SEMESTER I

B.Sc Microbiology

Remember, Understand, Apply, Analyze, Evaluate, Create : R, U, Ap, Az, E, C

THEORY

Name of the Course: P I General Microbiology			
Sem- I	**Credits: 4**	**Course Code : MIC102**	**Year/Group: I B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Understand the cell structuresof Prokaryotic & Eukaryotic microbes, Viruses and gain the knowledge on Scope and applications of microbiologyin different sectors of Human Life.		
CO2	Study the principles and applications of various microscopes and learn the concepts of sterilization. .		
CO3	Comprehend basic concepts of the nutritional requirements, metabolism and cultivation methods of different physiological groups of bacteria .		
CO4	Comprehend basic concepts of microbial growth and methods of measurement and study the techniques of isolation and preservation of pure cultures.		

PRACTICALS

Name of the Course: P I General Microbiology			
Sem-I	**Credits: 1**	**Course Code: MIC102P**	**Year/Group: I B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Learn essential skills in microbiology and develop strong foundation in microbiological techniques.		

SEMESTER I

AECC1A

Name of the Course: AECC1A Environmental Science			
Sem-I	**Credits: 2**	**Course Code:**	**Year/Group: I B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Demonstrate knowledge of key environmental concepts, including ecosystems, biodiversity and sustainability		
CO2	Integrate knowledge from various disciplines (science, policy, economics) to address complex environmental challenges.		

SEMESTER II

B.Sc Microbiology

THEORY

Name of the Course: P I General Microbiology and Microbial Physiology			
Sem- II	**Credits: 4**	**Course Code : MIC202**	**Year/Group: I B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Understand the concept of Biodiversity & its Conservation as well as various systems of classification of Living Organisms		
CO2	Comprehend the basic characteristics of prokaryotic and eukaryotic Cell and Understand the Metabolic diversity of special groups of Bacteria		
CO3	Understand the metabolic characteristics of Eukaryotic Organisms and Concept of various microbial interactions		
CO4	Learn the concepts of Microbial Diversity and different techniques to study Microbial Diversity.		

PRACTICALS

Name of the Course: P I General Microbiology and Microbial Physiology			
Sem-II	**Credits: 2**	**Course Code: MIC202P**	**Year/Group: I B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Cultivate advanced laboratory skills to isolate and identify microbes from different habitats		

SEMESTER III

B.Sc Microbiology

THEORY

Name of the Course: P III FOOD & ENVIRONMENTAL MICROBIOLOGY			
Sem-III	**Credits: 4**	**Course Code : MIC302**	**Year/Group: II B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Understand the microbiology of different types of fermented foods and probiotics .		
CO2	Understand the role of microorganisms in food spoilage and preservation		

	techniques.
CO3	Learn the role of microorganisms in Water and air habitats .
CO4	Study the different types of soil microorganisms & their role particularly in biogeochemical cycles and bioremediation

PRACTICALS

Name of the Course: P III FOOD & ENVIRONMENTAL MICROBIOLOGY			
Sem-III	**Credits: 1**	**Course Code: MIC302P**	**Year/Group: II B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Apply the knowledge of various experimental protocols in the field of food, environmental and applied microbiology.		

SEMESTER III

Skill Enhancement Course

Name of the Course: SEC II Haematology			
Sem-III	**Credits: 2**	**Course Code : MICSEC2A**	**Year/Group: II B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Learn the components of blood and to develop an ability to generate a differential diagnosis based on clinical examination and laboratory values.		
CO2	Understand the Principles of Blood Transfusion andknow the different types of blood disorders and their management.		

SEMESTER IV

B.Sc Microbiology

THEORY

Name of the Course: P IV Medical Microbiology and Immunology			
Sem-IV	**Credits: 4**	**Course Code : MIC402**	**Year/Group: II B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Learn concept of primary and secondary immune responses&various immunological techniques.		
CO2	Understand complement pathways, vaccines – importance & production,role of MHC in immune system		

CO3	Learn normal microbial flora of human and key concepts in medical microbiology &infection control.
CO4	Study about the properties, pathogenicity &lab diagnosis of various pathogenic microorganisms

PRACTICALS

Name of the Course: P IV Medical Microbiology and Immunology			
Sem-IV	**Credits: 1**	**Course Code: MIC402P**	**Year/Group: II B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Apply the knowledge of all haematological tests in clinical labs.		

SEMESTER IV

Skill Enhancement Course

Name of the Course: SEC IV Mushroom Cultivation			
Sem-III	**Credits: 2**	**Course Code : MICSEC4A**	**Year/Group: III B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Gain knowledge on different types of Mushrooms and their Nutritional value & Health benefits.		
CO2	Understand and learn methods of mushroom cultivation, harvesting and marketing strategies.		

SEMESTER V

B.Sc Microbiology

THEORY

Name of the Course: P V Molecular Biology and microbial Genetics			
Sem-IV	**Credits: 4**	**Course Code : MIC502A**	**Year/Group: II B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Analyze the basic concepts of hereditary and the process of inheritance; understand the functions and molecular structures of DNA and RNA and how they serve as genetic information and concept of Plasmids and Transposons.		
CO2	Analyze the molecular mechanisms behind DNA damage and repair, classify mutations and discuss the various ways in which bacteria acquire new genetic		

	information. (transduction, transformation, and conjugation)
CO3	Conceptualise gene and their types and explain the processes and regulatory mechanisms governing the synthesis of nucleic acid and protein
CO4	Explain the basic principles of genetic engineering (enzymes and vectors) and the applications of genetic engineering in various fields

PRACTICALS

Name of the Course: P V Molecular Biology and microbial Genetics			
Sem-IV	**Credits: 1**	**Course Code: MIC502AP**	**Year/Group: II B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Demonstrate the estimation of DNA, RNA, and proteins using colorimetric methods, and perform DNA extraction followed by separation through agarose gel electrophoresis		

Generic Elective (GE)

THEORY

Name of the Course: P V Molecular Biology and microbial Genetics			
Sem-IV	**Credits: 4**	**Course Code GES5**	**Year/Group: II B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Understand contributions of early scientific enquiries, basic laboratory techniques for handling and growing bacteria		
CO2	Know the conceptual basis for understanding the role of Microorganisms in both causing and preventing diseases.		
CO3	Demonstrate and understand key concepts in immunology medical terminology and about infections		
CO4	Demonstrate an understanding of laboratory diagnosis infections and to focus on biomedical waste management		

SEMESTER VI

B.Sc Microbiology

THEORY

Name of the Course: P VI Industrial Microbiology			
Sem-IV	**Credits: 4**	**Course Code : MIC602A**	**Year/Group: II B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Appreciate how microbiology is applied in manufacture of industrial products, learn the techniques of discovering new microorganisms by various isolation, screening and strain improvement methods		

CO2	Acquire knowledge of the design of Fermentors and process controls, different types of fermentation processes &Develop an understanding of fermentation & inoculum media, their formulation and product recovery methods
CO3	Explain the various fermentation strategies and the growth kinetics of industrial microorganisms
CO4	Acquire Knowledge about microbial production of various industrial products such as alcohols, Vitamins, antibiotic, enzymes, organic acids.

PRACTICALS

Name of the Course: P VI Industrial Microbiology			
Sem-IV	**Credits: 1**	**Course Code: MIC602AP**	**Year/Group: II B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Learn the basic techniques of isolation industrially important organisms and production of Microbial products.		