COURSE OUTCOME B.Sc. Microbiology MIC-100 Basics of Microbiology At the end of this Course, student will have developed the ability to:	
CO -1	Understand different types of microorganisms and apply the knowledge of different classification systems for grouping microorganism.
CO -2	Explain the cellular organisation of prokaryotic and eukaryotic cells.
CO -3	Apply the techniques for obtaining and preserving pure cultures of bacteria.
CO -4	Elaborate on physical and chemical methods of microbial control

COURSE OUTCOME B.Sc. Microbiology MIC-111 Microbial Ecology and Environment At the end of this Course, student will have developed the ability to:	
CO -1	Understand the concept of Microbial Ecology and diversity.
CO -2	Analyze role of microorganisms and their enzymes in various biogeochemical processes.
CO -3	Interpret Microbial interactions.
CO -4	Apply microorganisms for pollution abatement

COURSE OUTCOME

B.Sc. Microbiology

MIC-131 Introduction to Microbial World

At the end of this Course, student will have developed the ability to:

CO -1	Identify and describe important historical discoveries and developments in microbiology, including the work Louis Pasteur, and Antonie van Leeuwenhoek.
CO -2	Understand the diversity of microorganisms and their interaction with the environment.
CO -3	Develop scientific literacy and critical thinking skills by exploring, analysing, and interpreting scientific literature related to microbiology
CO -4	Evaluate emerging topics and trends in microbiological research and create a report on their impact on science, society, and the global community.

COURSE OUTCOME

B.Sc. Microbiology

MIC- 141 Techniques in Microbiology - Staining and Microscopy

At the end of this Course, student will have developed the ability to:

CO -1	Perform staining and microscopy.
CO -2	Operate different types of microscopes.
CO -3	Observe various types of cells and cellular structures using different microscopes.
CO -4	Analyse and interpret results of a range of staining techniques.

COURSE OUTCOME

B.Sc. Microbiology

MIC- 132 Microbiology in Everyday Life

At the end of this Course, student will have developed the ability to:

CO -1	Understand the occurrence of microorganisms in various aspects of daily life.
CO -2	Recognize the role and importance of microorganisms.
CO -3	Differentiate between harmful and beneficial microbes in various aspects of daily life
CO -4	Connect microorganisms to their applications in agriculture, pharmaceutical, food, beverages, environment and medical fields.

COURSE OUTCOME B.Sc. Microbiology MIC-142 Techniques in Microbiology - Microbial Cultivation and Enumeration At the end of this Course, student will have developed the ability to:	
CO -1	Demonstrate key concepts of microbial growth, cultivation, and enumeration
CO -2	Collect and process sample for microbial analysis
CO -3	Prepare media for the cultivation of different types of microorganisms
CO -4	Process and analyze the samples for microbial detection and enumeration.

COURSE OUTCOME B.Sc. Microbiology MIC-161 (Exit Course) Laboratory Skills in Microbiology At the end of this Course, student will have developed the ability to:	
CO -1	Assist in the conduct of microbiology experiments
CO -2	Independently handle equipment routinely used in the microbiology laboratory.
CO -3	Prepare media/reagents and culture suspensions.
CO -4	To isolate and maintain microbial culture.

COURSE OUTCOME B.Sc. Microbiology MIC-200 Microbial Biochemistry At the end of this Course, student will have developed the ability to:	
CO -1	Identify structures of carbohydrates, proteins and lipids and explain their biological importance
CO -2	Explain structure and function of enzymes with reference to lock- and-key and induce-fit models
CO -3	Analyze the factors affecting enzyme activity and apply the kinetics of enzymes such as Michaelis-Menten and LB plot.
CO -4	Apply the techniques involved in biochemical methods for isolation and analysis of biomolecules.

COURSE OUTCOME

B.Sc. Microbiology

MIC-201 Molecular Biology

At the end of this Course, student will have developed the ability to:

CO -1	Understand the structure of nucleic acids and the processes of replication, transcription, and translation in prokaryotes and eukaryotes.
CO -2	Explain the role of DNA, RNA, and proteins in life processes in microorganisms at molecular level.
CO -3	Apply the techniques of molecular biology in replication, transcription, and translation in bacteria.
CO -4	Design the experiments to demonstrate effect of biomolecules on molecular processes in bacteria.

