

**GOVERNMENT DEGREE COLLEGE, KHAIRATABAD,  
HYDERABAD, TELANGANA STATE**

**DEPARTMENT OF MICROBIOLOGY**

**PROGRAMME OUTCOMES**

- To understand fundamental principles involved in Microbiology
- Acquire detail properties of microorganisms, their types and significance in Human welfare
- Understand metabolic and structural significance of bio-molecules and bio-chemical techniques.
- To get the awareness on microbial growth and metabolic pathways
- Acquaint with concepts of Immunity, Antigen, Antibody and Immune system
- Understand importance and applications of various enzymes in replication transcription and translations
- Acquire the skills of the detail knowledge of fermentation types, industrial production of enzymes, antibiotics and vitamins
- Apply the knowledge and understanding of Microbiology to one's own and social life

## **COURSE OUTCOMES OF THE MICROBIOLOGY**

Microbiology is branch of science that deals with the study and understanding of microorganisms. It has become vital and indispensable since they are connected each and every aspect of human life activities. It has wide applications in multifaceted fields. The different branches of microbiology like medical microbiology, food microbiology, industrial microbiology and immunology also included in the syllabus that enables the stake holders to understand the basic concepts of microorganisms diversified fields. Historical development and scientist's contributions towards the development of microbiology and society also understood by the students. Research and development in microbiology also associated with the allied subjects like biotechnology, bioinformatics and so on. With this perception microbiology was introduced in the curriculum of B.Sc. curriculum was designed to educate important microbiological disciplines as well as to promote and inculcate the basic skills and competencies that have enduring value beyond the classroom.

- The students are able to understand the basic concepts and familiarizes with the structure and role of them in many fields
- Students get information about the role of microorganisms and their interactions in environment and human beings
- Students will acquire laboratory safety rules and skills applicable to various labs such microbiology, clinical methods, reporting of observations and analysis of them
- By learning Microbiology the students have multiple opportunities to get jobs in various pathological labs, industries and research laboratories, pollution control board jobs as well teaching field

### **Course: General Microbiology – Semester I**

- To know the basic foundations laid down by the scientist and their discoveries
- To know the basic principles, branches of Microbiology and their applications in different fields
- Handling Microscopes and their principles to observe the Microorganism
- To familiarize with the basic knowledge about the bacteria, viruses and fungi
- To learn about taxonomic strategies and their development along with emerging technologies
- To learn the methods of preservation and pure culture techniques

### **Course : Microbial Diversity – Semester II**

- To learn about the basic metabolisms and pathways present in the microorganisms
- Providing the learning chances to acquire knowledge about microbial diversity and their conservation strategies
- To equip the students foundations of phonetic and phylogenetic classification techniques used in the routine laboratory practices
- To describe the concepts of great plate count anomaly, methods used to study the uncultivated micro organisms
- To know general properties of microorganisms with their classification

### **Course: Food Microbiology and Environmental microbiology – Semester III**

- Learn about how the microorganism and uses in production of fermented foods
- To acquire the knowledge of the types of microorganisms and their role in the environment
- To discuss about diversity of microorganism and microbial communities inhabiting a multitude of habitats and occupying a wide range of ecological habitats.
- To absorb to the knowledge about the diseases caused by them through different modes and significance in detail
- To know about the role of microorganisms in sanitary quality of water and sewage treatment

### **Course: Medical Microbiology and Immunology – Semester IV**

- Recognize the biochemical and genetic basis for antibiotic resistance and ways of controlling spread of antibiotic resistance.
- To know about the interaction between the host and pathogens with mechanisms
- To familiarize with diseases and their causative agent, pathophysiological properties of microorganisms
- To learn the vaccines and their role in prevention of diseases and recent technologies in the development in the vaccines preparation
- To learn about the hypersensitive and autoimmune disorders with their mechanisms
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### **Course : Molecular Biology and Microbial Genetics – Semester V**

- To understand the basic foundation concepts of DNA structure and its history for discovery
- To discuss the various applications of crossing over, central dogma.
- To learn about the types of mutations and its impact on the health
- Enable to understand the basic concepts of recombinant DNA technology and regulation of gene function.
- To know about outcomes and advantages of the recombinant DNA technology for the human welfare and novel strategies for cure disease

### **Course: Industrial Microbiology- Semester VI**

- Competently explain various aspects of environmental microbiology and microbial ecology and to become familiar with current research in environmental microbiology.
- To learn and understand biogeochemical cycles – Carbon, Nitrogen, Phosphorus cycles etc. and microbes involved and their vital role in environment.
- Understand various plant microbes interactions especially rhizosphere, phyllosphere and mycorrhizae and their applications especially the biofertilizers and their production techniques
- To know about the role of microorganisms in the production of different microbial compounds and processes

### **Course: Applied Microbiology- Semester VI**

- Identify microorganisms of relevance to healthcare and the pharmaceutical industry and their sources.
- To learn the diagnostic microbiology techniques like sample collection, procedures and detection methods and prophylaxis measures
- To know about the microbial production of pigments and their uses in the human welfare
- To learn about the serological tests used in the diagnosis
- Microorganisms role in the crop productivity by using as biopesticides