

## Lesson Plan

Name of the Faculty: Mr. Ashutosh Dixit (Theory)

Discipline: Department of Applied Sciences and Humanities

Semester: 1<sup>st</sup>

Subject: Fundamentals of Biotechnology (BT-101N)

Work Load (Lecture/Practical) per week (in hours): Lectures-03, Practicals-00

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Concept and definition of Biology		
	2 <sup>nd</sup>	Characteristic features of living organisms		
	3 <sup>rd</sup>	Cell ultra-structure and functions of cell organelles like nucleus, mitochondria, chloroplast, ribosomes and endoplasmic reticulum		
2 <sup>nd</sup>	4 <sup>th</sup>	Cell ultra-structure and functions of cell organelles like nucleus, mitochondria, chloroplast, ribosomes and endoplasmic reticulum		
	5 <sup>th</sup>	Difference between prokaryotic and eukaryotic cell		
	6 <sup>th</sup>	Difference between animal and plant cell		
3 <sup>rd</sup>	7 <sup>th</sup>	Introduction to Biomolecules: Definition		
	8 <sup>th</sup>	General classification and important functions of carbohydrates, lipids, proteins, nucleic acids (DNA& RNA: Structure and forms)		
	9 <sup>th</sup>	General classification and important functions of carbohydrates, lipids, proteins, nucleic acids (DNA& RNA: Structure and forms)		
4 <sup>th</sup>	10 <sup>th</sup>	Vitamins, hormones and enzymes		
	11 <sup>th</sup>	Vitamins, hormones and enzymes		
	12 <sup>th</sup>	A1		
5 <sup>th</sup>	13 <sup>th</sup>	Cell division- Mitosis and its utility to living systems		
	14 <sup>th</sup>	Meiosis and its genetic significance		
	15 <sup>th</sup>	Gene: Concept, location, definition and structure		
6 <sup>th</sup>	16 <sup>th</sup>	Gene: Concept, location, definition and structure		
	17 <sup>th</sup>	Introduction to replication, transcription, translation		
	18 <sup>th</sup>	Mutations, Genetic disorders		
7 <sup>th</sup>	19 <sup>th</sup>	Genetics of blood groups		
	20 <sup>th</sup>	Diabetes type I & II		
	21 <sup>st</sup>	Brief introduction to morphology and pathogenicity of bacteria beneficial and harmful for human beings		
8 <sup>th</sup>	22 <sup>nd</sup>	Brief introduction to morphology and pathogenicity of fungi beneficial and harmful for human beings		
	23 <sup>rd</sup>	Brief introduction to morphology and		

		pathogenicity of virus beneficial and harmful for human beings		
	24 <sup>th</sup>	Brief introduction to morphology and pathogenicity of protozoa beneficial and harmful for human beings		
9 <sup>th</sup>	25 <sup>th</sup>	A2		
	26 <sup>th</sup>	Concepts of Genetic Engineering: Definition; Tools used in recombinant DNA Technology		
	27 <sup>th</sup>	Plasmids as nature's interlopers		
10 <sup>th</sup>	28 <sup>th</sup>	Restriction enzymes as nature's pink-shears		
	29 <sup>th</sup>	Vectors as gene transfer vehicles		
	30 <sup>th</sup>	Production and significance of transgenic plants and animals		
11 <sup>th</sup>	31 <sup>st</sup>	Basic concept of genetically modified organisms		
	32 <sup>nd</sup>	A3		
	33 <sup>rd</sup>	Definition of biotechnology		
12 <sup>th</sup>	34 <sup>th</sup>	Applications of Biotechnology in Agriculture		
	35 <sup>th</sup>	Applications of Biotechnology in Medicine		
	36 <sup>th</sup>	Applications of Biotechnology in Environment		
13 <sup>th</sup>	37 <sup>th</sup>	Applications of Biotechnology in Industry		
	38 <sup>th</sup>	Applications of Biotechnology in Forensic Science		
	39 <sup>th</sup>	Role of biology in Information Technology (Bioinformatics)		
14 <sup>th</sup>	40 <sup>th</sup>	Role of biology in Nanotechnology (Nanobiotechnology)		
	41 <sup>st</sup>	Role of biology in Micro-electromechanical systems (Bio-MEMS)		
	42 <sup>nd</sup>	Role of biology in Sensors (Biosensors)		
15 <sup>th</sup>	43 <sup>rd</sup>	Ethical issues related to Biotechnology		
	44 <sup>th</sup>	A4		
	45 <sup>th</sup>	Revision		

**A1: Biomolecules**

**A2: Role of immune system in health and disease**

**A3: Concepts of Genetic Engineering**

**A4: Role of biology in allied fields**