Course Number and Name

BBT202 - BIOLOGY FOR ENGINEERS

Credits and Contact Hours

2 & 30

Course Coordinator's Name

Ms.Priya

Text Books and References

TEXT BOOKS:

1. A Text book of Biotechnology, R.C.Dubey, S. Chand Higher Academic Publications, 2013
2. Diseases of the Human Body, Carol D. Tamparo and Marcia A. Lewis, F.A. Davis Company, 2011.
3. Biomedical instrumentation, Technology and applications, R. Khandpur, McGraw Hill Professional, 2004

REFERENCE BOOKS

1. Biology for Engineers, Arthur T. Johnson, CRC Press, Taylor and Francis, 2011
2. Cell Biology and Genetics (Biology: The unity and diversity of life Volume I), Cecie Starr, Ralph Taggart, Christine Evers and Lisa Starr, Cengage Learning, 2008
3. Biotechnology Expanding horizon, B.D. Singh, Kalyani Publishers, 2012

Course Description

Gain vivid knowledge in the fundamentals and uses of biology, human system and plant system**.**

Prerequisites	Co-requisites
Basic Science	NIL

required, elective, or selected elective (as per Table 5-1)

Course Outcomes (COs)

CO1	Graduates within the first five years will be able to grasp and apply biological engineering principles, procedures needed to solve real-world problems.
CO2	To understand the fundamentals of living things, their classification, cell structure and biochemical constituents
CO3	To apply the concept of plant, animal and microbial systems and growth in real life situations
CO4	To comprehend genetics and the immune system
CO5	To know the cause, symptoms, diagnosis and treatment of common diseases
CO6	To give a basic knowledge of the applications of biological systems in relevant industries

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k
CO1	H						M				
CO2		H							H		
CO3			H							M	
CO4										H	

	CO5												
	CO6						H						

List of Topics Covered

UNIT I INTRODUCTION TO LIFE 6

Characteristics of living organisms-Basic classification-cell theory-structure of prokaryotic and eukaryotic cell-Introduction to biomolecules: definition-general classification and important functions of carbohydrates-lipids-proteins-nucleic acids vitamins and enzymes-genes and chromosome.

UNITII BIODIVERSITY 6

Plant System: basic concepts of plant growth-nutrition-photosynthesis and nitrogen fixation-Animal System: elementary study of digestive-respiratory-circulatory-excretory systems and their functions-Microbial System: history-types of microbes-economic importance and control of microbes.

UNITIII GENETICS AND IMMUNE SYSTEM 6

Evolution: theories of evolution-**Mendel's** cell division–mitosis and meiosis-evidence of e **laws of inheritance**-variation and speciation- nucleic acids as a genetic material-central dogma immunity-antigens-antibody-immune response.

UNIT IV HUMAN DISEASES 6

Definition- causes, symptoms, diagnosis, treatment and prevention of diabetes, cancer, hypertension, influenza, AIDS and Hepatitis

UNIT V BIOLOGY AND ITS INDUSTRIAL APPLICATION 6

Transgenic plants and animals-stem cell and tissue engineering-bioreactors-biopharming-recombinant vaccines-cloning-drug discovery-biological neural networks-bioremediation-biofertilizer-biocontrol-biofilters-biosensors-biopolymers-bioenergy-biomaterials-biochips-basic biomedical instrumentation.