## Title of the Course: **GENETIC ENGINEERING [P]**

Course Code: MIC-624

Number of Credits: 1, Practical

Contact hours: 30

**Effective from Academic Year: 2022-23** 

selection media and preparatory microbiology.  • Hands-on experience of the workflow of a typical genetic engineering experiment.  Content:  1. Restriction mapping of bacterial plasmid. 2. Assessment of DNA ligation activity of T4 DNA ligase 3. Preparation of competent cells and transformation of <i>E. coli</i> host with plasmid DNA using heat shock method and electroporator; confirmation of positive transformants by blue-white screening.  4. Demonstration of insertional inactivation of marker gene.  Pedagogy: Experiments in the laboratory  References/ Readings  • Brown, T.A., Gene cloning and DNA Analysis: An Introduction, Blackwell Science (2020).  • Davis, L. G., Dibner, M. D. & Battey, J. F., Basic Methods in Molecular Biology, Elsevier (1994).  • Gerhardt, P., Methods for General and Molecular Bacteriology, Elsevier (2007).  • Glick, B.R., Pasternak, J.J. & Patten, C.L., Molecular Biotechnology: Principles and Applications of Recombinant DNA, ASM Press (2022).  • Glover, D. M., Gene cloning: The Mechanics of DNA Manipulation, Springer-Science+Business Media, B. V (2013).  • Green, M.R. & Sambrook, J., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Laboratory, New York (2012).  • Grinsted, J. & Bennett, P.M., Methods in Microbiology, Vol. 21, Plasmid Technology, Academic Press (1990).  • Old, R.W. and Primrose, S.B., Principles of Gene Manipulation: An introduction to Genetic Engineering, University of California Press (2014).  • Williamson, R., Genetic Engineering, Volumes 4-7, Academic Press (1997).  Course  Outcomes  • Apply the technique of restriction mapping;  • Clone a desired gene in a prokaryotic system.  • Interpret experimental results on the basis of gel profiles.  • Design experiments for obtaining specific outcomes in gene	Prerequisites	Theoretical understanding of chromosomal DNA, plasmid DNA,	
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