

## PROGRAMME SPECIFIC OUTCOME (PSO)

Upon graduation, Microbiology pupil should have a thorough knowledge and understanding of the core concepts in the discipline of Microbiology. Microbiology students will be able to:

- Describe how the microorganisms are used as model systems to study basic biology, genetics, metabolism and ecology.
- Identify the way in which the microorganisms play an integral role in disease, and microbial and immunological methodologies are used in disease treatment and prevention.
- Explain why microorganisms are ubiquitous in nature; inhabiting a multitude of habitats and occupying a wide range of ecological habitats.
- Cite examples of the *vital role* of microorganisms in biotechnology, fermentation, medicine, and other industries important to human well being.
- Demonstrate that microorganisms have an *indispensable role* in the environment, including elemental cycles, biodegradation, etc.

## COURSE OUTCOME (CO)

### **Fundamentals of Microbiology (13A)**

Will gain the importance of microorganisms to our global society, the structure/function of cells and the tools and techniques that are used to classify and identify microorganisms.

### **Biostatistics and computer applications I & II (IAB &2AB)**

Understand and use mathematical and statistical theory underlying the application of bio statistical methods; use and interpret results from specialized computer software for the management and statistical analysis of research data

### **Environmental studies (1FA)**

Will get an awareness of the values of the environment and will start preserving it

**Analytical Microbiology (23A)**

Will expand their knowledge about the accurate analysis of biological molecules and recent methodologies developed in analysis.

**General Biology (23B)**

Will get clear understanding about basic biological principles, ultrastructure and functions of all living cells.

**Core Practical I (23P)**

Will acquire the knowledge in accordance with the handling, identification and enumeration of microorganisms and separation of amino acids.

**Allied Practical Biostatistics and computer applications (23Q)**

Will get the knowledge on basic MS office and their applications in biology

**Human Rights (2FB)**

Will be exposed to the values and ethics of human life through Indian Act

**Microbial diversity (33A)**

Will have the knowledge about the origin, classification and characterisation of microbial lives

**Biochemistry- I (3AC)**

Will get clear understanding about the significance of the complex bio-molecules, polysaccharides, lipids, proteins, nucleic acids, vitamins and minerals

**Clinical lab technology (3ZA)**

Will get clear understanding about collection and examination of clinical samples and techniques used in clinical laboratory

**Women's Rights (3FA)**

Will get adequate knowledge about women's rights and entitlements claimed for women and girls world wide

**Microbial Physiology (43A)**

Will gain knowledge about the different conditions and requirements associated with microbial growth and metabolic and bio energetic pathway of microorganisms

**Biochemistry – II (4AC)**

Will gain knowledge about metabolic pathways of bio molecules and techniques used for analysis of bio molecules and their interrelationship metabolism

**Diagnostic Microbiology (Bacteriology& serology) (4ZB)**

Will gain knowledge about Collection, transport and examination of clinical

specimens and immunological diagnosis of samples

**Core practical II (43P)**

Will acquire the knowledge in accordance with estimation of proteins and carbohydrates, measurement of microbial growth and physiological characterization of microbes

**Allied Biochemistry Practical (43Q)**

Will gain knowledge about analysis of carbohydrates and amino acids and separation techniques

**General awareness (4FA)**

Will gain the cognizant of events, more broadly state and world wide

**Microbial Genetics (53A)**

Will gain basic knowledge about nucleicacids, structure and their replication and gene regulation, recombination

**Principles of Immunology (53B)**

Will gain basic knowledge about immune system, immunohematology and auto immune diseases

**Food Microbiology (53C)**

Will gain basic knowledge about food preservation, spoilage, fermented foods and regulations of food safety measures

**Recombinant DNA Technology I (53D)**

Will get clear understanding regarding gene manipulation, vectors and gene transfer mechanisms and DNA sequencing methodologies

**Medical Microbiology (5EA)**

Will achieve basic knowledge about medical terminology, functional understanding of microbes, host parasitic interactions and etiology of infectious diseases

**Diagnostic Microbiology – II (Virology, Mycology and Parasitology) (5ZC)**

Will acquire knowledge about sample collection, processing and identification of viral, fungal and parasitic pathogens

**Industrial Microbiology (63A)**

Will gain basic knowledge about industrially important strains and their development for product production.

**Environmental and Agricultural Microbiology (63B)**

Will gain basic knowledge about microbial communities, biodegradation, biogeochemical cycles, and bio fertilizers, water microbiology and air microbiology

### **Virology (63C)**

Will get clear understanding regarding viral properties, classification, cultivation, reproduction and viral infections

### **Recombinant DNA Technology II (6EA)**

Will get clear understanding regarding development of recombinant products using microorganism, developing transgenic plants, animals and its applications

### **Dairy Microbiology (6ED)**

Will gain basic knowledge about assure safe milk production, storage & transportation, milk treatments, fermented dairy products and their safety regulations

### **Core Practical III (63P)**

Will acquire basic practical skills on genetics, food, industrial, agricultural and medical microbiology

### **Practicals in Diagnostic Microbiology (6ZP)**

Will gain basic skills on clinical specimen diagnosis and immunodiagnostic techniques