Molecular Genetics and Genetic Engineering (LS 501) (2 credits)
M. Sc. 3rd Semester
Prof. K. Natarajan* and Prof. P.C.Rath

Lecture #	Topic	Faculty
1	Path from Genetics to Molecular Genetics and Genetic Engineering to Genomics	KN
2	Transcriptional Control Regions of Prokaryotic and Eukaryotic Genes	PCR
3		
4		
5	Transcriptional activation and repression mechanisms	KN
6		
7	DNA Modifying Enzymes, DNA Cloning and Manipulating Cloned DNA	PCR
8		
9		
10	RNA isolation, cDNA Synthesis, cDNA Library Construction and its Applications	PCR
11		
12	Genomic DNA Library Construction and its Applications	PCR
13		
14		
15	Identification and Analysis of Recombinant DNA Clones	PCR
16		
17		
18	DNA Sequencing Technology and its Applications	KN
19		
20	Methods to study Gene Expression and its Applications	KN
21		
22	Protein-Protein Interactions and its Applications	KN
23		
24		
25	Polymerase Chain Reaction and its Applications	KN
26		
27	Site-directed Mutagenesis, Genome Editing (Crispr-cas, Zfn, Talen etc.) and their Applications	PCR
28		
29	Gene Knock-out and Knock-down Methods and their Applications	PCR
30	Transgenic Systems and their Applications	PCR

Books recommended: Principles of Gene Manipulation, S.B. Primrose, R.M. Twyman & R.W. Old (6th Edn., 2001) Blackwell Science; Principles of Gene Manipulation & Genomics, S.B. Primrose & R.M. Twyman (7th Edn., 2006) Blackwell Publishing