

BS23MD1MB1

First year B.Sc (Multidisciplinary)

Micro-Organism and Basic Techniques (Credit 2) Semester One

Objective: The students would understand the relevance of microbiology and microorganisms. They would know the basic types of microbes, their cultivation and control the growth of microbes

Outcome:

The students will gain the knowledge of the scope of microbiology, microbial diversity, tools to study microbes and the importance of microbes.

Unit 1

10 lectures

1. Allied branches of Microbiology
2. Different schemes of classification of life
3. Introduction to eubacteria
4. Introduction to Archaeobacteria
5. Introduction to eucaryotes
6. Introduction to Virus, Viroids, Virusoids, Prions

Unit 2

10 lectures

- a) Principle and types of Light Microscope
- b) Principle working construction of electron microscope (TEM, SEM)
- c) Staining principles of bacteria for light microscopy

Unit 3

10 lectures

- a) Biogenesis and abiogenesis
- b) Developments in Pure Culture Techniques, Chemotherapy
- c) Contribution of scientist in discovery of virus
- d) Development in soil microbiology
- e) Major Developments in molecular biology
- f) Major Developments In Industrial microbiology, Biotechnology, Bioinformatics And bionanotechnology
- g) Major contribution of Indian Scientist in the field of microbiology and allied branches of microbiology

LAB. COURSE (Credit 2)

1. Microbiology Good Laboratory Practices and Bio-safety.
2. To study the principle and applications of important instruments :biological safety cabinets, autoclave, incubator, BOD incubator, hot air oven, light microscope, pH meter, autoclave, hot air oven, incubator, membrane filtration and laminar airflow.
 - a. used in the microbiology laboratory.
3. Demonstration of the presence of microflora in the environment by exposing nutrient agar plates to air.
4. Simple Staining: Positive Monochrome
5. Negative Staining
6. Gram Staining Of Bacteria
7. Gram Staining Of Yeast
8. Acid Fast Staining
9. Spirochete Staining
10. Mounting Of Mold :*Mucor*, *Rhizopus*, *Aspergillus*

11. Permanent Slide/Photographs Of: *Bacillus*, *Staphylococcus*, *Yeast*, *Rhizopus*, *Aspergillus*, *Penicillium*, *Gram Negative Short Rods*, *Paramecium*, *Spirogyra*, *Euglena*, *Tape Worm*

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List Of Microbiology Books Authored By:

- 1) Principles Of Microbiology , Atlas R.M. 4
 - 2) Microbiology Marjorie Kelly Cowan
 - 3) Microbiology Gerard J. Tortora
 - 4) Microbe Hunters: The Classic Book On The Major Discoveries Of The Microscopic World Paul De Kruif
 - 5) Foundations In Microbiology Kathleen Park Talaro
 - 6) General Microbiology Roger Y. Stanier Macmillan, 1987

 - 7) Michael J. Pelczar Jr. Chan Ecs And Krieg Nr (2004) Microbiology , 5th Edition. Tata Mcgraw Hill.
 - 8) Instructor's Manual To Accompany Elements Of Microbiology By Michael J. Pelczar
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