Department of Microbiology

Program specific Outcome (PSO)

B.Sc. (Microbiology)

1. Upon completion of B.Sc. Microbiology program, the students will be able to
   Perform the basic techniques related to screening, isolation and cultivation of microorganisms from various sources
2. Study the microorganism with regard to morphology, cultural and biochemical characters. It will help to classify the microbes to certain extent.
3. Follow the aseptic techniques and conduct the process of sterilization as well as perform the techniques to control the microorganism.
4. Understand microorganisms and their relationship with the environment,
5. Produce and analyze the microbial products at laboratory level
6. Conduct the basic research with these microorganisms and perform the diagnostic procedures required in food, milk and pharmaceutical industries.
7. Students very well understand about source of infection or disease and their control.
8. They know about the central dogma of cell.
9. Aware about the industrial process its production and their uses.
10. Aware about metabolism of cell.

Department of Microbiology

COURSE OUTCOMES

Class: B.Sc First Year.

Name of Teacher: Mr. Kadam Omprakash A

CCMB I (Section A): Introductory Microbiology (PI)

On completion of the course, students are able to:

- Get an idea about the historical events in microbiology
- Understand the diversity in microbiology
- Know the scope and areas studied under the Microbiology
- Understand the taxonomic classification of microorganisms
- To know the structure and functions of cell.

Name of Teacher: Dr. Bhusare Deepak U.

CCMB I (Section B : Fundamentals of Microbiology (PII)

On completion of the course, students are able to:

- Know parts of microscope, type and its principal
- Get the theoretical concepts of related stain
- Understand different methods of staining techniques
- Understand nutritional requirements of bacterial.

Name of Teacher: Mr. Kadam Omprakash A

CCMB II (Section A) Basic Microbiology & Bio-molecules (PIII)

On completion of the course, students are able to:

- Develop basic skill in aseptic techniques
- Understand various accessories for microbiology practicals

• Perform various staining techniques

• Cultivate bacteria with different cultivation technique

Name of Teacher: Dr. Bhusare Deepak U.

CCMB II (Section B): Microbial Physiology

(PIV)On completion of the course, students are able to:

• Understand concepts of growth and reproduction of bacteria

• Know anatomy of prokaryotic cell

• Know structural detail of bacterial sporulation.

• Understood various parts of cell and its importance

COURSE OUTCOMES

Class: B.Sc Second Year.

Name of Teacher: Dr. Bhusare Deepak U.

CCMB III (Section A): Applied Microbiology (P-VI)

On completion of the course, students learn about:

- Milk microbiology- technique used in milk industry,
- Air microbiology – technique used in Air industries,
- To know about the significance of microorganisms in air
- Concepts related to sewage microbiology and water microbiology.
- To know about the water borne diseases and their prevention.

Name of Teacher: Mr. Kadam Omprakash A

CCMB III (Section B): Immunology(P-VII)

On completion of the course, students are able to:

- Understand concept of immunity
- Familiar with concept of transmission of diseases
- Know the concepts of antibody, antigen etc.
- Understand basics of immunology.
- Know the concepts of ELISA, Immuno-fluroscence test, RIA etc.

Name of Teacher: Mr. Kadam Omprakash A

SEC: CCMBP II [CCMB III & IV (Section B)]; Public Health Microbiology

On completion of the course, students are able to:

- Know the Scope of Public Health Microbiology
- Awareness about Water borne pathogens & water borne diseases

• About the concept of Skill in water quality monitoring

• Know about the Skill in food and milk quality monitoring

Name of Teacher: Dr. Bhusare Deepak U.

CCMB IV (Section A): Food, Soil Microbiology and Microbial Ecology (PVIII)

On completion of the course, students are able to:

• Know the food spoilages and preservation methods

• Significance of microorganisms in soil

•Concept of elemental transformation of soil

• To Know about Microbial interaction, association and ecology

Name of Teacher: Mr. Kadam Omprakash A

CCMB IV (Section B): Medical microbiology (PIX)

On completion of the course, students learn about:

• Various concepts of medical microbiology

• Role of pathogenesis of water borne bacterial diseases.

