MICROBIOLOGY

COURSE OUTCOMES

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

SEMSTER I

THEORY

Name of the Course: P I Introductory Microbiology			
Sem- I	**Credits: 4**	**Course Code : MIC102T**	**Year/Group: I B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Learn fundamental aspects of Microbiology, Microscopy and Staining techniques.		
CO2	Understand the classification and the structural features of microbes .		
CO3	Conceptual understanding of microbial diversity, nutritional requirements, metabolism and cultivation methods of different physiological groups of bacteria.		
CO4	Study the principles and applications of various methods of sterilization, pure culture isolation and preservation techniques.		

PRACTICALS

Name of the Course: P I Introductory 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.		

SEMERTER II

THEORY

Name of the Course: P II Biomolecules			
Sem- II	**Credits: 4**	**Course Code : MIC202T**	**Year/Group: I B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Understand the types structures and of major biomolecules		
CO2	Gain foundational knowledge about central dogma of gene action		
CO3	Learn the key concepts of microbial physiology		
CO4	Comprehend the basic of biochemical techniques and their applications.		

PRACTICALS

Name of the Course: P II Biomolecules			
Sem-II	**Credits: 2**	**Course Code: MIC202P**	**Year/Group: I B.Sc Microbiology HPW: 2**
Course Outcomes			
CO1	Apply fundamental biochemical laboratory techniques to identify, analyze, and estimate biomolecules and demonstrate proper handling of basic analytical instruments		

SEMESTER III

THEORY

Name of the Course: P III Applied Microbiology			
Sem-III	**Credits: 4**	**Course Code : MIC302T**	**Year/Group: II B.Sc Microbiology HPW: 4**
Course Outcomes			
CO1	Understand the role of microorganisms in fermented foods, probiotics and food spoilage.		
CO2	Learn the role of microorganisms in Soil, water and air habitats		
CO3	Apply the principles of agricultural microbiology to biofertilizers, biopesticides, plant growth promotion, and sustainable farming practices.		
CO4	Explain the use of microorganisms and R DNA technology in the production of industrial products.		

PRACTICALS

Name of the Course: P III Applied 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 IV

THEORY

Name of the Course: P IV IMMUNOBIOLOGY & CLINICAL MICROBIOLOGY			
Sem-IV	**Credits: 4**	**Course Code : MIC402T**	**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 IV IMMUNOBIOLOGY & CLINICAL MICROBIOLOGY			
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.		

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

THEORY

Name of the Course: P V Molecular Biology and Microbial Genetics			
Sem-IV	**Credits: 4**	**Course Code : MIC502A**	**Year/Group: III 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: III 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

THEORY

Name of the Course: P VI Industrial Microbiology			
Sem-IV	**Credits: 4**	**Course Code : MIC602AT**	**Year/Group: III 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.		