

Course Outcome

	Course	Course outcome
I SEMESTER		
MG030101	Fundamentals of Microbiology	By attending the course, the students will be able To understand the diversity of microbial world and their interactions with the environment. To know about the genetic materials and different genetic mechanisms in bacteria and their role in the transmission of characters. To emphasize the importance of sterilization and disinfection and the methods used in a microbiology laboratory and premises To categorize microorganisms based on their characteristics.
MG030102	Fundamentals of Biochemistry	By attending the course, the students will be able To understand the basic concepts and significance of Biomolecules To understand the interactions between macromolecules To analyse the structure-function relationships of biomolecules
MG030103	Analytical Techniques, Biostatistics and Bioinformatics	By attending the course, the students will be able To understand the biochemical techniques used in research and industry To handle various instruments used in laboratories To appraise the role of statistics in research To demonstrate the in silico analytical tools for biological data analysis
MG030104	Cell Biology	By attending the course, the students will be able To understand the various organelles of a cell and its functions To know about the different cellular receptors and signal transduction pathways To understand the cell cycle and apoptosis To understand the etiology of cancer
MG030105	Laboratory course I	By attending the course, the students will be able To prepare molar, normal and percentage solutions To identify unknown samples by systematic analysis To quantify samples, present in solutions by selecting appropriate methods To isolate and identify samples present in a mixture, by various separation techniques To retrieve data and/or information present in databanks

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II SEMESTER		
MG030201	Immunology	<p>By attending the course, the students will be able</p> <p>To conceptualize cellular and molecular basis of the immune system.</p> <p>To understand how the innate and adaptive immune responses coordinate to fight against invading pathogens.</p> <p>To appreciate the structure and functions of MHC molecules and Immunoglobulins.</p> <p>To understand the complement system, its activation and biological consequences of complement activation.</p> <p>To understand about the vaccines in use and the strategies to develop vaccines of the future.</p> <p>To understand and identify the genetic defects that lead to immunodeficiency diseases and their treatment as well as the current status of gene therapy.</p>
MG030202	Molecular Biology and Recombinant DNA Technology	<p>By attending the course, the students will be able</p> <p>To acquire knowledge on various molecular mechanism underlying the transmission of genetic information</p> <p>To understand the theoretical aspects of rDNA technology and genetic engineering</p> <p>To custom the different molecular tools and strategies explored in rDNA technology</p> <p>To interpret the outcome of various molecular biology experiments</p>
MG030203	Enzymes	<p>By attending the course, the students will be able</p> <p>To describe structure, functions and mechanism of action of enzymes</p> <p>To understand the classification of enzymes based on the reactions catalysed</p> <p>To understand kinetics of enzyme catalysed reactions and enzyme inhibitory and regulatory processes.</p>
MG030204	Microbial Physiology and Metabolism	<p>By attending the course, the students will be able</p> <p>To understand the principle of metabolic processes of growth and solute transport</p> <p>To comprehend various physiological adaptations and intracellular signaling</p> <p>To explain the energy yielding central metabolic pathways and its regulations</p> <p>To know the metabolic pathways of lipid, protein and nucleic acid</p>
MG030205	Laboratory course II	<p>By attending the course, the students will be able</p> <p>To learn good microbiological practices in the laboratory</p> <p>Know various Culture media and their applications and also understand various physical and chemical means of sterilization</p> <p>Master aseptic techniques and be able to perform routine culture handling tasks safely and effectively</p> <p>To perform staining, biochemical and cultural tests to characterize and identify microorganisms</p> <p>To understand procedures for sterilization, cultivation procedures and enumeration methods of microorganism.</p> <p>To understand the principle and practices of immunological tests</p> <p>To know and practice basic technique in molecular biology</p>

