Semester	Paper	Unit	Topic	JULY – SEPTEMBER/ OCTOBER-DECEMBER	Faculty Name
Semester I (General)	**MCB-G-CC-1-1-TH CC-1/GE1: INTRODUCTION AND SCOPE OF MICROBIOLOGY Marks: 50; Credits: 4**	I	History of Development of Microbiology	July	Dr. Priya K Gopal
		II	Diversity of Microorganisms	July-August	-do-
		III	Microscopy	September	-do-
		IV	Sterilization	August	-do-
		V	Microbes in Human Health & Environment	September	-do-
		VI	Industrial Microbiology	September-October	-do-
		VII	Food and Dairy Microbiology	November	-do-
	MCB-G-CC-1-1-P INTRODUCTION AND SCOPE OF MICROBIOLOGY (PRACTICALS) Marks: 30; Credits: 2	1	Microbiology Laboratory Management and Biosafety	July	-do-
		2	To study the principle and applications of important instruments (biological safety cabinets, autoclave, incubator, BOD incubator, hot air oven, light microscope, pH meter) used in the microbiology laboratory	July	-do-
		3	Preparation of culture media for bacterial cultivation	August	-do-
		4	Sterilization of medium using Autoclave and assessment for sterility	August	-do-
		5	Study of different shapes of bacteria using permanent slides	September	-do-
		6	Study of *Rhizopus*, *Penicillium*, *Spirogyra*, *Chlamydomonas*, *Amoeba*, *Entamoeba*, *Paramecium* and *Plasmodium* using permanent mounts	November	-do-

Semester III & V (General) SEC PAPER	**MCB-G-SEC-A-3/5-3-TH Microbial Quality Control in Food and Pharmaceutical Industries**	I	Microbiological Laboratory and Safe Practices	July	Dr. Priya K Gopal
		II	Determining Microbes in Food / Pharmaceutical Samples	August	-do-
		III	Pathogenic Microorganisms of Importance in Food & Water	September-October	-do-
		IV	HACCP for Food Safety and Microbial Standards	November-December	-do-
Semester III (General)	**MCB-G-CC-3-3-TH CC-3/GE3: MICROBIAL METABOLISM Marks: 50; Credits: 4**	I	Microbial Growth and Effect of Environment on Microbial Growth	July	Dr. Priya K Gopal
		II	Nutrient uptake and Transport	August	-do-
		III	Chemoheterotrophic Metabolism - Aerobic Respiration	September	-do-
		IV	Chemoheterotrophic Metabolism- Anaerobic respiration and fermentation	September-October	-do-
		V	Chemolithotrophic and Phototrophic Metabolism	November	-do-
		VI	Nitrogen Metabolism - an overview	December	-do-
	MCB-G-CC-3-3-P CC-3/GE3: MICROBIAL METABOLISM (PRACTICAL) Marks: 30; Credits: 2	1	Study and plot the growth curve of *E. coli* by tubidiometric and standard plate count methods	July	Dr. Priya K Gopal
		2	Calculations of generation time and specific growth rate of bacteria from the graph plotted with the given data	July	-do-
		3	Effect of temperature on growth of *E. coli*	August	-do-
		4	Effect of pH on growth of *E. coli*	September-October	-do-
		5	Effect of salt on growth of *E. coli*	November	-do-

Semester V (General)	**MCB-G-DSE-A-5-1-TH DSE-A: 1. GENETIC ENGINEERING AND BIOTECHNOLOGY (THEORY) Marks: 50; Credits: 4**	I	Introduction to genetic engineering	July	Dr. Priya K Gopal
		II	Vectors	July-August	-do-
		III	DNA Amplification and DNA sequencing	August	-do-
		IV	Application of Genetic Engineering and Biotechnology	September-November	-do-
		V	Intellectual Property Rights	December	-do-
	MCB-G-DSE-A-5-1-P DSE-A: 1. GENETIC ENGINEERING AND BIOTECHNOLOGY (PRACTICAL) Marks: 30; Credits: 2	1	Isolation of Plasmid DNA from E.coli	July-August	Dr. Priya K Gopal
		2	Digestion of DNA using restriction enzymes and analysis by agarose gel electrophoresis	August	-do-
		3	Interpretation of sequencing gel electropherograms	September	-do-
		4	Designing of primers for DNA amplification	November	-do-
		5	Demonstration of Southern blotting	November-December	-do-

