

Course specification:

Bacteriology, Mycology, Immunology & Virology:

A-Immunology:

- Pathogenesis of disease by infectious agent.
- Tissues, organ and cells of immune system.
- Types and mechanisms of immunity.
- Antigen and immunogenicity.
- Major Histocompatibility Complex(MHC).
- Antigen Processing and Presentation.
- Cell mediated immunity.
- Cytokines.
- Immunoglobulins.
- Primary and Secondary Immune Response.
- Monoclonal Antibodies.
- The Complement System.
- Hypersensitivity reactions.
- Tolerance.
- Autoimmune diseases.
- Immunization.
- Serology reactions.

B) General Bacteriology & Mycology:

1- General Bacteriology:

- Classification and morphology of bacteria.
- Structure of the Bacterial Cell.
- Bacterial Growth and Metabolism.
- Biological Needs of Bacteria.
- Bacterial Growth and Multiplication.
- Bacterial growth curve.
- Bacterial variation and dissociation.
- Relationship of bacteria to host and environment.
- Bacterial products.
- Bacterial infection and virulence.
- Koch's postulates and their exceptions.

2- Antimicrobial Agents:

- **Methods of microbial control.**
- **Sterilization and Disinfection.**
- **Antimicrobial chemotherapy.**
- **Spectrum of Action of Chemotherapeutics.**
- **Mechanisms of Action of Chemotherapeutics.**
- **Mechanisms and origin of resistance to antimicrobial agents.**
- **Complications of Antibacterial Chemotherapy.**
- **Antibiotic combination.**
- **Antimicrobial susceptibility tests.**

3- General Mycology:

- **Structure of fungal cell and fungal colony.**
- **Fungal reproduction.**
- **Fungal growth and fungal products.**
- **Classification of fungi.**
- **Identification of fungi.**
- **Antifungal drugs.**

C)Principal of Molecular Biology:

- **BACTERIAL GENETICS:**
 - **Structure of nucleoproteins.**
 - **Structure of nucleic acid.**
 - **DNA Replication & DNA repair.**
 - **Plasmids.**
 - **Bacteriophage.**
 - **Bacterial Variations & Transposons.**
 - **DNA Mutation and genetic code.**
 - **Gene Exchange in Bacteria.**
 - **Protein biosynthesis.**
- **Applications of Molecular Bio-technology:**
 - **DNA Cloning.**
 - **Diagnostic Molecular Techniques.**
 - **Molecular Hybridization (DNA probing).**
 - **Polymerase Chain Reaction (PCR) and its application.**
 - **RAPD-PCR and its application.**
 - **RT-PCR and its application.**

- **SDS-PAGE Electrophoresis and its application.**
- **Whole genome sequencing and next generation sequencing and there application.**
- **Bioinformatics.**