

Cell Biology

Semester No 2/8	Code BIT-115	Credit Hours 2-1
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Course description:

This course is designed to help students understand basis of the cell structure and function at cellular and molecular level. In this course a detailed account of functional physiology of the cells will be discussed at molecular level.

Recommended Books:

1. **Cell Biology** by Thomas D. Pollard, William C. Earnshaw.
2. **Cell Biology: Structure, Biochemistry, and Function** by Phillip Sheeler, Donald E. Bianchi.
3. **Molecular Biology of the Cell** by Bruce Albert and Dennis Bray, 4th Ed. Garland Publishing Inc, New York and London.
4. **Cell and Molecular Biology** by Gerald Karp.1996. John Willey and Sons,Inc. London.
5. **Structural Aspects of Cell physiology** by Society for Experimental Biology (Great Britain), Society for Experimental Biology.

Prerequisite: None

Course Learning Outcomes

Students will be able to describe the evolution, diversity and replication of cells; Explain the role of compartmentalization and signalling in cellular biology; Interpret and explain key experiments in the history of cell biology; Evaluate and apply knowledge of modern techniques in cellular biology.

Assessment system:

Quizzes	10-15%
Assignments	5-10%
MSE	30-40%
ESE	40-50%

Week wise Lecture Plan:

Week	Lecture Topic	Quizzes	Assignments
1	Introduction to cells	1	
2	Cell sizes and shapes		
3	Types of cells		
4	Membrane Structure and Function		1
5	Structure and function of nucleus		
6	Mitochondria		
7	Golgi bodies	2	
8	Endoplasmic reticulum		
9	MIDTERMS		

10	Endomembrane system		2
11	Vesicular Transport		
12	Cytoskeleton		
13	Cell to cell Communication	3	
14	Cell Cycle		
15	Phases of Cell Cycle and Cell Division		
16	Regulation of Cell Growth		3
17	Apoptosis		
18	MIDTERMS		

Lab Number	Equipment	Experiment Detail
1-2	Microscope	Image Capture and Microscopic Measurement
3-4	Beakers, glassware	Making Solutions
5-6	Pipette sets	Pipetting
7-8	Glassware, Spectrophotometer	KMnO ₄ Absorption Spectrum
9-10	Spectrophotometer	Spectrophotometry
11-12	Spectrophotometer	Cell Fractionation and Determination of Protein Concentration
13-14	Centrifuge	Centrifugation
15	Graphs	G force Table
		Lab Exam