SARDAR PATEL UNIVERSITY
Programme: BSC (GENETICS)
Semester: VI
Syllabus with effect from: November 2013

Paper Code: US06CGEN02	**Total Credit: 3**
Title Of Paper: Recombinant DNA Technology	

Unit	Description in detail	Weighting (%)
1	**POLYMERASE CHAIN REACTION** Polymerase chain reaction: Principle, procedure and applications. Types of PCR, multiplex, nested, reverse transcriptase, real time PCR, touchdown PCR, hot start PCR, colony PCR, advantages and disadvantage of each type .Primer designing (Chemical Synthesis of oligonucleotides)	
2	**GENE SEQUENCING** Sequencing methods; Enzymatic DNA sequencing; Chemical sequencing of DNA; Automated DNA Sequencing, Pyrosequencing and new advances, Protein sequencing .Introduction and applications of Microarray technology.	
3	**MOLECULAR MARKERS** Markers-Morphological, Biochemical, Molecular-(RFLP, RAPD, AFLP, SNP ANALYSIS) DNA fingerprinting and its significance, Molecular genetic approach in Forensic sciences.	
4	**GENE MANIPULATION TECHNIQUES** Site directed mutagenesis, Introduction to siRNA, siRNA technology; Micro RNA; Principle and applications of Gene silencing; Gene knockouts, Knockout mice.	

Basic Text & Reference Books:

- Principles of Gene Manipulations - S. B. Primrose, Richard M. Twyman, R. W. Old, Wiley-Blackwell Publishing
- Gene Cloning and DNA Analysis: An Introduction - T.A. Brown, John Wiley and Sons
- Molecular Biotechnology - Glick. Bernard R. Glick, Jack J. Pasternak, Cheryl L. Patten, ASM Press
- Modern concept of Biotechnology-H.D. Kumar, Vikas Publishing House Pvt. Ltd
- Biotechnology Fundamentals and Applications - S.K. Mathur, S.S. Purohit, Agrobios (India)
- Comprehensive Biotechnology-K. G. Ramawat & Shaily Goyal, S. Chand &Company Ltd