

Maulana Azad College
Department of Microbiology
Lesson Plan 2020-21
Undergraduate Microbiology (Hons.)

SEMESTER 1							
Semester	Period of Semester	Tentative Dates of University Exam* (*follow the latest notification by CU)	Name of the Faculty	Course Code	Paper Name	Brief Description of the Topics	No. of Lectures (45 min each)
Sem-1 (CC)	July-December	follow the latest notification by CU	Dr. Samudra Prosad Banik	MCB-A-CC-1-1-TH	Introduction To Microbiology And Microbial Diversity (Theory)	Unit 1 History of Development of Microbiology	20
			Dr. Bikas Kumar Kundu Mrs. Bipasha Roy Dr. Debalina Bhattacharya	MCB-A-CC-1-1-TH	Introduction To Microbiology And Microbial Diversity (Theory)	Unit 2 Diversity of Microbial World	40
			Dr. Debalina Bhattacharya	MCB-A-CC-1-1-TH	Introduction To Microbiology And Microbial Diversity (Theory)	Unit 3 An Overview of scope of Microbiology	7
			Dr. Samudra P. Banik, Dr. Bikas Kumar Kundu, Mrs. Bipasha Roy, Dr. Debalina Bhattacharya	MCB-A-CC-1-1-P	Introduction To Microbiology And Microbial Diversity (Practicals)		80
			Dr. Arpan Das	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 1: Cell organization	13
			Dr. Debalina Bhattacharya	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 2: Bacteriological techniques	7
			Dr. Arpan Das	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 3: Microscopy	8
			Dr. Suchitra Sarkar	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 4 Growth and nutrition	11

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			Mrs. Bipasaha Roy	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 5 Reproduction in Bacteria	4
			Dr. Avishek Ghosh	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 6 Bacterial Systematics	11
			Dr. Debalina Bhattacharya	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 7 Important archaeal and eubacterial groups	9
			Dr. Debalina Bhattacharya	MCB-A-CC-1-2-TH	Bacteriology (Theory)	Unit 7 Important archaeal and eubacterial groups	4
			Mrs. Bipasaha Roy, Dr. Arpan Das, Dr. Avishek Ghosh	MCB-A-CC-1-2-P	Bacteriology (Practicals)		80
SEMESTER 2							
Sem-2 (CC)	January-June	follow the latest notification by CU	Dr. Samudra P. Banik	MCB-A-CC-2-3-TH	CC-3: BIOCHEMISTRY (THEORY)	Unit 1 Bioenergetics	8
			Dr. Suchitra Sarkar	MCB-A-CC-2-3-TH	CC-3: BIOCHEMISTRY (THEORY)	Unit 2 Carbohydrates	13
			Mrs, Bipasha Roy	MCB-A-CC-2-3-TH	CC-3: BIOCHEMISTRY (THEORY)	Unit 3 Lipids	13
			Dr. Samudra P. Banik	MCB-A-CC-2-3-TH	CC-3: BIOCHEMISTRY (THEORY)	Unit 4 Proteins	13
			Dr. Arpan Das	MCB-A-CC-2-3-TH	CC-3: BIOCHEMISTRY (THEORY)	Unit 5. Enzymes	13
			Dr. Debalina Bhattacharya	MCB-A-CC-2-3-TH	CC-3: BIOCHEMISTRY (THEORY)	Unit 6: Vitamins	5
			Dr. Samudra P. Banik Dr. Suchitra Sarkar Mrs, Bipasha Roy Dr. Arpan Das Dr. Debalina Bhattacharya	MCB-A-CC-2-3-P	CC-3: BIOCHEMISTRY (PRACTICALS)		80
			Dr. Debalina Bhattacharya	MCB-A-CC-2-4-TH	CC-4: CELL BIOLOGY (THEORY)	Unit 1 Structure and organization of Cell	16
			Dr. Arpan Das	MCB-A-CC-2-4-TH	CC-4: CELL BIOLOGY (THEORY)	Unit 2 Nucleus	5
			Dr. Avishek Ghosh	MCB-A-CC-2-	CC-4: CELL BIOLOGY (THEORY)	Unit 3 Protein Sorting and Transport	16