MCBG Even Semester Syllabus Distribution

Semester	Paper	Unit	Topic	JULY – SEPTEMBER/ OCTOBER-DECEMBER	Faculty Name
Semester II (General)	**MCB-G-CC-2-2-TH CC-2/GE2: BACTERIOLOGY AND VIROLOGY (THEORY) Marks: 50; Credits: 4**	I	Cell organization	January	Dr. Priya K Gopal
		II	Bacterial growth and control	February	-do-
		III	Bacterial Systematics and Taxonomy	March	-do-
		IV	Introduction to Viruses	March-April	-do-
		V	Structure, and multiplication of viruses	May	-do-
		VI	Role of Viruses in Disease and its prevention	May	-do-
	MCB-G-CC-2-2-P CC-2/GE2: BACTERIOLOGY AND	1	Preparation of different media: Nutrient agar, Nutrient broth	February	-do-

	VIROLOGY (PRACTICAL) Marks: 30; Credits: 2	2	To perform simple staining and Gram's staining of the bacterial smear	March	-do-
		3	To perform spore staining	April	-do-
		4	Isolation of pure cultures of bacteria by streaking method	April	-do-
		5	Enumeration of colony forming units (CFU) count by spread plate method/pour plate	May	-do-
		6	Study the morphological structures of viruses (DNA and RNA) and their important characters using electron micrographs	June	-do-
SEC PAPER Semester IV & VI (General)	**MCB-G-SEC-B-4/6-2-TH SEC-B: 1. MICROBIOLOGICAL ANALYSIS OF AIR AND WATER (THEORY)**	I	Aeromicrobiology	Feb-March	Dr. Priya K Gopal
		II	Air Sample Collection and Analysis	March	-do-
		III	Control Measures	April	-do-
		IV	Water Microbiology	May	-do-
		V	Microbiological Analysis of Water	May	-do-
		VI	Control Measures	May-June	-do-
Semester IV (General)	**MCB-G-CC-4-4-TH CC-4/GE4: MICROBIAL GENETICS AND MOLECULAR BIOLOGY Marks: 50; Credits: 4**	I	Structures of DNA and RNA / Genetic Material	Feb-March	Dr. Priya K Gopal
		II	Replication of DNA	March	-do-
		III	Transcription	April	-do-
		IV	Translation	May	-do-
		V	Regulation of gene Expression	May	-do-
		VI	Mutations	May-June	-do-
		VII	Mechanisms of Genetic Exchange Transformation	June	-do-
		VIII	Plasmids and Transposable Elements	June	-do-
	MCB-G-CC-4-4-P	1	Study of different types of DNA and RNA using	Feb-March	Dr. Priya K Gopal

	CC-4/GE4: MICROBIAL GENETICS AND MOLECULAR BIOLOGY (PRACTICAL) Marks: 30; Credits: 2		micrographs and model / schematic representations		
		2	Study of semi-conservative replication of DNA through micrographs /schematic representations	March	-do-
		3	Estimation of salmon sperm / calf thymus DNA using colorimeter (diphenylamine reagent) or UV spectrophotometer (A260 measurement)	April	-do-
		4	Resolution and visualization of DNA by Agarose Gel Electrophoresis	May	-do-
		5	Study survival curve of bacteria after exposure to ultraviolet (UV) light	May	-do-
		6	Demonstration of Bacterial transformation and calculation of transformation efficiency.	May-June	-do-
Semester VI (General)	**MCB-G-DSE-B-6-1-TH DSE-B: 1. MEDICAL MICROBIOLOGY AND IMMUNOLOGY (THEORY) Marks: 50; Credits: 4**	I	Normal microflora of the human body and host pathogen interaction	Feb	Dr. Priya K Gopal
		II	Sample collection, transport and diagnosis	Feb	-do-
		III	Bacterial diseases	March	-do-
		IV	Viral diseases	March	-do-
		V	Protozoan diseases	March	-do-
		VI	Fungal diseases	April	-do-
		VII	Antimicrobial agents: General characteristics and mode of action	April	-do-
		VIII	Immune Cells and Organs	April	-do-
		IX	Antigens and Antibodies	May	-do-

		X	Generation of Immune Response	May	-do-
		XI	Immunological Disorders and Tumor Immunity	May-June	-do-
		XII	Immunological Techniques	June	-do-
	MCB-G-DSE-B-6-1-P DSE-B: 1. MEDICAL MICROBIOLOGY AND IMMUNOLOGY (PRACTICAL) Marks: 30; Credits: 2	1	Identify bacteria on the basis of cultural, morphological and biochemical characteristics: IMViC, TSI, nitrate reduction, urease production and catalase tests	March	Dr. Priya K Gopal
		2	Study of composition and use of important differential media for identification of bacteria: EMB Agar, McConkey agar, Mannitol salt agar, Deoxycholate citrate agar, TCBS	April	-do-
		3	Perform antibacterial sensitivity by Kirby-Bauer method	April	-do-
		4	Identification of human blood groups	May-June	-do-
		5	To perform Total Leukocyte Count of the given blood sample	May-June	-do-
		6	To perform immunodiffusion by Ouchterlony method	May-June	-do-