Teaching Scheme Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	Examination Scheme Class Test -12Marks Teachers Assessment - 6Marks Attendance - 12 Marks End Semester Exam - 70 marks

Prerequisite: - General knowledge of Biology of intermediate standard

Course Objectives:

1. To give an overview of cell biology and their significance.
2. To give basic knowledge of Structure, biosynthesis and function of Macromolecules (Carbohydrates, Proteins and Lipids).
3. To explain about the Introduction evolution of cell.
4. To explain the cell signaling
5. To explain the Cellular transport mechanism

Course Outcomes:

After completing the course, students will be able to:

- CO1: Understand various applications of cell biology
- CO2: Analyze various biomolecules and their significance, structure and function
- CO3: Identify different types of cells and their importance
- CO4: Understand the concept of cell and signaling mechanism
- CO5: Knowledge of Genes, genetic disabilities and apoptosis cell pathways and Regulators

Detailed Syllabus

UNIT-1 The Evolution of the Cell The Evolution of the Cell: From Molecules to Prokaryotes and Eukaryotes, Ultra structure and function of cell and cell organelles, Membrane Structure: Physicochemical Properties; Molecular Organization - asymmetrical organization of lipids, proteins and carbohydrates, Eukaryotic cell division cycle: Different phases and molecular events. Control of cell division cycle, Transport of Small Molecules Across Cell Membranes: Carrier protein and channel protein, Active Transport
UNIT-2 Intracellular Compartments and Protein Sorting Intracellular Compartments and Protein Sorting: Structure, function and transport of proteins into mitochondria and chloroplast. Transport by vesicle formation: Endocytosis and Exocytosis and molecular Mechanism of vesicular transport. Intracellular communication through cell junctions: Occluding junctions, anchoring junctions and communicating junctions. Molecular mechanism of cell-cell adhesions: Extra-cellular matrix of animals: organization and functions
UNIT-3 Signaling

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Signaling: Signaling via G-Protein linked cell surface receptors, MAP kinase pathways and tyrosine kinase pathway: Initiation, interaction and regulation. Cohesins and condensins
 Apoptosis: Phases and significance, Morphological and biochemical changes associated with apoptotic cells, Apoptotic pathways and regulators.

Text and Reference Books

1. Cohn, N.S. (1964). Elements of Cytology Brace and World Inc., New Delhi.
2. Darrington, C.D.(1965). Cytology, Churchill, London.
3. Darnell, J., Lodish, KL and Baltimore, D (1991). Molecular Cell biology, Scientific American books.
4. De Robertis, E.D.P. and Robertis, E.M.F.(1991). Cell and Molecular biology. Lea and Febiger, Washington.
5. Dobzhansky, B (1961). Genetksland The origin of species, Columbia University press,New York.


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