

**B.Sc. (Medical Microbiology)**  
**COURSE OUTCOMES**

Students will be able to understand the following.

**Course: Human Anatomy & Physiology**

CO1	Understanding the Organization of human body and integrated physiology.
CO2	Knowledge of Gross anatomy and histology of organs of respiratory system, digestive system, reproductive system and cardiovascular system
CO3	Knowledge of anatomy and histology of musculo-skeletal system, classification & functions of bones and muscles.
CO4	Understanding the important Mechanism of hormone production and factors controlling it.

**Course: Basic Pathology**

CO1	Knowledge of Collection, preservation, transport and handling and disposal of blood samples.
CO2	Understanding of various pathological processes and their importance in human disease.
CO3	Understanding of Various routes of transport of Microbes to human body and methods of defence. Invasive techniques for diagnosis of acute and chronic microbial infections.
CO4	Knowledge of blood banking technology.

**Course: Clinical Biochemistry**

CO1	Basic awareness of clinical biochemistry laboratory in respect to equipments & glasswares.
CO2	To understand the preparation of standard solutions, buffer solutions and pH determination.
CO3	To learn the Biochemical composition of body fluids and their physiological variations.
CO4	Knowledge about the Qualitative tests for glycosuria, pentosuria, galactosuria proteinuria, microalbuminuria and Bence Jones Proteinuria and their clinical significance.
CO5	Knowledge about structure, function and classification of carbohydrates, Lipids, Proteins, Nucleic acid and Enzymes.

**Course: Preventive Medicine & Health Care**

CO1	Knowledge about epidemics, Immunization programme, health and hygiene
CO2	Developing students skills, required for working in environmental and Pollution control laboratory
CO3	Awareness of Normal constituents of diet, various diet programs, balance diet and

	factors responsible for etiology of various nutritional disorders.
CO4	Knowledge about epidemics, Immunization programme, health and hygiene
CO5	Role of regular exercise & yoga in prevention & management of various diseases.

#### **Course: Fundamentals of Medical Microbiology**

CO1	Understanding the important historical events and contribution of scientists in microbiology.
CO2	Understand the Role of medical microbiologist in identification and management of various infectious diseases.
CO3	Expertise in basic microbiology techniques like pure culture, streaking, spreading, pour plate, Serial dilution, inoculation, maintenance of aseptic conditions etc.
CO4	Knowledge about classification and general characters of bacteria, virus, fungi and protozoa.
CO5	Knowledge about disinfectants, antiseptics, chemotherapeutic agents, antibiotics and effect of antibiotics on protein, nucleic acid and cytoplasmic membrane.

#### **Course: Instrumentation Techniques in Medical Microbiology**

CO1	Understanding the principle and applications of Microscopy.
CO2	To learn about the basic staining techniques used in microbiology .
CO3	Being expert in use of general microbiology instruments, such as laminar air flow, pH meter, spectrophotometer, autoclave, water bath ,hot air oven etc.
CO4	To gain knowledge and develop skills of Care and management of experimental animals .

#### **Course: Bacterial Pathogens & Associated Diseases**

CO1	Knowledge about the infectious disease transmission, principles of aseptic practice, and the role of the human body's normal microflora.
CO2	Understanding the fundamentals of pathogens and pathogenesis
CO3	Understanding the detail account of pathogenicity, mode of infection, incubation period and toxigenicity of various gram positive and gram negative bacteria.
CO4	Knowledge of antigenic properties of Protein, carbohydrate, lipids and nucleic acid .

#### **Course: Systematic Bacteriology**

CO1	To learn the Management and quality control of medical microbiology laboratory.
CO2	knowledge regarding Specimen collection from patients, clinics and hospitals for

	epidemiological investigations.
CO3	Knowledge about the various modes of diseases transmission.
CO4	Understanding the various strategies for control of epidemics
CO5	Understanding the detail account of Morphology, Staining, Cultural Characters, Selective cultural media, identification by special tests, biochemical reactions and serotyping of various gram positive and gram negative bacteria.

**Course: Misc. Microbes, Fungal Pathogens & Ass. Diseases**

CO1	To understand the Principle and mode of action of antibiotics, antifungal and antiviral agents.
CO2	Knowledge about the pathogenicity, mode of infection, incubation period and toxigenicity of Miscellaneous microbes.
CO3	Knowledge about clinical features, transmission, causal organism, diagnostics, prevention and control of fungal diseases
CO4	Knowledge about the symptoms, causative organisms, disease cycle and control measures of vector borne diseases.

**Course: Lab Diagnosis of Microbial Disease**

CO1	To understand the importance of pathogenic bacteria in human disease with respect to infections of the respiratory tract, gastrointestinal tract, urinary tract, skin and soft tissue.
CO2	Knowledge about the etiopathogenesis, pathology, clinical features and lab diagnosis of Aspergillosis, Cryptococcosis, Candidiasis, Blastomycosis, ringworms and mycetoma.
CO3	Understanding of Serological and Molecular Methods of diagnosis

**Course: Human Parasitology**

CO1	To know the structural, physiological features and classification of parasites.
CO2	Knowledge about the various modes of diseases transmission through parasites.
CO3	Knowledge about the detail accounts of Lab diagnostic procedures and special methods of demonstrations of human parasites in blood, stool, tissue and other body fluids.

**Course: Applied Medical Microbiology**

CO1	Opportunities to develop informatics and diagnostic skills, including the use and interpretation of laboratory tests in the diagnosis of common infections and infestations.
CO2	To study the Epidemiology markers of microorganisms (Serotyping and

	Bacteriophage)
CO3	Knowledge about clinical sample collection, Portal regulation ,transport, processing and their examination.
CO4	Understanding about fundamentals of medical laboratory diagnostic techniques like :ELISA, Immunofluorescence, Agglutination based tests, Complement fixation etc.
CO5	Understanding of drug sensitivity and resistance in clinical isolates.

#### **Course:Pathogenic Viruses and Associated Diseases**

CO1	Knowledge about structure , replication and classification of different viruses.
CO2	To understand the different methods of viral cultivation such as tissue culture, embryonated egg and animal inoculations.
CO3	knowledge about the treatment, prevention and control of communicable diseases caused by viruses.

#### **Course:Applied immunology & Serodiagnosis**

CO1	Understanding the overview of Immune system and immunity.
CO2	Knowledge about antigens, antibodies and the different type of interactions between them.
CO3	Knowledge about the Clinical significance of tumor markers ,Hepatitis markers and autoimmune disorders markers.
CO4	Knowledge of Widal, ASO, CRP, Rose Waller, Rubella-Agglutination, Cold agglutination, VDRL, TPHA and STS.

#### **Course:Advanced Diagnostic Technology**

CO1	Perform a range of diagnostic techniques relevant to the field of laboratory medicine.
CO2	Knowledge about the Classification, morphological groups and applications of Bacteriophages in medical microbiology.
CO3	Knowledge about mechanism of replication , transcription , translation and transduction .
CO4	To learn the various immunological techniques such as IgM to HB core antigen ,IgG to Hepatitis C virus ,IgG to Hepatitis A virus,Cystecercosis IgG , Chlamydia IgM,IgG, IgA, IgM combined rapid test and Dengue IgM in diagnosis of diseases.

**Course:Automation & Computerization in Medical Micro.**

CO1	To understand the fundamental knowledge of computer structure.
CO2	Knowledge of computer applications in Medical Microbiology.
CO3	To understand the Basic guidelines for medical transcription.
CO4	To study the Automation in Medical Microbiology Laboratory.

**Course:Molecular Biology & Clinical Lab.**

CO1	Knowledge of blood glucose ,liver function,blood urea and cardiac profile tests.
CO2	To understand the Organization,Operation administration ,Quality assurance and safety measures in Blood Banking.
CO3	Knowledge of Histopathology & Histochemistry.
CO4	To understand the Theories of Blood Coagulation & Diagnostic procedures for Coagulation disorders.