

4th Semester	RBM4C002	Basic Clinical Science	L-T-P 3-0-0	3 CREDITS
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Module- I (9 Hours)

Introduction to Prokaryotes and Eukaryotes, Study of ultra-structure and morphological classification of bacteria, Nutritional requirements, raw materials used for culture media, Physical parameters for growth, Growth curve, Isolation and preservation methods for pure cultures, Cultivation of anaerobes, Quantitative measurement of bacterial growth (total and viable count). Study of different types of microscopes including bright field microscope, phase contrast microscope, dark field microscope and electron microscope.

Module- II (9 Hours)

Identification of bacteria using staining techniques (simple, Gram's & Acid fast staining) and biochemical tests (IMViC). Study of principle, procedure, merits, demerits and applications of Physical, chemical and mechanical method of sterilization. Evaluation of the efficiency of sterilization methods. Equipment employed in large scale sterilization. Sterility indicators

Module- III (9 Hours)

Study of morphology, classification, reproduction/replication and cultivation of Fungi and Virus. Classification and mode of action of disinfectants. Factors influencing disinfection, antiseptics and their evaluation. Bacteriostatic and bactericidal actions. Evaluation of bactericidal & Bacteriostatic. Sterility testing of products (solids, liquids, and sterile products).

Module- IV (9 Hours)

Designing of aseptic area, laminar flow equipment; study of different sources of contamination in an aseptic area and methods of prevention, clean area classification. Principles and methods of different microbiological assay. Assessment of a new antibiotic and testing of antimicrobial activity of a new substance. General aspects- environmental cleanliness.

Module- V (9 Hours)

Types of spoilage, factors affecting the microbial spoilage of biomedical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage. Preservation of biomedical products using antimicrobial agents, evaluation of microbial stability of biomedical products.

Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures. Application of cell cultures in biomedical industry and research.

Books:

- Microbiology; Michael Pelczar, Jr.; Publisher: McGraw Hill Education; 5 edition (20 April 2001)
- Microbiology; Gerard J. Tortora, Berdell R. Funke, and Christine L. Case; Publisher: Pearson Education India; Eleventh edition (15 July 2016)