Birla Institute of Technology & Science, Pilani
Hyderabad Campus

INSTRUCTION DIVISION
FIRST SEMESTER 2016-2017
Course Handout (Part-II)

Date: 01.08.2016

In addition to part I (General Handout for all courses appended to the Time Table) this portion gives further specific details regarding the course.

Course No. : **BIO F213**
Course Title : **CELL BIOLOGY**
Instructor-in-Charge : **JAYATI RAY DUTTA**
Instructors : **JAYATI RAY DUTTA & KRITI SINHA**

1. Scope and Objective of the Course:

The field of cell biology is both dynamic and evolving constantly. It is an academic discipline that studies cells at microscopic and molecular levels – their physiological properties, their structure, the organelles they contain, interactions with their environment and their life cycle. Today the basic knowledge of '*the cell*' is must for biology students. This course imparts the vast knowledge of the cell and cellular processes to prepare students to pursue their enquiry into the fundamentals of life.

2. Text Books (TB): *Cell and Molecular Biology* by Phillip, Sheeler and Donald E. Bianchi, WSE, 3rd ed, 1987.

3. Reference Books (RB):

RB1: *The World of Cell* by W.M Becker, L.J. Kleinsmith and J. Hardin. Pearson Education (6th Ed).

RB2: *Molecular Biology of The Cell* by Bruce Albert et al., Garland Science (5th Ed).

4. Course Plan:

Lecture No.	Learning Objectives	Topics to be covered	References
1-4	Preview of Cell	Brief introduction, Cell structure and overview of cell organelles, The composite Animal, Plant, Bacterial, Mycoplasma cells and Viruses Microscopy	Ch.1 (TB)
5-9	Cell Membrane	Structure and chemical organization of plasma membrane. Lipids, Carbohydrates and Proteins in the membrane. Origin of plasma membrane and its protein and lipid asymmetry, Cell-cell junctions and other specialized structures	Ch. 15 (TB)
10-12	--do--	Passive movement through cell membrane, Facilitated diffusion, Active transport, Bulk transport, Endo- and Exo-cytosis	Ch. 15 (TB)
13-16	Major Cell Organelles	Energy transducing organelles: Structure and functions of Mitochondria and Chloroplast	Ch. 16 & 17 (TB)

17-18	--do--	Lysosomes and Microbodies	Ch.19 (TB)
19-21	--do--	Endoplasmic reticulum: Structure, functions and association with Golgi apparatus	Ch. 12 (RB1)
22-24	--do--	Golgi apparatus: origin, development, structure and functions	Ch. 18 (TB)
25-27	--do--	Ribosomes: Composition, structure and functions. Eukaryotic and Prokaryotic ribosomes.	Ch. 22 (TB)
28-29	--do--	Nucleus: Organization and Division	Ch. 20 (TB)
30-31	--do--	Microtrabecular lattice, cytoplasmic filaments, microtubules, spindle fibers and centrioles	Ch. 23 (TB)
32-34	Cell Growth and Apoptosis	Growth curve. Quantitation of cells. Continuous culture of cells. Synchronous cell cultures	Ch. 2 (TB)
35-36	--do--	Regulation of Cell cycle	Ch. 19 (RB1)
37-39	--do--	Cancer and Programmed cell death/Apoptosis	Ch. 24 (RB1)
40-42	Cell Communication	General principle. Signaling molecules. Receptor-mediated signaling	Ch. 15 (RB2)

5. Evaluation Scheme:

Components	**Duration**	**Weightage (%)**	Date Time	**Remarks**
Test-I	60 min	20	9/9, 1.00--2.00 PM	**CB**
Test-II	60 min	20	24/10 1.00--2.00 PM	**CB**
Presentations		20		**OB**
Comprehensive exam	3 hrs	40	05/12 AN	**CB**

6. **Chamber Consultation Hour:** To be announced in the class.

7. **Notices:** Notices concerning the course will be displayed on the Notice Board at **Biological Sciences Group.**

8. Make-up policy: As per the **clause 4.07 in the Academic regulations booklet.**

INSTRUCTOR-IN-CHARGE
BIO C321