

**CORE COURSE – IX (CC) MICROBIAL GENETICS**

**UNIT – I**

History – experiments of Hershey Chase and Griffith, DNA as the genetic material – discovery of DNA structure – RNA as a genetic material – Genetic code.

**UNIT – II**

Organization and functioning of genetic material – Bacterial and viral. Details of *E.coli* chromosome. Brief account of plasmid – structure – types. Replication of DNA – rolling circle model – theta. Model. Replication of RNA – reverse transcriptase.

**UNIT – III**

Concept of gene – Lac operon, tryptophan operon, attenuation control – promoters – repressors – gene expression and regulation.

**UNIT – IV**

Gene transfer mechanisms – conjugation – transformation – transduction.

**UNIT – V**

Mutagenesis – mutation – mutants – phenotypic mutants – genotypic mutants – IS elements – transposons – repair mechanism, Carcinogenicity testing.

**Reference:**

- Daniel L. Hartl and Elizabeth W. Jones.(2001). Genetics-Analysis of Genes and Genomes, Jones and Bartlett publishers, UK.
- David Frifelder.(1990). Microbial Genetics, Narosa publishing house, New Delhi.
- Friedberg E.C., Walker C.C., Siede W. (1995). DNA repair and mutagenesis – ASM Press.
- Gardner E.J., Simmons M.J., Snustad D.P. (1991). Principles of Genetics. John Wiley & sons.
- Jeremy M. Dale. (1998). Molecular Genetics of Bacteria (3rd edition).John Wiley and sons,NewYork.
- Larry Synder and Wendy Champness. (2003). Molecular Genetics of Bacteria (2nd edition).American Society for Microbiology, Washington.
- Lodish, H., Baltimore, D. Berk, A. Zipsury, S.L., Matsudaira, P. Darnell, J. (1995). MolecularCell Biology. Scientific American Books.
- Malor Sr, Cronan Jr. JE. Freifelds D (1994). Microbial Genetics. Jones and Bartlett Publishers.
- Maxine Singer and Paul Berg. (1991).Genes & Genomes. University science books, California.
- Monroe W.Stickberger.2003.Genetics(3rd edition).Prentice/Hall of India Pvt. Ltd., NewDelhi.
- Old, R.S. and Primrose, S.B. (1989). Principles of Gene Manipulation, 4th Ed., Blackwell Scientific Publications, London.