

MANGALORE UNIVERSITY
DEPARTMENT OF MICROBIOLOGY
MSc Microbiology

MBS- 408: Microbial Methods and Techniques

40h

OBJECTIVES

1. Students are trained to identify bacteria based on the growth characteristics.
2. Study of different types of micro-organisms and their applications.
3. Preparation of microbial specimens and staining technique for microscopy.
4. Media formulation and factor influencing microbial growth.
5. Qualitative and quantitative assessment of bacterial growth.

COURSE OUTCOME

- CO1: Study of biochemical, analytical and molecular technique.
CO2: Employment as bacterial taxonomist, general microbiologist and in analytical labs.
CO3: Optimization of microbial culturing media.
CO4: Concepts of Microbiological and Biochemical techniques

Unit I

Laboratory procedures for identification of bacteria and fungi, classification of bacteria. Brief study of Bergey's manual. Microscopy- Principles and applications (Compound, Bright field, Phase Contrast, Fluorescent. Electron Microscopy)- specimen preparation, staining technique. Morphological study of bacterial and fungal cells.

Unit II

Media, types, factors influencing microbial growth- pH, temperature, Carbon, Nitrogen and metal ions. Bacterial photosynthesis, aerobic and anaerobic respiration, bacterial growth curve, DMC, SPC, MPN. Turbidity, Metabolic Activity and dry weight, haemocytometer.

Unit III

Chromatography, TLC, Gel filtration, IEC, Affinity, GC, HPLC, Electrophoresis, Centrifugation, Spectroscopy: Principle, types and application. Autoradiography and X-ray Crystallography. Florescent, Spectroscopy, Molecular Techniques: Electrophoresis-SDS page, agarose gel, IEF, 2D –Page, PFGE, southern western northern blotting, PCR and its types.

Note: unit: I 14h, & II, III 13h