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MG030301	Food and Industrial Microbiology	<p>By attending the course, the students will be able to</p> <p>Understand the beneficial role of microorganisms in fermented foods, dairy and food products.</p> <p>Principles involving various methods of food preservation</p> <p>Identify the spoilage mechanisms in foods and important microorganisms in spoilage of foods.</p> <p>Understand source for microorganisms of industrial importance from the environment</p> <p>Know about design of bioreactors, factors affecting growth and production, understand the rationale in medium formulation and the principles in downstream processing. Appreciate the different types of fermentation processes</p> <p>Identify techniques applicable for Improvement of microorganisms based on known biochemical pathways and regulatory mechanisms</p> <p>Appreciate how microbiology is applied in manufacture of industrial products</p>
MG030302	Environmental and Agricultural Microbiology	<p>By attending the course, the students will be able to</p> <p>Know the beneficial and harmful role of microorganisms in agriculture and environment.</p> <p>Understand various biogeochemical cycles occurring in soil</p> <p>Know plant – microbe interactions and microbe - microbe interactions in soil and there by improve the fertility of soil and yield.</p> <p>Comprehend various plant diseases caused by bacteria, fungi and viruses and their control measures</p> <p>Appreciate genetically modified crops and their importance in various aspects such as pest resistance, high nutrient value, easy to grow under unfavorable weather conditions, etc</p> <p>Grasp the process of extraction of metals using microorganisms in an economic and ecofriendly manner</p> <p>Recognize the pollutants in the environment using microorganisms</p>
MG870301	Marine Microbiology	<p>At the end of the course, students will be able to</p> <p>Understand the marine ecosystem and familiarize the structure and various habitat of marine environment.</p> <p>Comprehend water borne diseases and water borne pathogen.</p> <p>Understand various biotechnology applications of marine microbiology such as biosensor, transgenic, biosurfactant etc.</p> <p>Realize marine pollution and control measure, bio-corrosion and bioremediation</p>

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MG870302	Microbial Quality Assurance, Biosafety and Intellectual Property Rights	<p>At the end of the course, students will be able to</p> <p>Comprehend the basic issues of Bioethics, Biosafety, Food safety and IPR.</p> <p>Understand the ethical underpinnings of bioethics and to develop ethical intuitions on bioethical issues.</p> <p>Recognize safety concerns and ethical issues on application of biotechnology</p> <p>Understand current food safety programs that are used in the food industry in order to assure a safe food supply.</p> <p>Understand different types of Intellectual Property Rights like patents, copy right, trademarks, designs, information Technology etc.</p>
MG030303	Laboratory course III	<p>At the end of the course, students will be able to</p> <p>Learn the occurrence, abundance and distribution of microorganism in the environment and their role in the environment and also learn different methods for their detection and characterization</p> <p>Acquire, discover, and apply the theories and principles of food microbiology in practical</p> <p>Learn various methods for their isolation, detection and identification of microorganisms in food</p> <p>Identify ways to control microorganisms in foods and thus know the procedures for the microbiological analysis of food</p> <p>Get equipped with a theoretical and practical understanding of industrial microbiology</p>
IV SEMESTER		
MG030401	Systematic Bacteriology	<p>By attending the course, the students will be able</p> <p>To know the morphology, culture, antigenic structure and virulence factors of microorganisms of medical importance and the diseases they produce</p> <p>To understand the identifying characteristics of major classes of bacteria</p> <p>To learn the epidemiology and pathogenesis, lab diagnosis and treatment of different classes of bacteria.</p> <p>To assimilate and apply the information on lab diagnosis and treatment of different classes of bacteria</p>
MG030402	Medical Virology, Mycology and Protozoology	<p>By attending the course, the students will be able</p> <p>To understand the general characteristics and pathobiology of different classes of viruses.</p> <p>To learn lab diagnosis, prophylaxis and treatment of viral diseases.</p> <p>To describe different fungal infections</p> <p>To describe protozoal diseases</p>

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MG870403	Clinical Microbiology	<p>By attending the course, the students will be able</p> <ul style="list-style-type: none"> To comprehend the concept of safe microbiology To elicit the infections of various organs and systems of the human body To learn etiology, pathogenesis and laboratory diagnosis of local infections To understand and analyse various infections of skin, soft tissue and wound To compare and evaluate serological and molecular diagnostic methods To understand antibacterial therapy and prophylaxis
MG030403	Laboratory course IV	<p>By attending the course, the students will be able</p> <ul style="list-style-type: none"> To understand the central dogma of molecular biology To understand the basic principle of gene expression and regulation To learn the concepts of genetic mutation and repair To understand the basic principles of gene transfer techniques To comprehend the concept, methods and application of r DNA technology