

Prasad.V.Potluri Siddhartha Institute of Technology, Kanuru, Vijayawada

LIFE SCIENCES FOR ENGINEERS (Common to all)

Course Code	19BS1404	Year	II	Semester	II
Course Category	Basic Sciences	Branch	IT	Course Type	Theory
Credits	2	L-T-P	2-0-0	Prerequisites	Nil
Continuous Internal Evaluation:	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes

Upon successful completion of the course, the student will be able to

CO1	Understand the concepts of biology to create tangible and economically viable engineering goods.(L2)
CO2	Analyse the mechanism of energy transfer between cells.(L4)
CO3	Apply the knowledge of biology to improve the living standards of societies.(L3)
CO4	Apply the basic knowledge of genetics and DNA technology for disease diagnostics and therapy.(L3)
CO5	Analyse new technologies in biotechnology, pharmaceutical, medical and agricultural fields from the knowledge gained from DNA technology.(L4)

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:High, 2: Medium, 1:Low)

	PO 1	PO 2	PO3	PO4	PO 5	PO6	PO 7	PO 8	PO 9	PO1 0	PO11	PO1 2	PSO 1	PSO2
CO1	3						2							
CO2	3						2							
CO3	3						2							
CO4	3						2							
CO5	3						2							

UNIT NO	Contents	Mapped POS
I	Introduction to Biology Comparison of Biological organisms with manmade systems- eye and camera, flying bird and aircraft. Classification of living organisms-	CO1 CO2 CO3

	Cellular basis of life, differences between prokaryotes and eukaryotes , classification on the basis of carbon and energy sources	
II	Bio-molecules Structure and functions of proteins and nucleic acids, hemoglobin, antibodies. Enzymes-Industrial applications , Fermentation and its industrial applications.	CO1 CO2 CO3
III	Bioenergetics and Respiration Glycolysis and TCA cycle, Electron transport chain and oxidative phosphorylation, Mechanism of photosynthesis. Human physiology.	CO1 CO2 CO3
IV	Genetic Engineering Mendel's laws, gene mapping, Mitosis and Meiosis, Epistasis, single gene disorders in humans. Genetic code.	CO1 CO4 CO5
V	Recombinant DNA Technology Recombinant vaccines, transgenic microbes, plants and animals. Animal cloning, biosensors, biochips.	CO1 CO4 CO5

Learning Recourses
Text Books
N. A. Campbell, J. B. Reece, L. Urry, M. L. Cain and S. A. Wasserman, "Biology: A global approach", Pearson Education Ltd, 2018. Arthur T Johnson, Biology for Engineers, CRC press, 2011.
Reference Books
Alberts et al., The molecular biology of the cell, 6/e, Garland Science, 2014. E. E. Conn, P. K. Stumpf, G. Bruening and R. H. Doi, "Outlines of Biochemistry", John Wiley and Sons, 2009. John Enderle and Joseph Bronzino Introduction to Biomedical Engineering, 3/e, 2012.