

**Maulana Abul Kalam Azad University of Technology, West Bengal**  
*(Formerly West Bengal University of Technology)*  
**Syllabus for B. Tech in Electrical Engineering**  
 (Applicable from the academic session 2018-2019)

Name of the course		BIOLOGY FOR ENGINEERS	
Course Code: BS- 301		Semester: 3rd	
Duration: 6 months		Maximum Marks: 100	
Teaching Scheme		Examination Scheme	
Theory: 3 hrs/week		Mid Semester Exam: 15 Marks	
Tutorial: 0 hr/week		Assignment & Quiz: 10 Marks	
Practical: 0 hrs/week		Attendance: 05 Marks	
Credit Points: 3		End Semester Exam: 70 Marks	
Objective:			
1.	To introduce modern biology with an emphasis on evolution of biology as a multi-disciplinary field.		
2.	To make students aware of application of engineering principles in biology and engineering robust solution inspired by biological examples.		
Pre-Requisite			
1.	NIL		
Unit	Content	Hrs	Marks
1	Darwinian evolution, molecular perspective and classification, Phylogenetic trees, study of inter- and intra -species relationships.	3	
2	Cellular structure and function, cellular assembly and central dogma of molecular Biology.	6	
3	Organismal physiology-Energy and energetic constraints.	3	
4	3 D structure and function of large biological molecules.	3	
5	Techniques in bio physics and bio chemistry	3	
6	Immunology- Self vs Non-self, pathogens, human immune system, antigen-antibody reactions.	6	
7	Infectious disease Biology and vaccines.	4	
8	Cancer biology, gene regulation, aging, apoptosis and stem cell.	6	
9	Environmental bio-safety, bioresources, biodiversity.	2	
10	Drug design	2	
11	Engineering design inspired by examples in biology	2	

**Text books:**

1. Essential of Genetics, Miko, I & LeJeune, L, Cambridge, MA, NPG Education, 2009.
2. Essential of Cell Biology, O'Connor, C.M % Adam, J,U, Cambridge, MA, NPG Education, 2010.
3. Molecular Biology of the Gene, Warson JD, Baker, TA, Bell SP, Gann A, Levin M, Losick R, Pearson Education, 2004.