COURSE OUTCOME

B.Sc. Microbiology

MIC-211 Environmental Microbiology

At the end of this Course, student will have developed the ability to:

CO -1	Understand the various aspects of environmental microbiology.
CO -2	Apprise about pollution, water and air-borne diseases and their transmission.
CO -3	Know about determination of sanitary quality of water and sewage treatment methods employed in waste water treatment.
CO -4	Design the experiments to demonstrate the diversity of microorganisms, abundance, distribution and significance of microorganisms in the environment such as bioremediation.

COURSE OUTCOME

B.Sc. Microbiology

MIC-231 Scope of Microbiology

At the end of this Course, student will have developed the ability to:

CO -1	Know about human diseases and their causes and how the immune system works.
CO -2	Understand the role of microbes in environment.
CO -3	Be equipped with a theoretical understanding of industrial microbiology and production of important industrial products through microbial fermentation.
CO -4	Be informed about microbial food spoilage and food borne infections and the beneficial role of microorganisms in processing and preparing different fermented foods.

COURSE OUTCOME

B.Sc. Microbiology

MIC-241 Dairy Microbiology

At the end of this Course, student will have developed the ability to:

CO -1	Apply appropriate microbial testing methods to assess the quality and safety of milk and its products.
CO -2	Interpret the signs of spoilage in dairy products.
CO -3	Formulate fermented dairy products using microbial starter cultures.
CO -4	Identify the spoilage microorganisms in dairy products.

COURSE OUTCOME

B.Sc. Microbiology

MIC-202 Cell Biology

At the end of this Course, student will have developed the ability to:

CO -1	Demonstrate a comprehensive understanding of the fundamental concepts, structures, and functions of cells and their organelles.
CO -2	Utilize laboratory techniques and methodologies effectively to conduct experiments, analyze results, and draw evidence-based conclusions.
CO -3	Know of different types of cancers and their occurrence.
CO -4	Understand the concept of protein sorting and transport in eukaryotic cells.

COURSE OUTCOME

B.Sc. Microbiology

MIC-203 Microbial Physiology

At the end of this Course, student will have developed the ability to:

CO -1	Gain knowledge of energy transfers and biomolecular transformations
CO -2	Comprehend metabolic pathways of carbohydrate, protein and lipid metabolism
CO -3	Understand the distinct groups of phototrophic microorganisms and the differences between anoxygenic and oxygenic photosynthesis.
CO -4	Apply the techniques to understand the physiology of microorganisms.

COURSE OUTCOME

B.Sc. Microbiology

MIC-204 Microbial Genetics

At the end of this Course, student will have developed the ability to:

CO -1	Understand the mechanism of gene expression and regulation in prokaryotes.
CO -2	Learn the discovery of the various mechanisms of gene transfer and understand the mechanisms and applications of horizontal gene transfer.
CO -3	Comprehend the molecular mechanisms of genetic recombination.
CO -4	Describe various types of mutations, determine their significance in microbial genetics and detect mutants in a population

COURSE OUTCOME

B.Sc. Microbiology

MIC-205 Basic Biostatistics

At the end of this Course, student will have developed the ability to:

CO -1	Understand the meaning of data and its types.
CO -2	Understand the different tools for data analysis.
CO -3	Apply and use appropriate tool for data processing.
CO -4	Interpret statistical information.

COURSE OUTCOME

B.Sc. Microbiology

MIC-221 Instrumentation in Microbiology

At the end of this Course, student will have developed the ability to:

CO -1	Have an overview of operation and application of various instruments used in the microbiology laboratory.
CO -2	Be acquainted with principles, working and applications of pH meter, microscopy, spectroscopy, centrifugation and electrophoretic techniques for the purpose of identification, separation and quantification of biomolecules.
CO -3	Explore techniques for measuring microbial growth, biomolecule concentration and metabolite analysis using spectrophotometer and chromatography.
CO -4	Learn to analyse data generated by instrumentation and interpret the results in the context of microbiology.

COURSE OUTCOME B.Sc. Microbiology MIC-261 (Exit) Quality control and assurance in microbial processes and products	
At the end of this Course, student will have developed the ability to:	
CO -1	Apply the principles of quality control and assurance in microbial processes and products.
CO -2	Apply knowledge of regulatory framework and standards in microbial processes to monitor product quality
CO -3	Perform implementing quality control protocols for diverse microbial processes.
CO -4	Analyse and interpret data from QC testing procedures and ensure the reliability of microbial products and related processes in industrial settings.