DEPARTMENT OF BIOTECHNOLOGY				*CLASS: II B.Sc. Microbiology*				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
III	Ancillary Practicals-I	20U3LAP1	Lab in Biotechnology-I	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.	Extraction of genomic DNA from animal tissue
2.	Extraction of genomic DNA from Bacterial Cells
3.	Extraction of Plasmid DNA from Bacterial Cells
4.	Agarose gel electrophoresis
5.	DNA quantification by DPA method
6.	Restriction Digestion & Ligation
7.	Competent cell preparation & Transformation
8.	Selection of recombinants – Blue White Colony Selection
	Spotters Karyotying, Syndromes, Diseases - Cystic fibrosis, sickle cell Anemia, Duchenne's muscular dystrophy, SNP, Cloning Vectors maps –pBR322, pUC 18, Microinjection, electroporation

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

The ancillary laboratory course focuses on training the students in basic techniques in biotechnology and cloning strategies and to practice them to explicit the problem solving ability. Students can apply these skills & analytical ability for their higher studies.

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 designer

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Course Learning Outcomes

On completion of this course the students will be able to

#	CLOs	K - Level
CLO-1	Demonstrate techniques to construct recombinant DNA	Up to K-2
CLO-2	Correlate the results and develop critical thinking skills	Up to K-4
CLO-3	Apply biotechnological concepts to develop new techniques	Up to K-3
CLO-4	Solve the problem associated with disease diagnosis strategies	Up to K-3
CLO-5	Elaborate principle behind the analytical methods	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

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