SARDAR PATEL UNIVERSITY
Programme: BSC (MICROBIOLOGY)
Semester: V
Syllabus with effect from: June 2013

Paper Code: US05CMIC02	**Total Credit: 3**
Title Of Paper: Bioinstrumentation	

Unit	Description in detail	Weighting (%)
1	**COLORIMETERY AND SPECTROPHOTOMETRY** Principle, Instrumentation Method and Application of UV-Visible Spectroscopy Atomic Absorbtion Spectroscopy Flame Photometry Nephlometery Infra Red Spectroscopy Mass Spectroscopy for Protein Characterization & Identification.	
2	**ELECTROPHORESIS AND CENTRIFUGATION** **Electrophoresis** Principle, Support Media, Methods and Applications of electrophoresis Separation of protein and nucleic acids (PAGE, SDS-PAGE, Agarose and IEF) **Centrifugation :** Basic Principles of Sedimentation Methods and Applications of Density Gradient Centrifugation (Rate Zonal and Isopycnic), Ultracentrifugation (Introduction and Applications)	
3	**CHROMATOGRAPHY** Introduction, Definition and Types of Chromatography General Principles Underlying Chromatographic techniques. Working and Applications of :Thin Layer Chromatography, Adsorption cromatography,Ion Exchange Chromatography,Molecular Sieve Chromatography,Gas Liquid Chromatography,HPLC,Affinity Chromatography	
4	**Bioinformatics:** Definition.Branches of Bioinformatics. Aim of Bioinformatics. Scope of Bioinformatics. **Databases:** Types of Databases, Database retrieval system. **Biosensors:** Their Principle, Method and Applications. Radioactivity.Nature of Radioactivity, Types of radioactive decay.Safety aspects of Radioactivity. Applications of Radioactivity in Biological Sciences	

Basic Text & Reference Books:

- Biotechnology and Genetic Engineering - P.K. Gupta
- Biophysical chemistry - principles and techniques - Upadhyay, Upadhyay and Nath
- Instrumental methods of chemical analysis - Chatwal and Anand
- Principles and techniques of Practical biochemistry - Wilson and Walker
- Biochemistry - Zubay, G. L.
- Bioinformatics: Principles & Applications - Ghosh & Mallick.