

SARDAR PATEL UNIVERSITY
Programme: MSC (Integrated Biotechnology)
Semester: IV
Syllabus with effect from: December 2011

Paper Code: PS04CIGB06	Total Credits: 3
Title Of Paper: Virology	

Unit	Description in detail	Weightage (%)
1	Viruses: Origin, nature, properties and classification of virus particle. General structure and chemistry of viruses. General overview of plant (Structure of TMV) and animal viruses. Isolation, purification and quantification of viruses. Introduction to cancer: Its types, concept of oncogenes, activation of proto-oncogenes, role of HIV and Adenovirus in cancer.	
2	Bacterial viruses : General overview, single stranded icosahedral DNA bacteriophage (Φ X 174), single stranded filamentous DNA phage (M13), double stranded DNA phages (T7), Single stranded RNA phage (MS2), Transposable phage (Mu phage).	
3	Virus Reproduction: Organization of nucleic acid, one step growth experiment, attachment, penetration, viral synthesis, assembly. Lytic cycle (lysis of host) and lysogeny of lambda phage and its regulation. Viral based vaccines.	
4	Viral genetics and Viral vectors: Phenotypic mixing, host-induced modification and complementation. Viral based vectors: Lambda phage vector, M-13 vector, Cosmids, Phagemids and Phasmid.	
	Practical:	
	<ul style="list-style-type: none"> • Isolation of bacteriophages from sewage sample. • Lysate preparation and its viability test-SPOT TEST. • Titration and study of plaque morphology and characterization. • Isolation of plant/ insect virus from diseased sample and proving River's postulate on healthy plant/ insect. • Study of insect virus (NPV): Isolation, staining and microscopy. • Serological characterization of virus by Serological techniques (eg. ELISA) • Demonstration of Transduction. 	

Basic Text & Reference Books:

- Microbiology by Pelczar, Michael J./ Chan, E.C.S./ Krieg, Noel R./ Chan, E. C. S. Publ: Tata McGraw-Hill Publishing Company Limited New Delhi, 2004 , Fifth edition
- Fundamentals in Microbiology, Frobisher A H, 9th Ed. **ASIN:** B001CYZO68
- Prescott, Harley, and Klein's microbiology Publ : McGraw-Hill Higher Education New York, Seventh edition **ISBN-10:** 0073302082
- Brock Biology of Microorganisms by Madigan, M. T., Martinko, J. M., Dunlap, V. P., Clark. P. David. Publishers: Pearson Benjamin Cummings, San Francisco. 12th edition. ISBN 0321536150.
- Microbiology: An introduction by Tortora, Gerard J .Publ: Pearson Education , New Delhi, 2006 Eighth edition **ISBN-10:** 0805347917
- Plant Viruses 6th Edition by Smith K M (1992), ISBN: 8185392625 **Publisher:** UBS Publishers Distributors Ltd
- An Introduction to Viruses by Amita Biswas, Stosius Inc/Advent Books Division; Rev Sub edition (1984), **ISBN-10:** 0706925157



- Bacteriophage: Genetics and Molecular Biology by Stephen Mc Grath and Due van Sinderen, Caister Academic Press, July, 2007 ISBN: 978-1-904455-14-1
- Fundamental Virology by Fields B N and Knipe D M eds. 3rd Edition, New York Raven Press. 1996
- Basic Virology by Edward Wegner and Martinez J Hewlett, 2nd Edition, 2004, Blackwell Publ. ISBN: 1405103469, 9781405103466
- Principles of Molecular Virology (Book with CD-ROM) (Paperback) by Alan J Cann, Academic Press; 3rd edition (March 15, 2001) **ISBN-10:** 0121585336
- Virology by K C Sawant , 2005 ISBN: 8178883651 Dominant Publishers and Distributors
- Biotechnology expanding horizons by Singh D. B. Publisher Kalyani publishers, New Delhi. 2nd edition.

