

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

ACADEMIC YEAR 2023-24

DEPARTMENT: BIOTECHNOLOGY

CLASS: I SEM (NEP)

SUBJECT: BIOTECHNOLOGY

PAPER: CELL BIOLOGY & GENETICS (NEP Core)

MONTH/YEAR	WEEK	CLASS	PORTIONS	FACULTY	
August 2023	1	1	Introduction to biotechnology: Definition and objectives.	GK	
		2	Bridging the gap: Connecting PUC biology to degree biotechnology.	BMA	
		3	Bridging the gap: Connecting PUC biology to degree biotechnology.	GK	
		4	Bridging the gap: Connecting PUC biology to degree biotechnology.	GK	
	2	1	Bridging the gap: Connecting PUC biology to degree biotechnology.	GK	
		2	Introduction of the syllabus.	BMA	
		3	Unit 1: Cell biology: Introduction.	BMA	
		4	Unit 3: Genetics: Introduction, Mendel and his works.	GK	
	3	1	Unit 3: Genetics: Principle of Dominance.	GK	
		2	Unit 1: Cell biology: Discovery of cell.	BMA	
		3	Unit 1: Cell biology: Cell theory.	BMA	
		4	Unit 3: Genetics: Laws of inheritance- Law of Segregation, Incomplete dominance and co-dominance.	GK	
	4	1	Unit 3: Law of independent assortment. Back cross & Test cross with examples.	GK	
		2	Unit 1: Cell biology: Ultrastructure of eukaryotic cell- Plant & Animal cell	BMA	
		3	Unit 1: Cell biology: Structural organization of plasma membrane.	BMA	
		4	Unit 3: Gene interaction: Supplementary factors - comb pattern in fowls.	GK	

MONTH/YEAR	WEEK	CLASS	PORTIONS	FACULTY	
October 2023	1	1	Unit 3: Gene interaction: Complementary genes-sweet peas, multiple factors-skin colour in man.	GK	
		2	Unit 3: Gene interaction: Epistasis- plumage colour in poultry. Solving problems.	GK	
		3	Unit 1: Cell biology: Structural organization of plasma membrane.	BMA	
		4	Unit 1: Cell biology: Structural organization of plasma membrane-complete. Functions of plasma membrane	BMA	
	2	1	Unit 3: Maternal inheritance: Kappa particle in <i>Paramecium</i>	GK	
		2	Unit 3: Maternal inheritance: Plastid inheritance in <i>Mirabilis</i> & Petite characters in yeast.	GK	
		3	Unit 1: Cell biology: Structural organization of plasma membrane-complete. Functions of plasma membrane	BMA	
		4	Unit 1: Structure and functions of endoplasmic reticulum.	BMA	
	3	1	Unit 3: Sex-linked inheritance.	GK	
		2	Unit 3: Chromosomal theory of inheritance	GK	
		3	Unit 1: Structure & functions of Golgi complex, peroxisomes & vacuole.	BMA	
		4	Unit 1: Structure & functions of Chloroplast.	BMA	
	4	1	Unit 4: Linkage: general introduction. Coupling & repulsion hypothesis.	GK	
		2	Unit 4: Linkage in Maize.	GK	
		3	Unit 1: Structure & functions of Cytosol, ribosomes and lysosome.	BMA	
		4	Unit 1: Structure & functions of Nucleus, nucleolus and cytoskeleton structures.	BMA	
	5	1	Unit 4: Linkage in <i>Drosophila</i> .	GK	

MONTH/YEAR	WEEK	CLASS	PORTIONS	FACULTY	
November 2023	1	1	Unit 4: Mechanism of crossing over & its importance.	GK	
		2	Unit 2: Chromosomes: General introduction, discovery & morphology	BMA	
		3	Unit 2: Structural organization of metaphase chromosome.	BMA	
	2		IA TEST		
	3	1	Unit 4: Chromosome mapping.	GK	
		2	Unit 4: Structural and numerical chromosomal aberrations.	GK	
		3	Unit 2: chromosome: chemical composition & karyotype.	BMA	
		4	Unit 2: Ultrastructure of chromosome-hypothesis.	BMA	
	4	1	Unit4: Sex determination in plants and animals- XX-XY, XX-XO, ZW-ZZ, ZO-ZZ types.	GK	
		2	Unit4: Mutations: Introduction. Types of mutations- spontaneous mutation.	GK	
		3	Unit 2: Ultrastructure of chromosome-folded-fibre model.	BMA	
		4	Unit 2: Ultrastructure of chromosome-nucleosome model.	BMA	
	5	1	Unit 4: Mutations: Induced mutation. Physical & chemical mutagens.	GK	
		2	Unit4: Mutations in plants, animals & microbes and their merits & demerits.	GK	
		3	Unit 2: Salivary gland chromosome & Lampbrush chromosomes.	BMA	
		4	Unit2: Cell cycle: phases of cell cycle & checkpoints of cell cycle.	BMA	
	December 2023	1	1	Revision and clearing doubts.	GK
			2	Unit 2: Cell cycle- enzymes involved, achromatic apparatus & significance.	BMA
			3	Unit2: Senescence & programmed cell death.	BMA
			4	Discussion of Question bank.	GK

