

<b>Course code</b>	<b>Course Title</b>	<b>C</b>	<b>H</b>	<b>I</b>	<b>E</b>	<b>T</b>
<b>17U3BMC3</b>	<b>CELL BIOLOGY AND BIOCHEMISTRY</b>	<b>4</b>	<b>4</b>	<b>25</b>	<b>75</b>	<b>100</b>

**Objective:**

**To comprehend the life-forms in terms of their cellular structures and general chemicals that are present in them.**

**Learning Outcome:**

**Provided an advanced understanding of the core principles of cell functions and topics of biochemistry and their experimental basis**

**UNIT-I (10 hr)**

Cell as a basic unit. Cell theory. Differences between Prokaryotic & Eukaryotic cells. Ultra structure of plant and animal cell. Structure, chemical composition and functions of plant cell wall, plasma membrane (fluid mosaic model) and cell inclusions (Cystolith and Raphides).

**UNIT-II (20hr)**

Structure and functions of chloroplast, mitochondrion, ribosome and nucleus. Cell cycle, cell divisions (mitosis and meiosis) and their significance.

**UNIT –III(10hr)**

Basic concepts - chemical bonds (hydrogen, ionic and co-valent). Physico-chemical properties and biological significance of Carbohydrates – mono-eg: glucose, di- eg: Sucrose & polysaccharides eg.Starch.

**UNIT –IV(10hr )**

Proteins-primary, secondary, tertiary and quaternary levels of organization . Enzymes-classification and mechanism of action (Lock and Key model).

## UNIT-V(10hr )

Lipids: simple (Fats and Oils), compound (Phospholipids) and derived (Cholesterol).

Nucleic acids: Structure and functions of DNA (Watson and Crick model) and RNA (Clover leaf model of tRNA)

### REFERENCES:

1. Gerald karp, 1984. Cell biology ,International student edition , McGraw-Hill book company.
2. De Robertis, E.D.P and De Robertis ,E.M.P.2006. Cell and molecular biology 8<sup>th</sup> edition ,Lippincott.Willams and Wilkins Philadelphia.
3. Rastogi, S.C.1992.,Cell biology,Tata McGraw-Hill,NewDelhi.
4. Satyanaryana and Chakrapaani, U. 2006 Biochemistry Books and Ailled(P) Ltd.
5. Stryer, L. 1988. Biochemistry, WH Freeman & co.,NY.
6. <https://WWW.britannica.com> .
7. <https://WWW.biochemistry.org>

### PRACTICALS:

1. Cell division – Mitosis (*Allium cepa*) root.
2. Meiosis- Rheo sp flower bud Meristem.
3. Electron Micrographs of various cell organelles-Spotters.
4. Paper Chromatography.
5. Complementary colour.
6. Estimation of Starch.
7. Estimation of Protein.
8. Spotters.