

SYLLABUS

of the

Value-added Course Applied Microbiology

(MCBHVAC 003)

(w.e.f. 2022-2023)



Offered by:

THE DEPARTMENT OF MICROBIOLOGY

Panskura Banamali College

(AUTONOMOUS)

Panskura R.S., PurbaMedinipur

West Bengal – 721152

COURSE INFORMATION IN BRIEF

Course Name: Applied Microbiology

Course Contents: The Course consists of 5 units.

Unit-1 Medical Microbiology, **Unit-2** Pharmaceutical Microbiology, **Unit-3** Industrial Microbiology, **Unit-4** Microbial Biotechnology, **Unit-5** Agricultural Microbiology

Course Type: Value-added Course

(Optional, additional, and not a part of the CBCS curriculum)

Medium: English

Mode: Online (Google meet or Zoom meet)

Intake: Minimum 20; Maximum 50

Eligibility: **Microbiology Hons.** students from across College

Duration: 30 hours (to complete within a time span of 2 months)

Course Fees: Rs. 300.00 (Rupees three hundred only)

Coordinator: Ananya Bhaumik, Assistant Professor, SACT

Contact: Department of Microbiology, Panskura Banamali College (Autonomous)

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Objectives:

1. Applied Microbiology provides an advanced forum for studies related to the application of microorganisms, with a strong emphasis on Biotechnology, Environment, Medicine and Food.
2. To acquire basic skills in the field of advanced microbiology.
3. To provide the student with the basic knowledge of microorganisms in general.
4. To provide an understanding between theoretical aspect and research purpose.

Learning outcomes:

1. At the end of the lecture students will get know about the host pathogen interaction.
2. Students will acquire a knowledge about mechanisms of actions of antibiotics, industrial microbiology, .
3. Students will get a knowledge about economic importance of microbes.

Syllabus

Unit-1 Medical Microbiology

No. of hours:6

Microbial flora of the healthy human host, host-microbe interaction: the process of infection, natural resistance and nonspecific defence mechanisms, Theoretical aspect of the immune response, Microbial agents of diseases: Bacteria, Viruses, Fungi, Protozoa.

Unit-2 Pharmaceutical Microbiology

No. of hours:6

Chemotherapeutic agents and Chemotherapy, Characteristics of an ideal chemotherapeutic agent, Antibiotics and their mode of action: inhibition of Cell-wall synthesis, Damage to cytoplasmic membrane, Inhibition of Nucleic acid and Protein synthesis, Inhibition of specific enzyme systems. Development of resistance to Antibiotics.

Unit-3 Industrial Microbiology

No. of hours:6

Prerequisites to Practical industrial Microbiological processes, Major classes of products, Characters of microorganisms used in Industrial processes, Industrial uses of Bacteria, Industrial uses of Yeasts, Industrial uses of Molds.

Unit-4 Microbial Biotechnology

No. of hours:6

Microorganisms as tools: Microbial enzymes, Bacterial transformation, Cloning and Expression; Using Microbes for a Variety of Everyday Applications: Food Products, Therapeutic Proteins, Antibiotics, Vaccines.

Unit-5 Agricultural Microbiology

No. of hours:6

Plant Microbiology and plant pathology: The study of the interactions between microorganisms and plants and plant pathogens.

Soil Microbiology: The study of microorganisms that are found in soil.

Veterinary Microbiology: The study of the role in microbes in veterinary medicine.

Aeromicrobiology and epidemiology: The study of airborne microorganisms, incidence, spread, control of disease.

