

BACHELOR OF SCIENCE IN MEDICAL MICROBIOLOGY

(B.Sc Medical Microbiology)

Syllabus

GENERAL MICROBIOLOGY: Introduction and Bacterial Taxonomy, Microscopy, Morphology and physiology of Bacteria, Sterilisation and Disinfection, Culture Media, Culture methods, Identification of Bacteria, Bacterial Genetics.

IMMUNOLOGY: Infection, Immunity, Antigens, Antibodies –Immunoglobulins, Antigen-Antibody Reaction, Complement System, Structure and functions of the Immune System, Immune Response, Hypersensitivity, Immunodeficiency Diseases, Autoimmunity, Immunology of Transplantation and Malignancy, Immunohematology.

BACTERIOLOGY: *Staphylococcus, Streptococcus, Streptococcus pneumoniae, Neisseria, Corynebacterium, Bacillus*, Anaerobic Bacteria I: *Clostridium*, Anaerobic Bacteria II: Non-sporing Anaerobes, Enterobacteriaceae I: Coliforms – *Proteus*, Enterobacteriaceae II: *Shigella*, Enterobacteriaceae III: *Salmonella, Vibrio, Pseudomonas, Yersinia, Haemophilus, Bordetella, Brucella*, Mycobacterium I: *M.tuberculosis* II: Non-Tuberculous Mycobacteria, Mycobacterium III: *M.leprae*, Spirochetes, Mycoplasma, Actinomycetes, Miscellaneous Bacteria, Rickettsiaceae, Chlamydiae.

VIROLOGY: General Properties of Viruses, Viruses- Host Infections: Viral Infections, Bacteriophages, Poxviruses, Herpes viruses, Adenoviruses, Picornaviruses, Orthomyxoviruses, Paramyxoviruses, Arboviruses, Rhabdoviruses, Hepatitis Viruses, Miscellaneous Viruses, Oncogenic Viruses, Human Immunodeficiency Viruses: AIDS.

MYCOLOGY & PARASITOLOGY: General Aspects, Superficial and Subcutaneous mycoses, Systemic and Opportunistic Mycoses. Protozoans: Amoebae, Flagellates, Sporozoa, Helminths: Nematodes, Cestodes, Trematodes.

CLINICAL MICROBIOLOGY

Bloodstream Infections

Respiratory Tract Infections

Meningitis

Urinary Tract Infections

Sexually Transmitted Infections

Diarrhoea and Food Poisoning

Skin and Soft Tissue Infections

Pyrexia of Unknown Origin

Zoonosis

MICROBIOLOGY PRACTICALS

Grams staining, Acid-fast staining

Negative staining, Special staining

Media preparation

Pure culture techniques

Mixed culture

Serology

Mycology, Parasitology

Tissue culture (LD)

Egg inoculation technique

Lab animal handling

APPLIED MICROBIOLOGY:

Clinical pathology

Lab animal handling and care histopathology

Fundamentals in molecular biology

Cell culture technique, Quality control and quality assessment in clinical laboratory

ELECTIVE COURSE:

Normal Microbial Flora of the Human Body

Laboratory Control of Antimicrobial Therapy

Immunoprophylaxis

Biomedical Waste Management

**POST GRADUATE MODULE - MOLECULAR BIOLOGY, IMMUNOLOGY,
GENETICS AND BIOINFORMATICS**

The post graduate module on Molecular Biology, Genetics, Immunology and Bioinformatics has been designed for the first year Oral Pathology students to understand the basics of Molecular Genetics, Immunogenetics, Cancer Biology, Cancer Informatics, Computational Biology, Epigenomics etc., Since these topics are of great relevance in their field of speciality, this module serves the purpose of Clinical pathologist

Oncobiology is at the forefront of medical research, exploring the intricate mechanisms of cancer development, progression, and treatment. The postgraduate students and budding clinical researchers will have exposure towards the dynamic and rapidly evolving field, gaining insights into the latest discoveries and advancements in the field of cancer biology, drug discovery and theragnostics. Being an inherently interdisciplinary, integrating knowledge from genetics, molecular biology, biochemistry, immunology, and more, this multidimensional approach not only broadens scientific expertise but also fosters collaboration with professionals from various backgrounds, enriching the overall learning experience of students.