• To know about viral infection

• To know about various chemotherapeutic agent and their mode of action

• To know about laboratory diagnosis and prophylaxis of Bacterial, viral and protozoal diseases.

• To develop skill in diagnosis of diseases.

Name of Teacher: Mr. Kadam Omprakash A

CCMBP III [CCMB III & IV (Section B)]: Diagnostic Microbiology

•To create awareness about infectious diseases.

•To develop the essential skills among students in diagnostic laboratory techniques

•To increase the job opportunities.

• Collection and Examination of clinical samples by various staining techniques.

COURSE OUTCOMES

Class: B.Sc Third Year.

Name of Teacher: Mr. Kadam Omprakash A

DSEMBI (Section A): Microbial Genetics (P – XII)

On completion of the course, students learn about:

• To know about DNA as a genetic material of cell.

• Bacterial genome replication

• To know about the recombination in bacteria.

• Gene exchange in bacteria.

Name of Teacher: Dr. Bhusare Deepak U.

DSEMB I [Section B I]: Microbial Metabolism (P– XIII A)

On completion of the course, students learn about:

• Concept of bioenergetics

• Concept of enzyme kinetics

• Anabolism and catabolism with examples

• Fermentation process of various acids and alcohols.

• Bacterial photosynthesis

Name of Teacher: Mr. Kadam Omprakash A

DSEMB II (Section A): Molecular Biology (P-XIV)

On completion of the course, students learn about:

• Concept of gene regulation

• Principals and applications of various molecular techniques

• Concept, methods and application of r-DNA technology

• Gene library and gene mapping

• Know about DNA repair and mutagens.

Name of Teacher: Dr. Bhusare Deepak U.

DSEMB II [Section B I]: Industrial Microbiology (P – XVA)

On completion of the course, students will develop skill regarding:

• Techniques used in industries –Citric acid fermentation,

• Enzyme production and determination of its activity

• Validation techniques of instruments and immobilization process.

• Techniques used in industrial production of alcohol

• Phenol coefficient test

• Evaluation of sterilization techniques

Name of Teacher: Dr. Bhusare Deepak U.

SECMB III (A OR B): Enzyme Technology (A)

On completion of the course, students will develop skill regarding:

• To know about the Sources of enzymes and their classes

• To know about the Application of enzymes

• To know about the Methods of enzyme isolation

• To know about the Enzyme purification, characterization

• To know about the Immobilization of enzymes methods

Name of Teacher: Dr. Bhusare Deepak U.

SECMB IV (A OR B): Bioprocess Technology (A)

• To understand the bioprocesses.

• To study the role of microorganisms involved in treatment of sewage

• Agro based Bioprocesses involved in manufacture process.

• Food and Diary bioprocesses involved production of fermented food product.

• To know about the Industrial effluent Treatment

• to develop the skills of

1.Ethanol production from Agri waste

2. Idli & Dosa preparation

3. Determination of COD of industrial effluent

4. Determination of BOD of industrial effluent

Practical's based Outcomes:

On completion of the course, students are able to:

• Acquainted with various sterilization techniques

• Use various methods to control microbes.

• Gather theoretical background of microbial cultivation

• Understand various specialized techniques such as pasteurization

•Perform various biochemical test

• Stain the bacteria with differential staining techniques

• Understand the effect of various environmental factors

• Get familiar with various instrumentation

• Detect microbial enzymes

- Detection of biomolecules,
- Understand symbiotic interaction
- Check portability of water, microflora of air.
- Develop skill to stain parts of bacterial cell
- Detect fermentation product
- Isolate mutants
- Screen bacteria for organic acid and antibiotics
- Various viral disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis, prophylaxsis
- Various bacterial disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis, prophylaxsis
- Various fungal disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis, prophylaxsis
- Various protozoal disease, their causative agent, mode of infection, epidemiology, treatment, lab diagnosis, prophylaxsis
- Isolate and identify microorganism form laboratory sample
- Perform MIC of antibiotics
- ELISA test for disease diagnosis
- Immuno-diffusion techniques