

BB 411 [Introduction to Molecular Cell Biology]

Course Name	Molecular Cell Biology
Total Credits	6
Type	T
Lecture	2
Tutorial	1
Practical	0
Selfstudy	0
Half Semester	N
Prerequisite	BB101
Text Reference	1. Molecular Cell biology by Lodish et al., 8th ed., 2016, Freeman.
Description	<ol style="list-style-type: none"> 1. Biochemical Unity and biological diversity - Chemical and Molecular Foundations (Molecules, Cells, Model Organisms, Molecules of Life, Pro/Eukaryotic cell structure, Microbial kingdom. Prokaryotes, eukaryotes, archaea. Microbial growth, Cells Build Supramolecular Structures, Model organisms, Separation techniques: basis and importance, Culturing and Visualising Cells, Growing cells in cultures, Microscopy – Light/Electron etc. 2. Eukaryotic Cell cycle. 3. The flow of genetic information - Central dogma, DNA, RNA, Protein, DNA replication, Transcription, and Translation. 4. Chemical Building Blocks of Cells – Lipids/ membranes, Polysaccharides/Carbohydrates, Proteins, Amino acids, Proteins structure, Primary, Secondary, Tertiary, and Quaternary, Haemoglobin: portrait of an allosteric protein, Protein folding, Purifying, Detecting, characterising Proteins, and Proteomics) 5. Enzymes - How Enzymes work, Mechanism and kinetics, Enzyme reactions – examples, Regulations 6. Signal transduction - Extracellular cues to cellular response, Receptors/ GPCRs, Secondary messengers, signalling pathways – examples, Post-translational modifications and signalling. 7. Protein trafficking - Protein targeting, Quality control, Vesicular traffic, secretion, and endocytosis 8. Metabolism: basic concepts and design, Oxidative and photo-phosphorylation, Integration of metabolism, Cancers and metabolism. 9. Recombinant DNA technology – Genomes, Concept of homology.
Last Update	