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

ACADEMIC YEAR 2023-24

DEPARTMENT: BIOTECHNOLOGY

CLASS: III SEM (NEP)

SUBJECT: BIOTECHNOLOGY

PAPER: Biomolecules (NEP Core)

MONTH/YEAR	WEEK	CLASS	PORTIONS	FACULTY	
October 2023	3	1	Syllabus: Introduction. Definition and introduction of biochemistry	GK	
		2	Unit 1 a) Carbohydrates: Introduction and Definition.	BMA	
		3	Unit 1b) Aminoacids and proteins: Introduction and definition of amino acids.	GK	
		4	Aminoacids: General formula and features.	GK	
	4	1	Classification of carbohydrates	BMA	
		2	Properties of carbohydrates.	BMA	
		3	Amino acids: Names, three letter and single letter symbols.	GK	
		4	Classification of Amino acids.	GK	
November 2023	1	1	Structure of carbohydrates.	BMA	
		2	Structure of carbohydrates- completed.	BMA	
		3	Structure of Amino acids.	GK	
		4	Properties of Amino acids.	GK	
	2			IA Test	
	3	1	Monosaccharides – Isomerism and ring structure. Fructose.	BMA	
		2	Oligosaccharides: Sucrose.	BMA	
		3	Amino acids: Isoelectric point and pK values.	GK	
		4	Proteins: Properties and Classification.	GK	

MONTH/YEAR	WEEK	CLASS	PORTIONS	FACULTY
December 2023	4	1	Polysaccharides: Classification, Starch and glycogen.	BMA
		2	Polysaccharides: Cellulose and chitin.	BMA
		3	Structural organization of proteins – primary structure.	GK
		4	Structural organization of proteins- secondary structure; alpha & beta sheet.	GK
	1	1	Polysaccharides: glycoproteins and peptidoglycans.	BMA
		2	Unit 2 b) Enzymes: Introduction, definition and nomenclature.	BMA
		3	Structural organization of proteins- secondary structure- complete.	GK
		4	Structural organization of proteins: tertiary and quaternary structure.	GK
	2	1	Unit 2 b) Enzymes: Enzyme kinetics.	BMA
		2	Factors influencing enzyme activity.	BMA
		3	Denaturation and renaturation of proteins.	GK
		4	Unit 3 a): Lipids: Introduction and classification.	GK
	3	1	Coenzymes and their functions. Metalloenzymes.	BMA
		2	Enzyme inhibition- types with example.	BMA
		3	Lipids: Properties- Saponification, iodine number and rancidity.	GK
		4	Lipids: Hydrogenation of fatty acids and oils.	GK
	4	1	Zymogens and Isozymes.	BMA
		2	Unit 4 a): Electrophoresis: Introduction. Principle, procedure and applications of Agarose gel electrophoresis.	BMA
		3	Saturated and unsaturated fatty acids.	GK
		4	General structure & Biological functions of phospho, sphingo and glycol lipids.	GK

MONTH/YEAR	WEEK	CLASS	PORTIONS	FACULTY
January 2024	1	1	Principle, procedure and applications of SDS-PAGE.	BMA
		2	Unit 4 b) UV Spectrometry	BMA
		3	General structure & Biological functions of lipoproteins, prostaglandins & cholesterol.	GK
		4	Unit 3 a) Vitamins: water soluble vitamins.	GK
	2	1	Visible spectrometry	BMA
		2	Mass spectroscopy	BMA
		3	Fat soluble vitamins.	GK
		4	Unit 3 b) Nucelic acids: structure of purines and pyrimidines. Nucleosides & nucleotides in DNA.	GK
	3	1	Atomic Spectroscopy	BMA
		2	Absorption spectroscopy	BMA
		3	Unit 3 c) Hormones: Introduction and classification based on chemical nature.	GK
		4	Structure & functions of Glucagon, Cortisone & Epinephrine.	GK
	4	1	Discussion of Question bank.	BMA
		2	Structure & functions of Testosterone & Estradiol.	GK
		3	Discussion of Question bank	GK
		4	Revision.	GK