

# **BRIDGE COURSE**

## **Microbiology (2021-22)**

**Durations: 22 hrs. (Every session is interactive)**

### **Basics of Microbiology:**

Comparison of General Biology and Microbiology, Definition, Branches of Microbiology, and Its Importance in Science

### **Physiology:**

Basic Concept, Discussion of the Physiology of Plants, Animals, and Bacteria, Basic Components, and Their Relevance to Microbiology

### **Building block molecules:**

Discussion of four major biomolecules studied in general biology and their importance in microbiology, metabolism, and enzymes

### **Relationship of microbes between plants and animals:**

Discussion of microbes role in plant growth, photosynthesis, nitrogen fixation, biofertilizer, Discussion of microbes role in animals, good and bad bacteria, normal flora, and infections (typhoid, dysentery, food poisoning, etc.)

### **Advance infectious agent (virus):**

Definitions, physiology, classification (bacterial, plant, and animal viruses), diseases (Pandemic Corona), vaccines

### **Immunology:**

General concept of immunology, discussion on immunity, and terminology used in immunology in general, including antigens and antibodies and their roles.

### **Parasitology:**

General Discussion on Parasites: Definition, Types, and Diseases Malaria, filariasis, amoebiasis, etc.

### **Microbes in human welfare:**

Microbes in household food processing, microbes in industries, and microbes in waste management, in brief, Microbes as biocontrol agents, Microbes in biogas production

### **Genetics and Molecular Biology:**

Discussion of the specific role of genetics and molecular biology in general biology and its comparison with bacteria and viruses, Discussion of gene, genome, plasmid, genetic code, replication, transcription, and translation roles in bacteria

### **Advances in microbiology:**

Discussion of Recombinant DNA Technology, PCR, and Transgenic Plants and Animals

### **Introduction to Basic Instruments and Glassware:**

**Glassware:** conical flask, volumetric flask, beaker, pipette, burette, measuring cylinder, etc., their ranges, uses, and calibrations

**Instruments:** Incubator, oven, balance (single pan and digital), BOD incubator, microscope, water bath, pH metre, colorimeter, autoclave, etc., uses, handling, and calibrations

**Preparation of reagents and media:** percent, normal, and molar solution preparations, broth and media preparations, slant and plate preparations, storage and maintenance of culture.

**Head**  
**Department of Microbiology**