

DISCIPLINE: BIOTECHNOLOGY	SEMESTER:5th	NAME OF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (TH-2) Genetic Engineering	NO. OF DAYS/PER WEEK CLASS ALLOTTED:4	FROM DATE: 14-07-2025 TO DATE: 15-11-2025 NO OF WEEK: 15
WEEK:	CLASS DAY:	THEORY/PRACTICAL TOPICS:
1 st	1 st	1.1 Concept of Genetic Engineering.
	2 nd	Genes
	3 rd	Genome
	4 th	RDT, Basic steps of RDT.
2 nd	1 st	RDT, Basic steps of RDT.
	2 nd	Tools of RDT
	3 rd	Discussion about Restriction Endo nuclease enzyme.
	4 th	Discussion about Restriction Endo nuclease enzyme.
3 rd	1 st	Ligase enzyme and ligation
	2 nd	Plasmid
	3 rd	DNA modifying enzymes
	4 th	necessary role of RDT.
4 th	1 st	Application of RDT
	2 nd	Application of RDT
	3 rd	Vector system
	4 th	2.1 Gene cloning Vectors.
5 th	1 st	Gene cloning Vectors.
	2 nd	Gene cloning Vectors.
	3 rd	Plasmids and their properties.
	4 th	Plasmids and their properties.
6 th	1 st	Bacteriophage
	2 nd	Bacteriophage vectors for E. coli.
	3 rd	Bacteriophage vectors for E. coli.
	4 th	Life cycle of M13
7 th	1 st	Life cycle of M13
	2 nd	lambda phage in E. coli.
	3 rd	lambda phage in E. coli.
	4 th	Cosmids
8 th	1 st	Cosmids :construction,function
	2 nd	Shuttle Vectors
	3 rd	Shuttle Vectors
	4 th	YAC vectors.
9 th	1 st	YAC vectors.
	2 nd	3.1 Integration of DNA insert in to vector.
	3 rd	Integration of DNA insert in to vector.

	4 th	Linkers
10 th	1 st	Linkers
	2 nd	adaptors
	3 rd	Homo polymer tailing.
	4 th	Homo polymer tailing.
	1 st	cDNA and Genomic Libraries.
11 th	1 st	cDNA and Genomic Libraries.
	2 nd	Introduction of foreign DNA into host cells.
	3 rd	Transformation- Griffith Effect, Infection, Transfection.
	4 th	Sequence based screening – colony hybridization
12 th	1 st	Sequence based screening – colony hybridization
	2 nd	Sequence based screening – colony hybridization
	3 rd	Chromosome walking
	4 th	Chromosome walking
13 th	1 st	Concept of chromosome Jumping
	2 nd	Concept of chromosome Jumping
	3 rd	Screening by PCR
	4 th	Screening by PCR
14 th	1 st	Gene Tagging
	2 nd	Blotting Techniques (Southern & Western blotting)
	3 rd	Blotting Techniques (Southern & Western blotting)
	4 th	Genetic finger printing.
15 th	1 st	Microarray Technology.
	2 nd	Different molecular genetic marker RFLP,RAPD only
	3 rd	Different molecular genetic marker RFLP,RAPD only
	4 th	Revision and Class test