

## Lesson Plan

**Name of the Faculty : Er. Ritika Gera**

**Discipline : Biotechnology Engineering**

**Semester : 2<sup>nd</sup>**

**Subject : Biology (BS-141A)**

**Lesson Plan Duration: 15 Weeks** (January, 2020 - April, 2020)

**\*Work Load (Lecture/Practical) per week (in hours): L-2, T-1, P-0**

Week	Theory	
	Lecture Day	Topic(including assignment /test)
1 <sup>st</sup>	1 <sup>st</sup>	<b>Introduction to living world:</b> Concept and definition of biology Characteristics features of living organisms;
	2 <sup>nd</sup>	Cell ultra structure and functions of cell organelles, mitochondria And Chloroplast, Ribosome, endoplasmic reticulum and Nucleus.
2 <sup>nd</sup>	3 <sup>rd</sup>	Difference between prokaryotic and eukaryotic cell; Difference between animal and plant cell.
	4 <sup>th</sup>	<b>Classification of Organism:</b> Classify the organisms on the basis of (a) Cellularity;- Unicellular and multicellular organisms (b) Autotrophs, Heterotrophs and Lithotrophs.
3 <sup>rd</sup>	5 <sup>th</sup>	(c) Habitat:- aquatic and terrestrial (d) Ammonia excretion:- ammonotelic, ricotelic and Ureotelic. (e) Molecular Taxonomy:- Three major kingdom of life.
	6 <sup>th</sup>	Revision test -1
4 <sup>th</sup>	7 <sup>th</sup>	<b>Introduction to Biomolecules:</b> Definition, Classification and important functions of carbohydrates, proteins, nucleic acids (DNA and RNA Structure and forms)
	8 <sup>th</sup>	Lipids. Hierarch in protein structure: Primary, secondary, tertiary and quaternary structure.
5 <sup>th</sup>	9 <sup>th</sup>	Proteins as enzymes, transporters, receptors and structural element, <b>Enzymes as Biocatalysts:</b> General characteristics, nomenclature and classification of Enzymes.Effect of temperature, Ph, enzyme and substrate concentrations on the activity of enzymes
	10 <sup>th</sup>	Elementary concept of and coenzymes. Mechanism of enzyme action. Enzyme kinetics and kinetic parameters (Km and Vmax)
6 <sup>th</sup>	11 <sup>th</sup>	Revision test-2
	12 <sup>th</sup>	<b>Genetics:</b> Mendel's Law of inheritance. Variation and speciation, Concepts of recessiveness and dominance.Genetic Disorders: Single gene disorders in human.
7 <sup>th</sup>	13 <sup>th</sup>	<b>Human traits:</b> Genetics of blood groups, diabetes type I & II.
	14 <sup>th</sup>	<b>Cell Division:-</b> Mitosis and its utility to living systems.Meiosis and its genetic significance
8 <sup>th</sup>	15 <sup>th</sup>	Evidence of nucleic acids as a genetic material.Central Dogma of molecular biology;
	16 <sup>th</sup>	<b>Role of immune system in health and disease:</b> Brief introduction to morphology and pathogenicity of bacteria, Virus
9 <sup>th</sup>	17 <sup>th</sup>	Fungi,Protozoa

	18 <sup>th</sup>	Revision test-3
10 <sup>th</sup>	19 <sup>th</sup>	<b>Metabolism:-</b> Concept of Exothermic and endothermic reactions
	20 <sup>th</sup>	Concept of standard free energy and Spontaneity in biological reactions.Catabolism (Glycolysis)
11 <sup>th</sup>	21 <sup>th</sup>	Catabolism (Krebs cycle)
	22 <sup>nd</sup>	synthesis of glucose; Photosynthesis:- Light Reaction
12 <sup>th</sup>	23 <sup>rd</sup>	(Dark Reaction) of glucose
	24 <sup>th</sup>	ATP as Energy Currency of the cell;
13 <sup>th</sup>	25 <sup>th</sup>	<b>Microbiology:</b> Concept of species and strains, sterilization,
	26 <sup>th</sup>	media compositions and growth kinetics. <b>Role of Biology:</b> Role of Biology in Agriculture,
14 <sup>th</sup>	27 <sup>th</sup>	Role of biotechnology in Medicine, Forensic Science
	28 <sup>th</sup>	<b>Role of biology in Allied Sciences :</b> Bioinformatics Nanotechnology (Nano biotechnology)
15 <sup>th</sup>	29 <sup>th</sup>	Micro-electromechanical systems (Bio-MEMS);
	30 <sup>th</sup>	Biosensors

**Er. Ritika Gera**

**Assistant Professor**

**Biotechnology Engineering**