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				4-TH			
			Dr. Bikas Kumar Kundu	MCB-A-CC-2-4-TH	CC-4: CELL BIOLOGY (THEORY)	Unit 4 Cell Signalling	10
			Dr. Avishek Ghosh	MCB-A-CC-2-4-TH	CC-4: CELL BIOLOGY (THEORY)	Unit 5 Cell Cycle, Cell Death and Cell Renewal	16
			Dr. Avishek Ghosh, Dr. Bikas Kumar Kundu	MCB-A-CC-2-4-P	CC-4: CELL BIOLOGY (PRACTICAL)		80
SEMESTER 3							
Sem-3 (CC)	July-December	follow the latest notification by CU	Dr. Avishek Ghosh	MCB-A-CC-3-5-TH	CC-5: VIROLOGY (THEORY)	Unit 1 Nature and Properties of Viruses	13
			Mrs. Bipasha Roy	MCB-A-CC-3-5-TH	CC-5: VIROLOGY (THEORY)	Unit 2 Bacteriophages	13
			Dr. Avishek Ghosh	MCB-A-CC-3-5-TH	CC-5: VIROLOGY (THEORY)	Unit 3 Viral Transmission, Salient features of viral nucleic acids and Replication	19
			Dr. Avishek Ghosh	MCB-A-CC-3-5-TH	CC-5: VIROLOGY (THEORY)	Unit 4 Viruses and Cancer	8
			Dr. Debalina Bhattacharya	MCB-A-CC-3-5-TH	CC-5: VIROLOGY (THEORY)	Unit 5 Prevention & control of viral diseases	8
			Dr. Debalina Bhattacharya	MCB-A-CC-3-5-TH	CC-5: VIROLOGY (THEORY)	Unit 6 Applications of Virology	5
			Dr. Avishek Ghosh Mrs. Bipasha Roy Dr. Debalina Bhattacharya	MCB-A-CC-3-5-P	CC-5: VIROLOGY (PRACTICAL)		80
			Mrs. Bipasha Roy	MCB-A-CC-3-6-TH	CC-6: MICROBIAL PHYSIOLOGY AND METABOLISM (THEORY)	Unit 1 Microbial Growth and Effect of Environment on Microbial Growth	13
			Mrs. Bipasha Roy	MCB-A-CC-3-6-TH	CC-6: MICROBIAL PHYSIOLOGY AND METABOLISM (THEORY)	Unit 2 Nutrient uptake and Transport	11
			Dr. Suchitra Sarkar	MCB-A-CC-3-6-TH	CC-6: MICROBIAL PHYSIOLOGY AND	Unit 3 Chemoheterotrophic Metabolism - Aerobic Respiration	13

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				METABOLISM (THEORY)		
		Dr. Suchitra Sarkar	MCB-A-CC-3-6-TH	CC-6: MICROBIAL PHYSIOLOGY AND METABOLISM (THEORY)	Unit 4 Chemoheterotrophic Metabolism- Anaerobic respiration and fermentation	8
		Dr. Bikas Kumar Kundu	MCB-A-CC-3-6-TH	CC-6: MICROBIAL PHYSIOLOGY AND METABOLISM (THEORY)	Unit 5 Chemolithotrophic and Phototrophic Metabolism	13
		Dr. Arpan Das	MCB-A-CC-3-6-TH	CC-6: MICROBIAL PHYSIOLOGY AND METABOLISM (THEORY)	Unit 6 Nitrogen Metabolism - an overview	8
		Dr. Arpan Das, Dr. Avishek Ghosh, Mrs Bipasa Roy, Dr. Samudra Prosad Banik	MCB-A-CC-3-6-P	CC-6: MICROBIAL PHYSIOLOGY AND METABOLISM (PRACTICAL)		80
		Dr. Samudra Prosad Banik	MCB-A-CC-3-7-TH	CC-7: MOLECULAR BIOLOGY (THEORY)	Unit 1 Structures of DNA and RNA / Genetic Material	13
		Dr. Samudra Prosad Banik	MCB-A-CC-3-7-TH	CC-7: MOLECULAR BIOLOGY (THEORY)	Unit 2 Replication of DNA (Prokaryotes and Eukaryotes)	11
		Dr. Samudra Prosad Banik	MCB-A-CC-3-7-TH	CC-7: MOLECULAR BIOLOGY (THEORY)	Unit 3 Transcription in Prokaryotes and Eukaryotes	11
		Dr. Debalina Bhattacharya	MCB-A-CC-3-7-TH	CC-7: MOLECULAR BIOLOGY (THEORY)	Unit 4 Post-Transcriptional Processing	8
		Dr. Debalina Bhattacharya	MCB-A-CC-3-7-TH	CC-7: MOLECULAR BIOLOGY (THEORY)	Unit 5 Translation (Prokaryotes and Eukaryotes)	11
		Mrs. Bipasha Roy	MCB-A-CC-3-7-TH	CC-7: MOLECULAR BIOLOGY (THEORY)	Unit 6 Regulation of gene Expression in Prokaryotes and Eukaryotes	13
		Dr. Samudra Prosad Banik Dr. Avishek Ghosh Dr. Suchitra Sarkar	MCB-A-CC-3-7-P	CC-7: MOLECULAR BIOLOGY (PRACTICAL)		80
		Dr. Arpan Das	MCB-A-SEC-A-3-2	SEC-A2: BIOFERTILIZERS AND BIOPESTICIDES	Unit 1 Biofertilizers	13
		Dr. Arpan Das	MCB-A-SEC-A-3-2	SEC-A2: BIOFERTILIZERS AND	Unit 2 Non - Symbiotic Nitrogen Fixers	5

