**B.Sc. IV Year** 

**BIM** – E801 **DSE-10 BASIC TOOLS AND TECHNIQUES** 

MM: 100 Time: 3 hrs Credit L 44

Total Hours: 60

Learning objectives:

- To get the knowledge of sophisticated and common instruments used in the microbiology laboratory
- To know aseptic techniques to keep the instrument and media sterile.

#### Learning outcomes:

At the end of course students will be able to

- Maintain the sterility of glassware, utensils and medium by different physical and chemical procedure.
- Operate the different sophisticated instruments available in the laboratory.

Industrial microbiology- Definition and scope, history of industrial microbiology, industrial microbiology in present scenario, development of industrial microbiology in India. (06 Lectures)

UNIT-I

### UNIT-II

Basic knowledge of different instruments and their applications in microbiology such as microscope (Compound, SEM & TEM), micrometry, spectrophotometer, hot air oven, autoclave, laminar air flow and BOD incubator.

Isolation of industrially important microorganisms, Primary screening (crowded plate technique, auxanography technique,

UNIT-III

UNIT-IV Aseptic technique: contamination, sterilization (heating, steam sterilization, tyndallization, dry heat, chemicals, radiation

Chromatography techniques: paper chromatography, thin layer chromatography, adsorption column chromatography, gas

liquid chromatography, gel permeation, ion exchange and affinity chromatography, gel electrophoresis.

Suggested Reading

- 1. Dubey R.C. and Maheshwari, D.K. A Textbook of Microbiology. 3rd ed., S. Chand & Co, Ram Nagar, New Dethi, p. 1034. ISBN 81-219-2620-3
- 2. Prescott's Microbiology, 10th Edition, McGraw Hill Publication
- 3. Dubey, R.C. and Maheshwari, D.K. Practical Microhiology. 2nd ed., S. Chand & Co. P Ltd, New Delhi, p. 413. ISBN:
- 4. Dubey, R.C. Advanced Biotechnology. S. Chand & Co. P Ltd, New Delhi, p. 1161; ISBN: 81:219-4290-X.

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enrichment culture technique, differential culture technique), Importance of screening. (14 Lectures)

sterilization, filter sterilization), sterilization of air. (14 Lectures)

UNIT-V

(16 Lectures)

## Semester – VIII

Sessional: 30 ESE : 70 Pass Marks: 40



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# (10 Lectures)

# DSE 10 SEMESTER VIII / BIM-E851 (LAB COURSE CC-10)

The practicals based on BIM E801 will be performed.

- 1. To perform column chromatography for separation of different components.
- 2. To perform gel electrophoresis.
- 3. To perform demonstration of paper chromatography.
- 4. To perform demonstration of thin layer chromatography.
- 5. Perform primary screening for antibiotic producers using crowded plate technique.
- 6. To perform industrially important organisms using auxanographic technique.
- 7. To perform different aseptic techniques.
- 8. Demonstration of enrichment culture technique for isolation of industrial important microbes.
- 9. To perform indicator dye technique for the isolation of microorganisms producing acids or amines.

-17/15/2022 Jallous