

SRM University
School of Bioengineering
Department of Biotechnology

B. Tech.,
I Year / I Semester
BT1001 – Biology for Engineers
Total hours: 28

Lesson Plan

UNIT	Hours	Lecture Topics	Page Nos.	References	Learning Outcome
I	1	Introduction to Biology	1-3	1	After reintroducing the basics in biology, the students will be taught cell structure, components of cell, metabolism in the cell, cellular differentiation, and cell reproduction to emphasize the importance of cell as the basic unit of an organism.
	1	The cell: the basic unit of life	4-14	1	
	1	Expression of genetic information - protein structure and function	14-22	1	
	1	Cell metabolism; Cells maintain their internal environments	22-32	1	
	1	Cells respond to their external environments	33-34	1	
	1	Cells grow and reproduce	34-46	1	
	1	Cellular differentiation	46-52	1	
II	2	Biodiversity - Chemical bonds in Biochemistry; Biochemistry and Human biology	53-63	1	An understanding about the role of various cellular organelles in modifying the functions of the cells, primarily the protein synthesis required for growth and differentiation. Current advances about the stem cells and their medical applications.
	1	Protein synthesis –DNA; RNA	63-67	1	
	1	Transcription and translation factors play key roles in protein synthesis	68-73	1	
	2	Differences between eukaryotic and prokaryotic protein Synthesis; Stem cells and their applications	74-86	1	
III	1	Enzymes – significance, factors	89-102	1	The role of enzymes in the body and its industrial
	1	Mechanism and effective catalysis –	103-107	1	

		proteases, carbonic anhydrase			applications.
	1	Restriction Enzymes Nucleoside Monophosphate Kinases	107-111	1	
	1	Photosynthesis and carbon fixation Biological energy production; Metabolism- anabolism and catabolism	111-124	1	
IV	1	Protein motors convert chemical energy into mechanical work	127-129	1	Understanding the biological motor systems in the living things; biosensors for medical and food industry; environmental protection by microorganisms.
	1	ATP synthase structure	129-130	1	
	1	The bacterial flagellar motor	130-134	1	
	1	Cytoskeleton	134-139	1	
	1	Biosensors - types, applications	139-149	1	
	1	Bioremediation	150-158	1	
V	1	Basics of nervous system and "neural networks"	161-178	1	Provide an overall understanding of the interaction of the cells in cellular functions especially with focus on the nervous system and immune system.
	1	The cellular basis of immunity	178-187	1	
	1	The functional properties and structure of antibodies	187-190	1	
	1	T cell receptors and subclasses	190-194	1	
	1	General principles of cell signalling	195-204	1	

Text book

Thyaga Rajan, S., N. Selvamurugan, M.P. Rajesh, R.A. Nazeer, Richard W. Thilagaraj, S. Bharathi, M.K. Jaganathan, 2012. Biology for Engineers. Tata McGraw Hill Education Pvt. Ltd., New Delhi.

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