**BCH-DCC-102** Course Title: **CELL BIOLOGY-I**

**THEORY** **CREDITS: 04**

**UNIT I Introduction**

Cell: Unit of Life, Universal Features, Introduction and classification of organisms by cell structure, cytosol, compartmentalization of eukaryotic cells, cell fractionation.

**UNIT-II Membrane Biology**

Cell Membrane and Permeability: Chemical components of biological membranes, organization and Fluid Mosaic Model, membrane as a dynamic entity, cell recognition and membrane transport. Active & passive

**UNIT III Cell Organelles-I**

Endoplasmic reticulum: Structure, function including role in protein segregation/Trafficking.
Ribosomes: Structure, types and function including role in protein synthesis.
Golgi complex: Structure, biogenesis and functions including role in protein secretion.
Brief idea of vesicle transport. Endocytosis, Pinocytosis and Phagocytosis.
Lysosomes: Vacuoles and micro bodies: Structure and functions.

**UNIT IV Cell Organelles-II**

Mitochondria: Structure and function, Genomes, biogenesis.
Plastids (Chloroplasts): Structure and function, genomes, biogenesis Peroxisomes
Nucleus: Structure and function, chromosomes and their structure.

**Suggested Readings:**

1. Karp, G. 2010. Cell and Molecular Biology: Concepts and Experiments. 6th Edition. John Wiley& Sons. Inc.
2. De Robertis, E.D.P. and De Robertis, E.M.F. 2006. Cell and Molecular Biology. 8th edition. Lippincott Williams and Wilkins, Philadelphia.
3. Cooper, G.M. and Hausman, R.E. 2009. The Cell: A Molecular Approach. 5th edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA.
4. Becker, W.M., Kleinsmith, L.J., Hardin. J. and Bertoni, G. P. 2009 The World of the Cell.7th edition. Pearson Benjamin Cummings Publishing, San Francisco.
5. Alberts B et al. 2014 Molecular Biology of the Cell, Garland. 6th Edn. (Taylor & Francis)

**PRACTICALS**

**Laboratory Course Based on BCH DCC 101 & BCH DCC 102** **Credits: 04 (02 + 02)**

1. Preparation of solutions based on Molarity, Normality, Mass Percent.
2. Preparation of Buffers & Determination of pH of solutions.
3. Qualitative tests for Carbohydrates.
   a) Tests for Mono-, Di- and Poly-saccharides
   b) Tests for Reducing & Non reducing sugars
   c) Individual qualitative tests for various sugars.
4. Qualitative tests for Proteins/amino acids.
   a) General tests for amino acids
   b) Tests for aromatic & aliphatic amino acids
   c) Tests for Sulfur containing amino acids
5. Qualitative tests for Lipids
6. Principles of Colorimetry: Verification of Beer's law.

**Suggested Readings:**


1. Plummer D. T., Introduction to Practical Biochemistry, Tata McGraw Hill. (Third Edn.)
2. Deb A. C., Viva & Practical Biochemistry, Central Book Agency
3. Boyer R., Modern Experimental Biochemistry, Pearson.

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