

<b>Experiment 4</b>	To isolate plant genomic DNA by CTAB method
<b>Experiment 5</b>	Isolation of plasmid DNA from E. coli cells
<b>Experiment 6</b>	To check the presence of DNA by Agarose gel Electrophoresis
<b>Experiment 7</b>	To electro elute specific bands or regions of agarose gel separated DNA
<b>Experiment 8</b>	To prepare competent cells by calcium chloride method
<b>Experiment 9</b>	To perform PCR thermal cycler for DNA amplification
<b>Experiment 10</b>	To transform competent cells with pUC18- $\lambda$ DNA ligated product

Books:

S.No.	Name of Book/Author/Publisher
1.	Gene Cloning & DNA Analysis: An Introduction by T.A. Brown. Blackwell Publisher,
2.	Principles of Gene Manipulation & Genomics by Primrose & Twyman. Seventh edition
3.	Molecular Cloning: A Laboratory Manual (3 Volume Set) by J. Sambrook and David W. Russel. Third edition Publisher: Cold Spring Harbor Laboratory Press,
4.	Molecular Biotechnology: Principles and Applications of Recombinant DNA by B.R. Glick and J.J. Pasternak. Publisher: ASM Press
5.	Genetic Engineering by S. Rastogi and N. Pathak. Publisher: Oxford University Press
6.	Recombinant DNA by J.D. Watson et al. Publisher: W.H. Freeman and company

**Details of course: - Environmental Biotechnology (Department core course-12)**

Course Title	Course Structure			Pre-Requisite
	L	T	P	
Environmental Biotechnology (BT 305)	3	1	0	Nil

Course Objective:

To impart knowledge about the environment structure and its balance, Pollution and its measurement. The strategies to reduce the pollutant concentrations in the biosphere and strategies for sustainable ecosystem.

Course Outcome (CO):

- 1) To impart knowledge on different types of pollution in the environment
- 2) To understand sources, impacts and strategies for monitoring air, water and noise pollution
- 3) To study the solid waste management techniques and bioremediation
- 4) To understand greenhouse effect, acid rain and ozone depletion
- 5) To study the microbiology for degradation of pollutants

S.No.	Content	Contact Hours
1.	<b>Environmental Pollution:</b> Types of pollution, methods for the measurement of pollution; Methodology of environmental management the problem- solving approach, its limitations	06
2.	<b>Air Pollution and its Control through Biotechnology:</b> Active trace gases in air, reactive odd nitrogen, carbon, sulfur and Halogen compounds in air, aerosols in air, direct and indirect effect on radioactive forcing, Bio-filtration	08
3.	<b>Water Pollution and its Control:</b> Water resource management, waste water collection, Measurement of water pollution, sources of water pollution, waste water treatment - physical, chemical and biological treatment processes. Activated sludge, oxidation ditches, trickling filter, towers, rotating discs, rotating drums, oxidation ponds. Anaerobic processes of biological treatment- Anaerobic digestion, anaerobic filters. Upflow anaerobic sludge blanket reactors; Treatment schemes for waste waters of dairy, distillery, tannery, sugar, antibiotic industries	08
4.	<b>Global Environmental Problems:</b> Ozone depletion, greenhouse effect and acid rain, their impact and biotechnological approaches for management	06
5.	<b>Solid Wastes:</b> Treatment and Management: Sources of solid waste and management (composting, Vermiculture and methane production) Bioremediation of contaminated soils and waste land, Biopesticides in integrated pest management.	08
Total		36