

P.G. Department of Microbiology

Program:

1. Graduate Course: B.Sc.
2. Post Graduate Course: M.Sc.

Graduate Program Outcome:

PO-1: To provide adequate, basic understanding about Microbiology subject among the students. This program will enable students to understand and demonstrate the basics and fundamentals of the subject such as types of microorganisms, their life cycle, diseases caused by pathogens.

PO-2: To apply the knowledge of molecular biology, genetics, instrumentation, Biochemistry and environmental microbiology to derive solutions to various environmental problems.

PO-3: To Demonstrate their theoretical learning into practical skills and to work effectively in team.

PO-4: The students will be able to get a practical skill in isolating and handling pathogenic organisms and their safe disposal.

PO-4: To derive knowledge of industrially important microbes and their applications in various industries, this would enhance their chances of employability.

Programme Specific Outcomes:

Students after completing their graduation would be able to pursue their career in hospitals, pathology labs and quality control section of dairy, food, pharmaceutical industries, FMCG companies etc.

Course Outcome I Year

Paper I GENERAL MICROBIOLOGY & BASIC TECHNIQUES

CO-1: The objective of this course is to enable students to understand the history and developments in the field of microbiology.

CO-2: They will learn the different methods of sterilization, plating and staining techniques.

CO-3: They will be able to understand the principles of classification of viruses, fungi, bacteria, algae, protozoa and their economic importance.

CO-4: They will be able to understand the various diseases caused by these organisms their life-cycle, symptoms and methods of prevention.

Paper II BIOCHEMISTRY & PHYSIOLOGY

CO-1: The course will enable students to understand the structure and properties of biologically important molecules.

CO-2: They will be able to understand various metabolic pathways, photosynthesis and growth of bacteria.

CO-3: Students can imbibe knowledge of basic concepts of photosynthesis with special reference to bacterial photosynthesis and the metabolism of various macromolecules and their transport mechanisms.

II Year

Paper I MOLECULAR BIOLOGY AND GENETIC ENGINEERING

CO-1: The course will enable students to have knowledge of basic concepts of heredity and DNA replication mechanism along with experimental evidences.

CO-2: It will enable understanding of basics of genetic code and process of protein synthesis.

CO-3: Students will gain knowledge of various types of mutations and the DNA repair mechanisms involved.

CO-4: This course will help students to be introduced to basic concepts of bioinformatics and genetic engineering including various vectors and their screening procedures.

II Year

Paper II BIOINSTRUMENTATION AND BIostatISTICS

CO-1: Students will be able to understand the principles and applications of different types of microscopes and centrifuges.

CO-2: This course will enable students to acquire knowledge of working of various instruments like spectrophotometers, X-ray diffraction along with applications of techniques like chromatography, electrophoresis etc.

CO-3: Students will be introduced to basics of biostatistics like data and its analytical methods.

III Year

Paper I MEDICAL MICROBIOLOGY AND IMMUNOLOGY

CO-1: The course will help students to acquaint themselves with different air and water borne disease along with their symptoms and preventive measures.

CO-2: It will help students to understand the basics of immunity and types of immune systems.

CO-3: The course will benefit students in gaining knowledge of various clinical and immune related diseases and their diagnosis.

III Year

Paper II ENVIRONMENTAL, INDUSTRIAL AND AGRICULTURAL MICROBIOLOGY

CO-1: This course will enable students to understand the microbiology of air and water along with knowledge of methods to determine their quality.

CO-2: It will help students understand the different microbial interactions existing in soil and help gain knowledge of microbiological examination of soil.

CO-3: The course will help students to be introduced to industrial microbiology and its scope with knowledge of different industrially important microorganisms and their role.

CO-4: It will orient students to different agriculturally important microorganisms and the role of biofertilizers in agriculture.

Post Graduate Program Outcome:

PO-1: Students shall be able to understand the basic concepts of various metabolic pathways in microorganisms. They will be proficient in branches of microbiology like industrial, agricultural microbiology, microbial physiology etc. This program would help build knowledge about the current industrial practices in the field of microbiology.

PO-2: This program will enable students to possess the modern molecular, biological and technical knowledge needed to support research activities.

PO-3: It will enable to study the use of living microorganisms in various fields like bioprocess engineering, genetic engineering, Medicine, Agriculture etc.

PO-4: Students will be proficient ethically; will have leadership qualities and skills relevant to the subject.

PO-5: Students will gain the proficiency to become excellent researchers, scientists or academicians in microbiology field enabling them to discover unique products for societal needs.

Programme Specific Outcomes:

PSO-1: The students after completing their post graduation would be able to pursue their career in academics, research or in various applied fields like pharmaceutical, food, clinical microbiology, etc. Students would be well versed in the subject and shall have a deep knowledge.

PSO-2: Students will have the confidence to apply their knowledge to work collaboratively on projects of social interest.

PSO-3: To familiarize with the Principles underlying the relevant compounds and their Clinical Importance.

PSO-4: Build Knowledge of Current industrial practice including innovations and Molecular Biological Techniques.

M.Sc.

I Semester

CO-1: Students will be able to acquire detailed knowledge of membrane structure and transport systems, replication, recombination and repair of DNA along with cell signalling mechanism.

CO-2: They will be able to understand structure and properties of various macromolecules and also understand the properties, classification and kinetics of enzymes.

CO-3: The objective of this course is to enable students to understand the history and developments in the field of microbiology. It will help students learn different microbiological techniques. They will be able to understand the principles of classification of viruses, fungi, bacteria, algae, protozoa and their causative diseases and economic importance.

CO-4: Students will be able to learn the basic concepts of immune system and their types along with different immunodeficiency disorders etc.

II Semester

CO-1: Students will be able to learn and understand the basic concepts of Mendelian genetics along with an in-depth knowledge of Gene mapping, Protein targeting and DNA replication, mutation and repair mechanisms.

CO-2: Students will acquire knowledge of concepts of thermodynamics with reference to metabolism of various macromolecules.

CO-3: Students will be able to understand the principle, working and applications of different instruments and techniques relevant to life sciences.

CO-4: Students will be introduced to concepts of biostatistics with which they can imbibe knowledge of various statistical methods and their application for analysis of biological data. Also, the course would enhance students' proficiency to work on computer using different software.

III Semester

CO-1: Students will be able to understand the concept of microbial photosynthesis and the role of special group of microorganisms in maintaining the ecology.

CO-2: The course would enable students to understand the basics of fermentation technology, wherein they would acquaint themselves with different types of bio-reactors and their applications in production of industrially important products.

CO-3: The course will help students understand the different types of ecosystems and the distribution and ecology of microorganisms.

CO-4: It will help disseminate knowledge relevant to various pathogenic organisms and their interaction with human immune system.

IV Semester

CO-1: This course will enable students to learn different techniques relevant to genetic engineering like polymerase chain reaction, DNA sequencing, cloning strategies, immobilization, etc.

CO-2: Students will be able to understand the fundamentals of monoclonal antibodies, and immunodeficiency diseases. They will have a thorough knowledge of vaccination, Immunization practices and principles of immunodiagnostics.

CO-3: Students will have knowledge of food sanitation and the role of microorganisms in the food industries.

CO-4: Knowledge related to structure and characteristic features of the different biofertilizer organisms, biofertilization processes, would help students understand their application in the field of agriculture.