

COURSE CURRICULUM FRAMEWORK UNDER AUTONOMY

Program: B.Sc.

Department: Microbiology

Semester I		
Course Code	Course Title	Credits
SMIC 101	Fundamentals of Microbiology Introduction To Microbiology and Prokaryotic cell structure Biosafety and Biomolecules Nucleic Acid Structure and Chemistry	2
SMIC 102	Basic Techniques in Microbiology Microscopy & Staining Controlling Microbial Growth in the environment Microbial Nutrition, Cultivation, Isolation and Preservation	2
SMIC1PR	Practicals based on Fundamentals of Microbiology and Basic techniques in Microbiology	2
Semester II		
Course Code	Course Title	Credits
SMIC 201	Microbial Diversity Study of Different Groups of Microbes-I Study of Different Groups of Microbes-II Microbial growth	2
SMIC 202	Exploring Microbiology Tools of the Laboratory Microbial Interactions Microbe-Human Interactions: Infection and Disease	2
SMIC2PR	Practicals based on Microbial Diversity and Exploring Microbiology	2

Semester III		
Course Code	Course Title	Credits
SMIC301	Essentials of Molecular Biology Principles of Inheritance Molecular techniques based on nucleic acids Replication in prokaryotes & eukaryotes	3
SMIC302	Research methodology, Biostatistics and Analytical techniques Estimation of biomolecules and Instrumentation-I Instrumentation-II Research methodology and Biostatistics	3
SMIC303	Environmental and Applied Microbiology Aeromicrobiology and Soil microbiology Aquatic and Wastewater Microbiology Applied Microbiology	3
SMIC3PR	Practicals based on SMIC301, SMIC302, SMIC303	3
Semester IV		
Course Code	Course Title	Credits
SMIC401	Microbial Biochemistry Thermodynamics and Introduction to Metabolism Enzyme Kinetics Transcription and Translation	3
SMIC402	Taxonomy and Basics in Immunology Non –specific Host resistance Diagnostic Microbiology Classification and taxonomy	3
SMIC403	Food and Industrial Microbiology Food microbiology Dairy microbiology Industrial Microbiology	3
SMIC4PR	Practicals based on SMIC401, SMIC402, SMIC403	3

Semester V		
Course Code	Course Title	Credits
SMIC501	Microbial Genetics and Cell Biology Mutation and DNA Repair Genetic Exchange & Homologous Recombination Cell Biology Cell Signalling	04
SMIC502	Medical Microbiology & Immunology: Part-I Bacterial Strategies for Evasion and Study of a Few Diseases (Respiratory Tract and Urinary Tract) Study of G.I Tract and Skin Infections General Immunology-I General Immunology-II	04
SMIC503	Microbial Biochemistry: Part – I Biological Membranes & Transport Bioenergetics & Bioluminescence Methods of Studying Metabolism & Catabolism of Carbohydrates Fermentative Pathways and Anabolism of Carbohydrates	04
SMIC504	Bioprocess Technology: Part – I Strain Improvement and Inoculum Development Types of Fermenters and Sterilization Scale up, Scale down of Fermentation and Downstream Processes Traditional Fermentations	04
SMIC5PR1	Practicals Based on SMIC501 and SMIC502	04
SMIC5PR2	Practicals Based on SMIC503 and SMIC504	04
Semester VI		
Course Code	Course Title	Credits

SMIC601	rDNA TECHNOLOGY, BIOINFORMATICS & VIROLOGY Recombinant DNA Technology Applications of rDNA Technology & Bioinformatics Regulation & Basic Virology Advanced Virology	04
SMIC602	MEDICAL MICROBIOLOGY AND IMMUNOLOGY PART-II Study of vector borne, sexually transmitted and CNS infections Chemotherapy of infectious agents Immunology –I Immunology –II	04
SMIC603	MICROBIAL BIOCHEMISTRY: PART-II Lipid Metabolism & Catabolism of Hydrocarbons Metabolism of Proteins and Nucleic Acids Metabolic Regulation Prokaryotic Photosynthesis & Inorganic Metabolism	04
SMIC604	BIOPROCESS TECHNOLOGY- PART-II Advances in bioprocess technology Pharmaceutical microbiology Instrumentation and IPR Industrial fermentations	04
SMIC6PR1	Practicals Based on SMIC601 and SMIC602	04
SMIC6PR2	Practicals Based on SMIC603 and SMIC604	04

Applied Component: Food Production and Processing

Semester V		
Course Code	Course Title	Credits
SMIC5AC	FOOD PRODUCTION AND PROCESSING (General Principles) Food Science and Nutrition Traditional Production Methods Principles of Food Processing Principles and Methods of Food Preservation	2.5
SMIC5ACPR	Practicals based on SMIC5AC	2.5
Semester VI		
SMIC6AC	Food Production and Processing (Applications and Q.A) Modern Methods of Food production Production of Fermented Food and Beverages Food Safety and Quality Assurance Food Packaging and Marketing	2.5
SMIC6ACPR	Practicals based on SMIC6AC	2.5