

SARDAR PATEL UNIVERSITY
Programme: BSC (GENETICS)
Semester: IV
Syllabus with effect from: November 2012

Paper Code: US04CGEN01	Total Credit: 3
Title Of Paper: Molecular Genetics & Biostatistics	

Unit	Description in detail	Weighting (%)
1	MICROBIAL GENETICS: Introduction and History of Microbiology, Groups of micro organisms, Principles of staining of micro organisms, Bacterial growth curve, Types of culture media and conditions required for cultivation of bacteria. Methods of isolating pure cultures (Streak, Spread and Pour plate technique), Methods of sterilization, Discovery of gene transfer in bacteria(U tube & Lederberg & Tatum exp.)	
2	DNA REPLICATION, TRANSCRIPTION & TRANSLATION IN PROKARYOTES: Unidirectional and bidirectional, Semi-conservative and discontinuous, Models of replication(Replication fork in detail, rolling circle, D-loop)Enzymes and proteins in replications, Transcription in prokaryotes Processing of rRNA, tRNA, mRNA, Protein synthesis (Translation in prokaryotes), Replication of RNA and antisense RNA	
3	QUANTITATIVE GENETICS: Qualitative and Quantitative traits, Introduction to quantitative inheritance. Hardy - Weinberg law, Gene and genotype frequency	
4	CORRELATION AND REGRESSION: Correlation :Introduction, Types of correlation, Methods for study of correlation(Scattered diagram & Karl Pearson coefficient), Regression, Regression lines and its coefficient(Properties without proof), Difference between Correlation and Regression, Attributes: Tabulation Chi-square test for independence of two attributes	

Basic Text & Reference Books:

- Principles of Genetics – D .Peter Snustad and Michael J. Simmons, John Wiley & Sons, Inc
- Genetics - Peter J. Russel 5th Ed. Benjamin Cummings Publishing Company
- Genetics - P.K. Gupta 3rd Ed. Rastogi Publications.
- Principles of Biochemistry, Cox, M. M., & Nelson, D.L., Lehninger, W. H. Freeman & Co.
- Genes VII - Benjamin Lewin, 10th Ed. Oxford University Press
- Molecular Biology of the Cell, 3rd Ed. Bruce Alberts, Dennis Bray, Julian Lewis, Martin Raff, Keith Roberts, and James D Watson, Garland Science
- Cell biology - Satyeshchandra Roy and K. K. De
- Cytology, genetics, evolution and plant breeding - P. K. Gupta, Rastogi Publications
- Fundamentals of Statistics - S.C.Gupta 11th Ed. Himalaya Publishing House.
- Methods in Biostatistics - B.K. Mahajan 6th Ed. Jaypee Publishers
- A handbook of Agricultural Statistics - S. R. S Chandel, Anchal Prakashan Mandir, Kanpur.
- A textbook of Agricultural Statistics - R Rangaswamy, New Age International Publications.
- Introduction to Biostatistics - Pranab Kumar Banerjee, 3rd Ed. S. Chand & Company.
- Statistics made Simple - K.V.S.Sharma, Prentice Hall of India.
- Elementary Microbiology (Fundamentals of Microbiology) Vol. II Pelczar Michael J., Reid R.D. and Chan E.C.S, Tata McGraw hill publishing. Co.
- Microbiology - Presscot, Harley & Kleins 7th Ed. McGraw-Hill Higher Education.
- Experimental Microbiology (volume 1&2) - Rakesh Patel and Kiran Patel, Aditya Publications.