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					BIOPESTICIDES		
			Dr. Suchitra Sarkar	MCB-A-SEC-A-3-2	SEC-A2: BIOFERTILIZERS AND BIOPESTICIDES	Unit 3 Phosphate Solubilizers	5
			Dr. Bikas Kumar Kundu	MCB-A-SEC-A-3-2	SEC-A2: BIOFERTILIZERS AND BIOPESTICIDES	Unit 4 Mycorrhizal Biofertilizers	7
			Dr. Arpan Das	MCB-A-SEC-A-3-2	SEC-A2: BIOFERTILIZERS AND BIOPESTICIDES	Unit 5 Bioinsecticides	9
SEMESTER 4							
Sem-4 (CC)	January-June	follow the latest notification by CU	Dr. Debalina Bhattacharya	MCB-A-CC-4-8-TH	CC-8: MICROBIAL GENETICS (THEORY)	Unit 1 Genome Organization and Mutations	19
			Mrs. Bipasha Roy	MCB-A-CC-4-8-TH	CC-8: MICROBIAL GENETICS (THEORY)	Unit 2 Plasmids	11
			Dr. Arpan Das	MCB-A-CC-4-8-TH	CC-8: MICROBIAL GENETICS (THEORY)	Unit 3 Mechanisms of Genetic Exchange	13
			Dr. Samudra Prosad Banik	MCB-A-CC-4-8-TH	CC-8: MICROBIAL GENETICS (THEORY)	Unit 4 Phage Genetics	11
			Dr. Samudra Prosad Banik	MCB-A-CC-4-8-TH	CC-8: MICROBIAL GENETICS (THEORY)	Unit 5 Transposable elements	13
			Dr. Debalina Bhattacharya Dr Samudra Prosad Banik Mrs. Bipasha Roy Dr. Suchitra Sarkar	MCB-A-CC-4-8-P	CC-8: MICROBIAL GENETICS (PRACTICAL)		
			Dr. Bikas Kumar Kundu, Dr. Arpan Das, Mrs. Bipasha Roy, Dr. Debalina Bhattacharya	MCB-A-CC-4-9-TH	CC-9: ENVIRONMENTAL MICROBIOLOGY (THEORY)	Unit 1 Microorganisms and their Habitats	13
			Dr. Bikas Kumar Kundu, Mrs. Bipasha Roy	MCB-A-CC-4-9-TH	CC-9: ENVIRONMENTAL MICROBIOLOGY (THEORY)	Unit 2 Microbial Interactions	13
			Dr. Bikas Kumar Kundu	MCB-A-CC-4-9-TH	CC-9: ENVIRONMENTAL MICROBIOLOGY	Unit 3 Biogeochemical Cycling	13

