

**LIFE SCIENCES FOR ENGINEERS PVP-19 Regulation**

<b>Course Code</b>	19BS1303	<b>Year</b>	II	<b>Semester</b>	I
<b>Course Category</b>	Basic Sciences	<b>Branch</b>	ME	<b>Course Type</b>	Theory
<b>Credits</b>	2	<b>L-T-P</b>	2-0-0	<b>Prerequisites</b>	Nil
<b>Continuous Internal Evaluation:</b>	30	<b>Semester End Evaluation:</b>	70	<b>Total Marks:</b>	100

**Course Outcomes**

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

<b>CO1</b>	Apply the principles of biology to create tangible and economically viable engineering goods.(L3)
<b>CO2</b>	Know and illustrate bio-engineering field.(L2)
<b>CO3</b>	Analyse the importance of bioenergetics and apply the knowledge to improve the living standards of societies.(L4)
<b>CO4</b>	Gain the knowledge in genetic engineering.(L1)
<b>CO5</b>	Design and develop new technologies in genetic industrial field.(L5)

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

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>CO1</b>	3						2							
<b>CO2</b>	3						2							
<b>CO3</b>	3						2							
<b>CO4</b>	3						2							
<b>CO5</b>	3						2							

UNIT NO	Contents	Mapped COS
<b>I</b>	<b>Introduction to Biology</b> Comparison of Biological organisms with manmade systems- eye and camera, flying bird and aircraft. Classification of living organisms- Cellular basis of life, differences between prokaryotes and eukaryotes , classification on the basis of carbon and energy sources	CO1 CO3 CO5
<b>II</b>	<b>Bio-molecules</b> Structure and functions of proteins and nucleic acids, hemoglobin, antibodies.Enzymes-Industrial applications , Fermentation and its industrial applications.	CO1 CO2
<b>III</b>	<b>Bioenergetics and Respiration</b> Glycolysis and TCA cycle, Electron transport chain and oxidative phosphorylation, Mechanism of photosynthesis. Human physiology.	CO2 CO3
<b>IV</b>	<b>Genetic Engineering</b> Mendel's laws, gene mapping, Mitosis and Meiosis, Epistasis, single gene disorders in humans. Geneticcode.	CO2 CO4 CO5
<b>V</b>	<b>Recombinant DNA Technology</b> Recombinant vaccines, transgenic microbes, plants and animals. Animal cloning, biosensors, biochips.	CO1 CO4 CO5

<b>Learning Recourses</b>
<b>Text Books</b>
<ol style="list-style-type: none"><li>1. N. A. Campbell, J. B. Reece, L. Urry, M. L. Cain and S. A. Wasserman, "Biology: A global approach", Pearson Education Ltd, 2018.</li><li>2. Arthur T Johnson, Biology for Engineers, CRC press, 2011.</li></ol>
<b>Reference Books</b>
<ol style="list-style-type: none"><li>1. Alberts et al., The molecular biology of the cell, 6/e, Garland Science, 2014.</li><li>2. E. E. Conn, P. K. Stumpf, G. Bruening and R. H. Doi, "Outlines of Biochemistry", John Wiley and Sons, 2009.</li><li>3. John Enderle and Joseph Bronzino Introduction to Biomedical Engineering, 3/e, 2012.</li></ol>