Basic Biosciences

[1st Semester, First Year]

Course Description

Offered by Department	Credits	Status	Code
Biotechnology	3-0-0, (3)	EPR	BT10I026BT

[Pre Requisite-NIL]

Course Objectives

1. To understand the structure and function of the cell, molecular mechanisms of cell cycle.
2. Acquainted with origin of life, evolution and classification of life.
3. To understand the human systems and application of biotechnology.

Course Content

Unit –I The Cell & Cell Cycle

Introduction to prokaryotic & eukaryotic cells, structure & function of cell organelles, models of plasma membrane, cell wall, mechanics of cell division, cell-cycle control, cell differentiation, apoptosis, introduction to biotechnology and its applications.

Unit –II Fundamental Processes

DNA structure, replication & proof-reading, RNA: types, structure & function, process of transcription, genetic code, protein synthesis & translational proof-reading, inhibitors of replication, transcription & translation.

Unit –III Basic Bioinformatics

Introduction & application of Bioinformatics, Sequences and nomenclature, Databases and Search tool, Microbial and cellular Databanks, Genome annotation, Sequence homology, Sequence Alignment, BLAST, FASTA, PDB.

Unit –IV Evolution and Human Physiology

Oparin-Haldane theory of chemical evolution; Organic Evolution- Darwin's theory of origin of species, Classification of plant & animal kingdom, Tissue system, overview of circulatory, digestive, endocrine, skeletal, respiratory and nervous system.

Course Materials

Required Text: Text books

1. Cell Biology by CB Powar.
2. Introduction to Bioinformatics by Arther M. Lesk.
3. Human physiology by Singh and Subhramanyam.

Optional Materials: Reference Books

1. Cell and Molecular Biology: Concepts and Experiments by G. Karp.
2. Human physiology by Guyton.