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				(THEORY)		
		Dr. Arpan Das	MCB-A-CC-4-9-TH	CC-9: ENVIRONMENTAL MICROBIOLOGY (THEORY)	Unit 4 Waste Management	13
		Dr. Arpan Das	MCB-A-CC-4-9-TH	CC-9: ENVIRONMENTAL MICROBIOLOGY (THEORY)	Unit 5 Microbial Bioremediation	7
		Dr Samudra Prosad Banik	MCB-A-CC-4-9-TH	CC-9: ENVIRONMENTAL MICROBIOLOGY (THEORY)	Unit 6 Water Potability	7
		Dr. Bikas Kumar Kundu, Dr. Arpan Das, Mrs. Bipasha Roy, Dr. Debalina Bhattacharya, Dr Samudra Prosad Banik	MCB-A-CC-4-9-P	CC-9: ENVIRONMENTAL MICROBIOLOGY (PRACTICAL)		
		Dr. Suchitra Sarkar	MCB-A-CC-4-10-TH	CC-10: RECOMBINANT DNA TECHNOLOGY (THEORY)	Unit 1 Introduction to Genetic Engineering	3
		Dr. Suchitra Sarkar	MCB-A-CC-4-10-TH	CC-10: RECOMBINANT DNA TECHNOLOGY (THEORY)	Unit 2 Molecular Cloning- Tools and Strategies	20
		Dr. Debalina Bhattacharya	MCB-A-CC-4-10-TH	CC-10: RECOMBINANT DNA TECHNOLOGY (THEORY)	Unit 3 Methods in Molecular Cloning	16
		Mrs. Bipasha Roy	MCB-A-CC-4-10-TH	CC-10: RECOMBINANT DNA TECHNOLOGY (THEORY)	Unit 4 DNA Amplification and DNA sequencing	12
		Mrs. Bipasha Roy	MCB-A-CC-4-10-TH	CC-10: RECOMBINANT DNA TECHNOLOGY (THEORY)	Unit 5 Construction and Screening of Genomic and cDNA libraries	8
		Dr. Samudra Prosad Banik	MCB-A-CC-4-10-TH	CC-10: RECOMBINANT DNA TECHNOLOGY (THEORY)	Unit 6 Applications of Recombinant DNA Technology	8
		Dr. Suchitra Sarkar,	MCB-A-CC-4-	CC-10: RECOMBINANT		80

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			Mrs. Bipasha Roy, Dr. Debalina Bhattacharya, Dr. Samudra Prosad Banik	10-P	DNA TECHNOLOGY (PRACTICAL)		
				MCB-A-SEC- B-4-1	SEC-B1: FOOD FERMENTATION TECHNIQUES	Unit 1 Fermented Foods Unit 2 Milk Based Fermented Foods Unit 3 Grain Based Fermented Foods Unit 4 Vegetable Based Fermented Foods Unit 5 Fermented Meat and Fish Unit 6 Probiotic Foods	40
SEMESTER 5							
Sem-5	July- December	follow the latest notification by CU	Mrs. Bipasha Roy	MCB-A-CC-5- 11-TH	CC-11: FOOD AND DAIRY MICROBIOLOGY (THEORY)	Unit 1 Foods as a substrate for microorganisms	8
			Mrs. Bipasha Roy	MCB-A-CC-5- 11-TH	CC-11: FOOD AND DAIRY MICROBIOLOGY (THEORY)	Unit 2 Microbial spoilage of various foods	11
			Mrs. Bipasha Roy	MCB-A-CC-5- 11-TH	CC-11: FOOD AND DAIRY MICROBIOLOGY (THEORY)	Unit 3 Principles and methods of food preservation	11
			Dr. Avishek Ghosh	MCB-A-CC-5- 11-TH	CC-11: FOOD AND DAIRY MICROBIOLOGY (THEORY)	Unit 4 Fermented foods	11
			Dr. Avishek Ghosh	MCB-A-CC-5- 11-TH	CC-11: FOOD AND DAIRY MICROBIOLOGY (THEORY)	Unit 5 Food borne diseases (causative agents, foods involved, symptoms and preventive measures)	13
			Dr. Avishek Ghosh	MCB-A-CC-5- 11-TH	CC-11: FOOD AND DAIRY MICROBIOLOGY (THEORY)	Unit 6 Food sanitation and control	7
			Dr. Avishek Ghosh	MCB-A-CC-5- 11-TH	CC-11: FOOD AND DAIRY MICROBIOLOGY (THEORY)	Unit 7 Cultural and rapid detection methods of food borne pathogens in foods and introduction to predictive microbiology.	7
			Dr. Avishek Ghosh Mrs. Bipasha Roy	MCB-A-CC-5- 11-P	C-11: FOOD AND DAIRY MICROBIOLOGY		80

