Maulana Azad College
Department of Microbiology
Lesson Plan 2019-20
Undergraduate Microbiology (Hons.)

SEMESTER 2							
Sem-2 (CC)	Jan-June, 2020	follow the latest notification by CU	DR. SAMUDRA PROSAD BANIK	MCB-A-CC-2-3-TH	BIOCHEMISTRY	Bioenergetics	8
						Proteins	14
				MCB-A-CC-2-4-TH	CELL BIOLOGY	Cell Cycle, Cell Death and Cell Renewal	6
			DR. AVISHEK GHOSH	MCB-A-CC-2-4-TH	CELL BIOLOGY	Protein Sorting & Transport	16
						Cell Cycle, Cell Death and Cell Renewal	10
			DR. ARPAN DAS	MCB-A-CC-2-3-TH	BIOCHEMISTRY	Enzymes	13
				MCB-A-CC-2-4-TH	CELL BIOLOGY	Nucleus	6
			MRS. BIPASHA ROY	MCB-A-CC-2-3-TH	BIOCHEMISTRY	Lipids	13
			DR. DEBALINA BHATTACHARYA	MCB-A-CC-2-3-TH	BIOCHEMISTRY	Vitamins	6
				MCB-A-CC-2-4-TH	CELL BIOLOGY	Structure & Organisation of Cell	16
			DR. BIKAS KUMAR KUNDU	MCB-A-CC-2-4-TH	CELL BIOLOGY	Cell Signaling	14
			DR. SUCHITRA SARKAR	MCB-A-CC-2-3-TH	BIOCHEMISTRY	Carbohydrates	14
			DR. SAMUDRA PROSAD BANIK DR. ARPAN DAS MRS. BIPASHA ROY DR. DEBALINA BHATTACHARYA DR. SUCHITRA SARKAR	MCB-A-CC-2-3-P	BIOCHEMISTRY (Practical)	1. Properties of water, Concept of pH and buffers, preparation of buffers and 1.Numerical problems to explain the concepts 2. Numerical problems on calculations of Standard Free Energy Change and Equilibrium constant 3. Standard Free Energy Change of coupled reactions 4. Qualitative/Quantitative tests for carbohydrates, reducing sugars, non reducing sugars 5. Qualitative/Quantitative tests for lipids and proteins 6. Study of protein secondary and tertiary structures with the help of models 7. Study of enzyme kinetics – calculation of *V*max , Km, Kcat values 8. Study effect of temperature, pH and Heavy metals on enzyme activity 9. Estimation of any one vitamin	80

			DR. AVISHEK GHOSH DR. DEBALINA BHATTACHARYA DR. BIKAS KUMAR KUNDU	MCB-A-CC-2-4-P	CELL BIOLOGY (Practical)	1. Study a representative plant and animal cell by microscopy. 2. Study of the structure of cell organelles through electron micrographs 3. Cytochemical staining of DNA – Feulgen 4. Demonstration of the presence of mitochondria in striated muscle cells/ cheek epithelial cell using vital stain Janus Green B 5. Study of polyploidy in Onion root tip by colchicine treatment. 6. Identification and study of cancer cells by photomicrographs. 7. Study of different stages of Mitosis. 8. Study of different stages of Meiosis.	80
SEMESTER 4							
Sem-4 (CC)	Jan-June, 2020	follow the latest notification by CU	DR. SAMUDRA PROSAD BANIK	MCB-A-CC-4-8-TH	MICROBIAL GENETICS	Phage Genetics	11
						Transposable Elements	14
				MCB-A-CC-4-9-TH	ENVIRONMENTAL MICROBIOLOGY	Water Potability	7
				MCB-A-CC-4-10-TH	RECOMBINANT DNA TECHNOLOGY	Applications of RDT	8
			DR. AVISHEK GHOSH	MCB-A-SEC-B-4-1	FOOD FERMENTATION TECHNIQUES	Unit 1- Unit 6	40
			DR. ARPAN DAS	MCB-A-CC-4-8-TH	MICROBIAL GENETICS	Mechanisms of Genetic Exchange	14
				MCB-A-CC-4-9-TH	ENVIRONMENTAL MICROBIOLOGY	Microorganisms & their Habitats	4
						Waste Management	13
			MRS. BIPASHA ROY	MCB-A-CC-4-8-TH	MICROBIAL GENETICS	Plasmids	11
				MCB-A-CC-4-9-TH	ENVIRONMENTAL MICROBIOLOGY	Microorganisms & their Habitats	5
						Microbial Interactions	7
				MCB-A-CC-4-10-TH	RECOMBINANT DNA TECHNOLOGY	Amplification and DNA sequencing	12
						Construction and Screening of Genomic and cDNA libraries	8
			DR. DEBALINA	MCB-A-CC-4-8-TH	MICROBIAL	Genome Organisation & Mutations	19

