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

Paper Code: US06CGEN04	**Total Credit: 3**
Title Of Paper: Bioinformatics	

Unit	Description in detail	Weighting (%)
1	**COMPUTER APPLICATIONS** Introduction to computer, structural organization of computer, Generation of computers, RAM, ROM and cache memory, Operating systems ,Word processing, Basics of MS-windows & UNIX, MS-OFFICE and its applications	
2	**DATABASE AND BIOINFORMATICS** Database, Types of database, Biological database and Classification Scheme, NCBI data model, DNA and protein sequence data banks. Bioinformatics: Concept, Goal, Scope and Applications, Use of Internet in Bioinformatics.	
3	**SEQUENCE ALIGNMENT** Useful sites on world wide web, freeware & shareware software, Information retrival, Major bioinformatics software programmes, Pairwise alignment, Multiple sequence alignment, Database similarity searches, Introduction to BLAST, FASTA. Pedigree analysis- Genetic similarity analysis.	
4	**STUCTURE PREDICTION USING BIOINFORMATICS** Gene prediction, Promoter and other regulatory element prediction, Protein structure visualization, comparison and classification, Protein secondary structure prediction, Protein tertiary structure prediction	

Basic Text & Reference Books:

- Essential Bioinformatics- Xiong, J. 1st Ed, Cambridge University Press.
- Bioinformatics Sequences and Genome Analysis - Mount, D. W 2nd Ed, Cold Spring Harbor lab press.
- Bioinformatics: a practical guide to the analysis of genes and proteins. Baxevanis AD, Ouellette FF editors. New York: Wiley - Liss Inc.
- Bioinformatics - Principles and Applications - Ghosh, Z & Mallick, B,Oxford University Press.
- Bioinformatics from Genome to Drug, (Vol. I-Basic Technology), Lengauer, T Wiley - VCH