

18BP093 CELL AND MOLECULAR BIOLOGY (Elective Subject)

Hours Per Week :

L	T	P	CP	CL
3	1	-	-	4

Total Hours :

L	T	P	WA/RA	SSH/HSH	CS	SA	S	BS
45	1	-						

SCOPE:

Cell biology is a branch of biology that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, death and cell function. This is done both on a microscopic and molecular level. Cell biology research encompasses both the great diversity of single-celled organisms like bacteria and protozoa, as well as the many specialized cells in multi-cellular organisms such as humans, plants, and sponges.

COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes	POs	PSOs
1	Summarize cell and molecular biology history	1,4	1
2	Summarize cellular functioning and composition	1,4	1
3	Describe the chemical foundation of cell biology	1,4	1
4	Various strategies to develop new drug like molecules	1,4	1
5	The design of new drug molecules using molecular modeling software	1,4	1
6	Summarize the DNA properties of cell biology	1,4	1
7	Describe protein structure and function	1,4	1
8	Describe cellular membrane structure and function	1,4	1
9	Describe basic molecular genetics mechanisms	1,4	1
10	Summarize the cell cycle	1,4	1

UNIT – I	10HOURS
a) Cell and Molecular Biology: Definitions theory and basics and Applications.	
b) Cell and Molecular Biology: History and Summation.	
c) Properties of cells and cell membrane.	
d) Prokaryotic versus Eukaryotic	
e) Cellular Reproduction	
f) Chemical Foundations – an Introduction and Reactions(Types)	
UNIT - II	10HOURS
a) DNA and the Flow of Molecular Information	
b) DNA Functioning	
c) DNA and RNA	
d) Types of RNA	
e) Transcription and Translation	
UNIT - III	10HOURS
a) Proteins: Defined and Amino Acids	
b) Protein Structure	
c) Regularities in Protein Pathways	
d) Cellular Processes	
e) Positive Control and significance of Protein Synthesis	
UNIT – IV	08HOURS
a) Science of Genetics	
b) Transgenic and Genomic Analysis	
c) Cell Cycle analysis	
d) Mitosis and Meiosis	
e) Cellular Activities and Check points	
UNIT – V	07HOURS
a) Cell Signals: Introduction	
b) Receptors for Cell Signals	
c) Signaling Pathways: Overview	
d) Mis regulation of Signaling Pathways	
e) Protein- Kinases : Functioning	

RECOMMENDED BOOKS (LATEST EDITION):

1. W.B. Hugo and A.D. Russell: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn. Industrial Microbiology, 4th edition, CBS Publishers& Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hilledn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed.Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Peppler: Microbial Technology.
9. Edward: Fundamentals of Microbiology.
10. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
11. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company
12. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of Recombinant DNA: ASM Press Washington D.C.
13. RA Gold shy et. al.

