

SYLLABUS OF SEMESTER I

CC 2 -CELL BIOLOGY

(Credit – 3)

Course Code:

Objective: To provide detailed insight of various basic concepts of cellular structure, their functions and different aspects genetics including mechanism of inheritance, gene structure and function.

Learning outcomes: Student will acquire a detailed knowledge of the cell types, cell structure and mechanism of cell division and basics of genetic inheritance.

UNIT – I

General structure of prokaryotic and eukaryotic cells. Major organic and inorganic constituents of cells. Structure and function of plasma membrane (fluid mosaic model and Unit mosaic model), mechanisms of membrane transport.

UNIT – II

Structure and function of Cell Organelles: Endoplasmic reticulum, Golgi complex, Mitochondria, Chloroplast, Lysosome and Ribosome etc.

UNIT – III

Structure and function of the nuclear membrane. Nuclear lamina, transport between nucleus and cytoplasm. Chromatin fibres, chromosomes; types and structure. heterochromatin, euchromatin.

UNIT – IV

Cytoskeleton: Composition, organization and functions of microtubules, microfilaments and intermediate filaments

UNIT – V

Cell division, types of Cell division. Mitosis, Meiosis, significance of mitosis and meiosis. regulation of cell cycle.

REFERENCES:

- Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., & Walter, P. (2018). Molecular biology of the cell. New York: Garland Science.
- Lodish, H. F. (2019). Molecular cell biology. New York: W.H. Freeman.

- Krebs, J. E., Lewin, B., Kilpatrick, S. T., & Goldstein, E. S. (2015). *Lewin's genes XI*. Burlington, MA: Jones & Bartlett Learning.
- Cooper, G. M., & Hausman, R. E. (2019). *The cell: A molecular approach*. Washington: ASM; Sunderland.
- Hardin, J., Bertoni, G., Kleinsmith, L. J., & Becker, W. M. (2019). *Becker's world of the cell*. Boston: Benjamin Cummings.
- Watson, J. D. (2016). *Molecular biology of the gene* (7th ed.). Menlo Park, CA: Benjamin/Cummings.

Practical CC-II: CELL BIOLOGY LAB (Credit: 1)

1. Light microscope – components – use and principles
2. Microscopic slides: Stages of mitosis and meiosis
3. Squash preparation for the study of mitosis.
4. Identification of different stages of meiosis.
5. Micrometry (A) Camera Lucida (B) Stage micrometer (C) Ocular micrometer
6. Study of giant chromosomes
7. Identification of cancer tissues