			BHATTACHARYA		GENETICS		
				MCB-A-CC-4-9-TH	ENVIRONMENTAL MICROBIOLOGY	Microorganisms & their Habitats	5
				MCB-A-CC-4-10-TH	RECOMBINANT DNA TECHNOLOGY	Methods in Molecular Cloning	16
			DR. BIKASH KUMAR KUNDU	MCB-A-CC-4-9-TH	ENVIRONMENTAL MICROBIOLOGY	Microorganisms & their Habitats	4
						Microbial Interactions	6
						Biogeochemical Cycling	14
			DR. SUCHITRA SARKAR	MCB-A-CC-4-10-TH	RECOMBINANT DNA TECHNOLOGY	Introduction to Genetic Engineering	3
						Molecular Cloning- Tools & Strategies	20
			DR. SAMUDRA PROSAD BANIK DR. SUCHITRA SARKAR DR. DEBALINA BHATTACHARYA MRS. BIPASHA ROY	MCB-A-CC-4-8-P	MICROBIAL GENETICS (PRACTICAL)	1. Preparation of Master and Replica Plates 2. Study the effect of chemical (HNO2) and physical (UV) mutagens on bacterial cells 3. Study survival curve of bacteria after exposure to ultraviolet (UV) light 4. Isolation of Plasmid DNA from *E.coli* 5. Study different conformations of plasmid DNA through Agaraose gel electrophoresis. 6. Demonstration of Bacterial Conjugation 7. Demonstration of bacterial transformation and transduction 8. Demonstration of AMES test	80
			DR. SAMUDRA PROSAD BANIK DR. BIKASH KUMAR KUNDU DR. ARPAN DAS DR. AVISHEK GHOSH	MCB-A-CC-4-9-P	ENVIRONMENTAL MICROBIOLOGY (PRACTICAL)	1. Analysis of soil - pH, moisture content, water holding capacity, percolation, capillary action. 2. Isolation of microbes (bacteria & fungi) from soil (28°C & 45°C). 3. Isolation of microbes (bacteria & fungi) from rhizosphere and rhizoplane. 4. Assessment of microbiological quality of water. 5. Determination of BOD of waste water sample. 6. Study the presence of microbial activity	80

						by detecting (qualitatively) enzymes (dehydrogenase, amylase, urease) in soil. 7. Isolation of *Rhizobium* from root nodules.	
			DR. DEBALINA BHATTACHARYA MRS. BIPASHA ROY DR. ARPAN DAS DR. AVISHEK GHOSH	MCB-A-CC-4-10-P		1. Preparation of competent cells for transformation 2. Demonstration of Bacterial Transformation and calculation of transformation efficiency. 3. Digestion of DNA using restriction enzymes and analysis by agarose gel electrophoresis 4. Ligation of DNA fragments 5. Cloning of DNA insert and Blue white screening of recombinants. 6. Interpretation of sequencing gel electropherograms 7. Designing of primers for DNA amplification 8. Amplification of DNA by PCR 9. Demonstration of Southern blotting	80