

**ACADEMIC PLAN FOR THE DEPARTMENT OF MICROBIOLOGY**
**SESSION:2020-21 (ODD SEMESTER)**

SEMESTER	PAPER	UNIT	TEACHER		No. of class hours allotted per week (as per class routine)		Total no. of class hours required in the session (Approx.)		Duration (in month)	Remark (if any)
			Theory	Practical/Tutorial	Theory	Practical/Tutorial	Theory	Practical/Tutorial		
<b>I<sup>st</sup> Semester (UG) (CBCS)</b>	<b>CC-1: INTRODUCTION TO MICROBIOLOGY AND MICROBIAL DIVERSITY</b>	Unit 1: History of Development of Microbiology	Dr. Sampa Debnath	Dr. Saswati Gayen Dr. Surajit Bag	1	4	50	60	4	
		Unit 3: An overview of Scope of Microbiology			1					
		Unit 2: Diversity of Microbial World	Dr. Saswati Gayen		3					
		Unit 2A: Systems of classification								
		Unit 2B: General characteristics of different groups								
		Unit 2B: Fungi	Dr. Surajit Bag							
		Unit 2B: Algae								
	Unit 2B: Protozoa									
	<b>CC-2: BACTERIOLOGY</b>	Unit 1: Cell organization	Dr. Prasenjit Das	Miss Sahana Ghosh	2	4	50	60	4	
		Unit 6: Bacterial Systematics			1					
		Unit 7: Important archaeal and eubacterial groups	Mr. Pinaki Hazra							
		Unit 2: Bacteriological techniques								
		Unit 3: Microscopy	Miss Sahana Ghosh		1					
Unit 4: Growth and nutrition										
Unit 5: Reproduction in Bacteria										

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<b>III<sup>rd</sup> Semester (UG) (CBCS)</b>	<b>CC-5: VIROLOGY</b>	Unit 1: Nature and Properties of Viruses	Dr. Shilajit Barua	Dr. Shilajit Barua	1	4	50	60	4	<b>SEC-A1 paper does not contain any Practical/Tutorial according to the CBCS syllabus</b>
		Unit 6: Applications of Virology	Dr. Sudip Samadder		2					
		Unit 2: Bacteriophages								
		Unit 4: Viruses and Cancer								
		Unit 5: Prevention & control of viral diseases	Dr. Arun Roy		1					
	Unit 3: Viral Transmission, Salient features of viral nucleic acids and Replication	Dr. Prasenjit Das	2							
	Unit 1: Microbial Growth and Effect of Environment on Microbial Growth									
	Unit 2: Nutrient uptake and Transport									
	Unit 6: Nitrogen Metabolism									
	Unit 3: Chemoheterotrophic Metabolism - Aerobic Respiration			Dr. Sampa Debnath	2					
	Unit 4: Chemoheterotrophic Metabolism- Anaerobic respiration and fermentation									
	Unit 5: Chemolithotrophic and Phototrophic Metabolism									
	<b>CC-7: MOLECULAR BIOLOGY</b>	Unit 1: Structures of DNA and RNA / Genetic Material	Dr. Gargi Saha Kesh	2	Dr. Gargi Saha Kesh	4	50	60	4	
		Unit 3: Transcription in Prokaryotes and Eukaryotes								
		Unit 4: Post-Transcriptional Processing								
		Unit 5: Translation (Prokaryotes and Eukaryotes)	Mr. Pinaki Hazra	1						
		Unit 2: Replication of DNA (Prokaryotes and Eukaryotes)	Dr. Arun Roy	1						
	Unit 6: Regulation of gene Expression in Prokaryotes and Eukaryotes	Dr. Saswati Gayen	2							
Unit 1: Microbiological Laboratory and Safe Practices										
Unit 3: Pathogenic Microorganisms of Importance in Food & Water										
Unit 4: HACCP for Food Safety and Microbial Standards										
<b>SEC-A1: MICROBIAL QUALITY CONTROL IN FOOD AND PHARMACEUTICAL INDUSTRIES</b>	Unit 2: Determining Microbes in Food / Pharmaceutical Samples	Dr. Surajit Bag	1							

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V <sup>th</sup> Semester (UG) (CBCS)	CC-11: FOOD AND DAIRY MICRO BIOLOGY	Unit 1: Foods as a substrate for microorganisms	Miss Sahana Ghosh	Dr. Gargi Saha Kesh	1	4	50	60	4	
		Unit 2: Microbial spoilage of various foods								
		Unit 3: Principles and methods of food preservation	Dr. Surajit Bag		1					
		Unit 4: Fermented foods	Dr. Saswati Gayen		2					
		Unit 5: Food borne diseases (causative agents, foods involved, symptoms and preventive measures)								
		Unit 6: Food sanitation and control								
		Unit 7: Cultural and rapid detection methods of food borne pathogens in foods and introduction to predictive microbiology								
	CC-12: INDUSTRIAL MICRO BIOLOGY	Unit 1: Introduction to industrial microbiology	Dr. Shilajit Barua	Dr. Shilajit Barua Dr. Surajit Bag	2	4	50	60	4	
		Unit 2: Isolation of industrially important microbial strains and fermentation media								
		Unit 3: Types of fermentation processes, bio-reactors and measurement of fermentation parameters								
		Unit 4: Down-stream processing	Dr. Surajit Bag		2					
		Unit 5: Microbial production of industrial products (micro-organisms involved, media, fermentation conditions, downstream processing and uses)								
		Unit 6: Enzyme immobilization								

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V <sup>th</sup> Semester (UG) (CBCS)	<b>DSE-A1: MICROBIAL BIOTECHNOL OGY</b>	Unit 1: Microbial Biotechnology and its Applications	Dr. Sudip Samadder	Dr. Saswati Gayen	2	4	50	60	4	
		Unit 2: Therapeutic and Industrial Biotechnology								
		Unit 6: RNAi								
		Unit 7: Intellectual Property Rights								
		Unit 3: Applications of Microbes in Biotransformations	Dr. Gargi Saha Kesh		2					
		Unit 4: Microbial Products and their Recovery								
		Unit 5 Microbes for Bio-energy and Environment								
	<b>DSE-B1: INHERITANCE BIOLOGY</b>	Unit 1: Introduction to Genetics	Mr. Pinaki Hazra	Dr. Prasenjit Das	1	4	50	60	4	
		Unit 4: Extra-Chromosomal Inheritance								
		Unit 6: Recombination								
		Unit 8: Quantitative genetics								
		Unit 2: Mendelian Principles	Dr. Prasenjit Das		3					
		Unit 3: Linkage and Crossing over								
		Unit 5: Characteristics of Chromosomes								
Unit 7: Human genetics										