



### Cell Biology

Course Code	Course Num.	Course Name	Credit Hours	Lec	Lab	Tut	Prerequisites
BIO	113	Cell Biology	2	1	2	0	Bio101

### Objectives:

By the end of this course, the student must be able :-

- To recognize the structures and functions of cells from lower to higher organisms .
- To know the method of biosynthesis of cellular membranes and organelles .
- To define the abnormal cases of transformations such as oncogenic transformation .
- To outline the language of identification between different cells
- To memorize the importance extracellular matrix and nuclear structure inside each kind of cells.

### Syllabus:

- Road map of course, what is and what is not cell biology, properties and behaviors of cells
- Structure of biological membranes, lipids and lipid modification, membrane proteins
- Pumps, channels, transporters . Receptors, basics of signal transduction
- Endoplasmic reticulum & Ribosomes, Type and function.
- Golgi apparatus, Protein secretion, biogenesis of membrane proteins
- Mitochondria and plastids and chemical photosynthesis and respiration.
- Protein modifications and intracellular transport, glycosylation, vesicular transport, receptor mediated endocytosis, lysosomes, organelle biogenesis
- Nucleus and its components, Regulation of the cell division cycle
- Regulation of DNA replication
- Regulation of mitosis
- Meiosis
- Cell cycle checkpoints
- The extracellular matrix, The actin-myosin & microtubule cytoskeleton
- Signal transduction: Detailed molecular mechanisms

Nerve cells, ion channels, synapse, Ca<sup>++</sup> regulated events

### References:

- Bruce Alberts et al., Essential Cell Biology, Third edition, London, UK. (2009). ISBN-13: 978-0815341291.
- Lodish, et al. *Molecular Cell Biology*. 5th ed. New York, NY: W.H. Freeman and Company, (2003). ISBN: 9780716743668.

