



<b>Department of Biotechnology</b>	LP: BT22511 Rev. No: 00 Date: 24.06.2024
B.E/B.Tech/M.E/M.Tech : <b>Biotechnology</b> Regulation: 2022 PG Specialisation : NA Sub. Code / Sub. Name : BT22511/ Molecular Biology and Genetic Engineering Laboratory	

**OBJECTIVE:**

- To acquire the skills in performing the basic molecular biology techniques.
- To understand the various types of expression vectors and their implication of cloning.
- To provide hands-on experience in performing the recombinant DNA techniques.
- To appraise the concepts on the isolation and expression of proteins.
- To study the differential expression of genes.

Session No*	List of Experiments
<b>CYCLE-I</b>	
1	Isolation of Genomic DNA from microbes.
2	Isolation of RNA.
3	Isolation of Plasmid DNA by Alkaline Lysis Method.
4	Restriction Digestion and Ligation of DNA into expression vectors.
5	Preparation of <i>E.coli</i> Competent cells and Transformation of expression vectors in to the Competent cells.
<b>CYCLE-II</b>	
6	Optimization of Inducer Concentration for recombinant protein expression.
7	Optimization of Time of Inducer for recombinant protein expression.
8	Sodium Dodecyl Sulphate-Poly Acrylamide Gel Electrophoresis (SDS-PAGE).
9	Western blotting and Hybridization with anti-sera.
10	Polymerase Chain Reaction (PCR).
Content beyond syllabus (if any): Demonstration of Real-Time PCR.	

\* Session Duration: 200 minutes



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**TEXTBOOKS:**

1. Old, RW, Primrose, SB, "Principles Of Gene Manipulation, An Introduction to Genetic Engineering", 3rd Edition, Blackwell Science Publications, 1993.
2. Anselm FM, Brent, R, Kingston, RE, Moore, DD, "Current Protocols In Molecular Biology", 2nd Edition, Greene Publishing Associates, NY, 1988.
3. Berger, SI, Kimmer, AR, "Methods In Enzymology", 2nd Edition, Vol 152, Academic Press, 1987.
4. Sambrook, Joseph and David, W. Russell, "The Condensed Protocols: From Molecular Cloning: A Laboratory Manual" 1st Edition, Cold Spring Harbor, 2006.

	Prepared by	Approved by
Signature		
Name	Dr. K. Ganesh Prasath	Prof. E. Nakkeeran
Designation	Assistant Professor, Biotechnology	HOD
Date	24/06/2024	24/06/2024
Remarks*:	This lesson plan will be followed in the subsequent years	
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\*If the same lab plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD