

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Semester : IV

Environmental Science & Technology

Subject Code : 143504

Subject Name : Fundamentals of Biotechnology
(Institute Elective – 1)

Sr. No.	Course contents
01.	Structure and functions of different forms of DNA (Watson and Crick model),Chargaff's rule, RNA (mRNA, hnRNA, tRNA, rRNA and snRNA). Plasmid DNA – Definition and basic Properties of natural plasmids. Genetic code, Wobble Hypothesis.
02.	Introduction to immune system, types of immunity (innate and acquired, Active and passive, humoral and cell-mediated). Immune response-primary and secondary.
03.	Antigen-Definition, properties and classification, epitopes and haptens, Antibody- Definition, structure, type and function, blood groups types, ABO and Rh system
04.	Replication-definition, property and features of prokaryotic DNA replication (Enzymes and proteins involved in replication). Unidirectional and bidirectional replication. Initiation, elongation and termination of replication. Closed clamp and Rolling Circle model of replication. Significance of replication.

Reference Books:

1. Biotechnology , B D Singh, ,Kalyani, 1st Ed.,2009.
2. Harper's Biochemistry (Harper's Biochemistry), Harold A. Harper, ,Appleton & lange, 1st Ed. ,1988
3. Molecular biology of the gene / James D. Watson ... [et al.]. San Francisco, Calif. ; Harlow : Benjamin Cummings, 6th ed.2008.
4. Genomes 3 , T. A. Brown, Garland Publishing, 3rd Ed., 2006
5. Immunology , Raj Khanna, Oxford University Press India, Ed.,2011
6. Lehninger Principles of Biochemistry ,David L. Nelson,Michael M. Cox, Macmillan,5th Ed., 2008
7. Elements of biotechnolgy ,Prof. P k gupta, ,Rastogi Publications, 2nd Ed.,2010
8. A Textbook of Biotechnology by R. C Dubey, ,S. Chand Publisher,4th Ed.,2007

**APPROPRIATE NUMBER OF PRACTICALS WILL BE CONDUCTED AS
PER THE THEORY SYLLABUS**