DISCIPLINE: BIOTECHNOLOGY	SEMESTER:3rd	NAMEOF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (TH-2) Molecular Biology	NO.OFDAYS/PER WEEK CLASSALLOTED:3	FROM DATE: 14-07-2025 TO DATE: 15-11-2025 NO OF WEEK: 12
WEEK:	**CLASS DAY:**	**THEORY/PRACTICAL TOPICS:**
1st	1st	Introduction to Molecular Biology: Definition, history, of
	2nd	Scope of molecular biology,
	3rd	Scope of molecular biology,
2nd	1st	Central dogma of molecular biology
	2nd	Central dogma of molecular biology
	3rd	DNA Replication
3rd	1st	Replication process in prokaryotes
	2nd	Replication process in prokaryotes
	3rd	and eukaryotes, DNA damage and
4th	1st	DNA damage
	2nd	DNA damage
	3rd	repair mechanism
5th	1st	repair mechanism
	2nd	repair mechanism
	3rd	Class test
6th	1st	Transcription
	2nd	Transcription
	3rd	RNA Processing:
		RNA Processing
7th	1st	Mechanism of transcription in prokaryotes
	2nd	Mechanism of transcription in prokaryotes
	3rd	transcription in eukaryotes
		Transcription and RNA Processing: in eukaryotes
8th	1st	eukaryotes
	2nd	Doubt clearing session
	3rd	Class test
9th	1st	Translation
	2nd	Translation and Protein Synthesis:
	3rd	Translation and Protein Synthesis: Genetic code

10th	1st	characteristics, Process of translation
	2nd	characteristics, Process of translation:
	3rd	eukaryotes translation
	1st	Molecular Biology Techniques: PCR (Polymerase Chain Reaction), Gel electrophoresis, Southern, Northern, and Western blotting
11th	1st	Molecular Biology Techniques: PCR (Polymerase Chain Reaction), Gel electrophoresis, Southern, Northern, and Western blotting
	2nd	Molecular Biology Techniques: PCR (Polymerase Chain Reaction), Gel electrophoresis, Southern, Northern, and Western blotting
	3rd	Molecular Biology Techniques: PCR (Polymerase Chain Reaction), Gel electrophoresis, Southern, Northern, and Western blotting
12th	1st	Molecular Biology Techniques: PCR (Polymerase Chain Reaction), Gel electrophoresis, Southern, Northern, and Western blotting
	2nd	Molecular Biology Techniques: PCR (Polymerase Chain Reaction), Gel electrophoresis, Southern, Northern, and Western blotting
	3rd	Molecular Biology Techniques: PCR (Polymerase Chain Reaction), Gel electrophoresis, Southern, Northern, and Western blotting
13th	1st	Molecular Biology Techniques: PCR
	2nd	Molecular Biology Techniques: PCR (Polymerase Chain
	3rd	Molecular Biology Techniques:
14th	1st	Gel electrophoresis,
	2nd	Southern, Northern,
	3rd	Southern, Northern,
15th	1st	Northern, and Western blotting
	2nd	Western blotting
	3rd	Western blotting

DISCIPLINE: Biotechnology	SEMESTER:3rd	NAME OF THE TEACHING FACULTY: SWETANGINI NAIK
SUBJECT: (Th-2) Biochemistry	NO. OF DAYS/ PER WEEK CLASS ALLOTTED: 03	FROM DATE: 14-07-2025 TO DATE: 15-11-2025 NO. OF WEEKS: 15
WEEK	CLASS DAY	THEORY TOPICS
1st	1st	Introduction to Biochemistry
	2nd	definition, scope, and importance of biochemistry
	3rd	overview of biomolecules
2nd	1st	overview of biomolecules
	2nd	water and its role in biological systems
	3rd	Carbohydrates: Classification
3rd	1st	Monosaccharides,
	2nd	disaccharides,
	3rd	polysaccharides
4th	1st	Glycolysis,
	2nd	Gluconeogenesis
	3rd	the citric acid cycle
5th	1st	Proteins and Enzymes
	2nd	Amino acids,
	3rd	Protein structure
6th	1st	Enzymes -Types,
	2nd	mechanisms of action, enzyme kinetics, factors affecting
	3rd	Enzyme activity
7th	1st	Lipids: Classification and structure
	2nd	Functions of lipids in biological systems
	3rd	Functions of lipids in biological systems
8th	1st	Functions of lipids in biological systems
	2nd	Nucleic Acids
	3rd	Structure and function of DNA and RNA
		Structure and function of DNA and RNA

9th	1st	Structure and function of DNA and RNA
	2nd	Structure and function of DNA and RNA
	3rd	Metabolism and Bioenergetics
10th	1st	Overview of metabolism
	2nd	Overview of metabolism
	3rd	Anabolism and catabolism,
11th	1st	ATP: The energy currency of the cell,
	2nd	Electron transport chain
	3rd	Electron transport chain
12th	1st	Electron transport chain
	2nd	Electron transport chain
	3rd	oxidative phosphorylation
13th	1st	Clinical Biochemistry and Applications:
	2nd	Biochemical basis of diseases
	3rd	(diabetes, obesity, genetic disorders),
14th	1st	Diagnostic enzymes
	2nd	biomarkers
	3rd	Role of biochemistry in medicine,
15th	1st	nutrition,
	2nd	nutrition,
	3rd	environmental science