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			(PRACTICAL)			
		Dr. Arpan Das	MCB-A-CC-5-12-TH	CC-12: INDUSTRIAL MICROBIOLOGY (THEORY)	Unit 1 Introduction to industrial microbiology	3
		Dr. Arpan Das	MCB-A-CC-5-12-TH	CC-12: INDUSTRIAL MICROBIOLOGY (THEORY)	Unit 2 Isolation of industrially important microbial strains and fermentation media	13
		Dr. Arpan Das	MCB-A-CC-5-12-TH	CC-12: INDUSTRIAL MICROBIOLOGY (THEORY)	Unit 3 Types of fermentation processes, bio-reactors and measurement of fermentation parameters	16
		Dr. Arpan Das	MCB-A-CC-5-12-TH	CC-12: INDUSTRIAL MICROBIOLOGY (THEORY)	Unit 4 Down-stream processing	8
		Dr. Debalina Bhattacharya	MCB-A-CC-5-12-TH	CC-12: INDUSTRIAL MICROBIOLOGY (THEORY)	Unit 5 Microbial production of industrial products (micro-organisms involved, media, fermentation conditions, downstream processing and uses)	24
		Dr. Arpan Das	MCB-A-CC-5-12-TH	CC-12: INDUSTRIAL MICROBIOLOGY (THEORY)	Unit 6 Enzyme immobilization	5
		Dr. Arpan Das Dr. Debalina Bhattacharya	MCB-A-CC-5-12-P	CC-12: INDUSTRIAL MICROBIOLOGY (PRACTICAL)		80
		Dr. Samudra Prosad Banik	MCB-A-DSE-A-5-2-TH	DSE-A2: ADVANCES IN MICROBIOLOGY (THEORY)	Unit 1: Evolution of Microbial Genomes	13
		Dr. Debalina Bhattacharya	MCB-A-DSE-A-5-2-TH	DSE-A2: ADVANCES IN MICROBIOLOGY (THEORY)	Unit 2: Metagenomics	20
		Mrs. Bipasha Roy	MCB-A-DSE-A-5-2-TH	DSE-A2: ADVANCES IN MICROBIOLOGY (THEORY)	Unit 3 Molecular Basis of Host-Microbe Interactions	10
		Dr. Bikas Kumar	MCB-A-DSE-	DSE-A2:	Unit 3 Molecular Basis of Host-Microbe	11

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			Kundu	A-5-2-TH	ADVANCES IN MICROBIOLOGY (THEORY)	Interactions	
			Dr. Suchitra Sarkar	MCB-A-DSE-A-5-2-TH	DSE-A2: ADVANCES IN MICROBIOLOGY (THEORY)	Unit 4 Systems and Synthetic Biology	13
			Dr. Suchitra Sarkar Dr. Debalina Bhattacharya	MCB-A-DSE-A-5-2-P	DSE-A: 2.ADVANCES IN MICROBIOLOGY (PRACTICAL)		80
			Dr. Samudra Prosad Banik	MCB-A-DSE-B-6-1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 1 Introduction to Genetics	7
			Dr. Bikas Kumar Kundu	MCB-A-DSE-B-6-1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 2 Mendelian Principles	11
			Dr. Bikas Kumar Kundu	MCB-A-DSE-B-6-1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 3 Linkage and Crossing over	8
			Dr. Suchitra Sarkar	MCB-A-DSE-B-6-1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 4 Unit 4 Extra-Chromosomal Inheritance	9
			Dr. Samudra Prosad Banik	MCB-A-DSE-B-6-1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 5 Characteristics of Chromosomes	20
			Mrs. Bipasha Roy	MCB-A-DSE-B-6-1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 6 Recombination	4
			Dr. Suchitra Sarkar	MCB-A-DSE-B-6 -1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 7 Human genetics	4
			Dr. Avishek Ghosh	MCB-A-DSE-B-6-1-TH	DSE-B1: INHERITANCE BIOLOGY (THEORY)	Unit 8 Quantitative genetics	4
			Dr. Bikas Kumar Kundu Dr. Samudra Prosad Banik	MCB-A-DSE-B-6-1-P	DSE-B: 1. INHERITANCE BIOLOGY (PRACTICAL)		80