DEPARTMENT OF BIOTECHNOLOGY				*CLASS: II B.Sc. Microbiology*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
IV	Ancillary Practicals -II	20U4LAP2	Lab in Biotechnology-II	1	2	40	60	100

Nature of Course				
Knowledge and skill	✓		Employability oriented	
Skill oriented	✓		Entrepreneurship oriented	

Course Objectives

1.	To introduce basic techniques used in biotechnology
2.	To understand and design a cloning process
3.	To identify problem, Interpret results and modify the techniques used in biotechnology

	Experiments
1	Isolation of Yeast
2	Immobilization of yeast cells
3	Alcohol fermentation& Estimation of alcohol
4	Isolation of antibiotic producing microbes from soil
5	Plant tissue culture media preparation & shoot culture
6	Separation of serum and plasma
7	Immunooelectrophoresis
8	Isolation of lipolytic bacteria from butter
	Spotters Microarray, Cystic fibrosis, RFLP, microinjection, DNA fingerprinting, Liposome mediated gene transfer, superbugs

Books for Study

1. John Vennison. 2009. Laboratory Manual of Genetic Engineering. PHI.
2. Sambrook, Joseph. 2001. Molecular Cloning: a Laboratory Manual. Cold Spring Harbor, N.Y. Cold Spring Harbor Laboratory Press.

Books for Reference

1. AbhijitDutta. 2011. Experimental Biology: A laboratory Manual. Narosa.
2. Rajan&Selvi Christy. 2010. Experimental Procedures in Lifesciences. Anjanaa Book House

Rationale for Nature of the course

This laboratory course aimed to provide practical experience on industrial biotechnology, bioremediation process and diseases diagnostic tools. Knowledge gained by the students through this course not only enriches their understanding, but also enhance their analytical ability

Activities having direct bearing on Skill development / Employability /Entrepreneurship

- Individual experimental activity to the students.
- Hands on- training in techniques in Biotechnology.
- Report writing – new advanced methodologies in biotechnology

Pedagogy
The teaching methods may include: Demonstrations, hands on experiments and Problem solving

Course content designers
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Course Learning Outcomes
On completion of this course the students will be able to

#	CLOs	K –Level
CLO-1	Demonstrate the fermentation process	Up to K-2
CLO-2	Correlate the role of plant hormones in plant tissue culture	Up to K-4
CLO-3	Apply various techniques to isolate microbes	Up to K-3
CLO-4	Solve the problem associated with genetic disorders	Up to K-3
CLO-5	Elaborate principle behind the transgenesis	Up to K-2

Mapping of Course outcomes with Program Outcomes

CO/PO	PO-1	PO-2	PO-3	PO-4	PO-5
CLO-1	3	2	3	2	2
CLO-2	3	2	2	2	2
CLO-3	3	2	3	2	2
CLO-4	3	2	3	2	2
CLO-5	3	3	3	2	2

Advance application-3; Intermediate level-2 &Basic level-1

Mapping of Course outcomes with Program specific Outcomes

CO/PSO	PSO-1	PSO-2	PSO-3	PSO-4	PSO-5
CLO-1	3	3	3	3	2
CLO-2	3	1	2	1	1
CLO-3	3	3	1	3	1
CLO-4	3	3	2	2	2
CLO-5	3	3	2	3	3

Advance application-3; Intermediate level-2 &Basic level-1