

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

Paper Code: US06CMIC02	Total Credit: 3
Title Of Paper: Tools and Techniques in Molecular Biology	

Unit	Description in detail	Weighting (%)
1	Isolation of DNA and RNA Restriction Endonucleases - Types, Nomenclature, Recognition sequences and Cleavage patterns. Ligases and Ligation (Cohesive and Blunt end Ligation) DNA Sequencing (The Sanger's and Maxam - Gilbert method) C - DNA library Preparation	
2	Salient features of a Cloning vectors. Properties of Good host. Types of Vectors - Cloning and Expression Vectors. Plasmid Vectors (PUC 18 and PBR 322), Bacteriophage Vector (λ - phage), Cosmid, Phasmid and Artificial Chromosome Vectors (YAC and BAC).	
3	Methods of Introduction of DNA into host cell (Transformation, Transduction, Transfection, Electroporation and Partical gun) Selection of Recombinant Clones : Marker inactivation, Reporter genes. Sequence dependent screening : Colony hybridization Southern hybridization, Northern hybridization DNA Foot printing DNA Finger printing	
4	Oligonucleotide probe and Labelling of Probes Molecular markers : RFLP, RAPD, Minisatellite and Microsatellite Protein Sequencing Concept of Microarray Polymerase Chain Reaction - Basic Principle, Procedure, Application, Advantages and Limitations.	

Basic Text & Reference Books:

- Principles and techniques of Biochemistry and molecular biology – Wilson and Walker
- Biotechnology (B.Sc.edition) - B.D.Singh
- Genecloning and DNA analysis - T.A.Brown
- Genetics (Third edition) - P.K.Gupta

