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| **B.Sc MICROBIOLOGY (CBCS) SYLLABUS**  **SECOND YEAR – SEMESTER- IV** |
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| **MBT- 401 IMMUNOLOGY AND MEDICAL MICROBIOLOGY** |
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| **TOTAL HOURS: 48** **CREDITS: 4** |
| **UNIT-I No. of hours: 10** |
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| Types of immunity – innate and acquired; active and passive; humoral and cell-mediated immunity.  Primary and secondary organs of immune system – thymus, bursa fabricus, bone marrow, spleen and lymph nodes.  Cells of immune system.  Identiification and function of B and T lymphocytes, null cells, monocytes, macrophages, neutrophils, basophils and eosinophils and Mast cells |
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| **UNIT-II No. of hours: 10** |
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| Antigens – types, chemical nature, antigenic determinants, haptens.  Factors affecting antigenicity.  Antibodies – basic structure, types, properties and functions of immunoglobulins.  Types of antigen-antibody reactions - Agglutinations, Precipitation, Neutralization, complement fixation, blood groups.  Labeled antibody based techniques – ELISA, RIA and Immunofluroscence. Polyclonal and monoclonal antibodies – production and applications.  Concept of hypersensitivity and Autoimmunity. |
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| **UNIT-III No. of hours: 10** |
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| Normal flora of human body.  Host pathogen interactions: infection, invasion, pathogen, pathogenicity, virulence and opportunistic infection.  General account on nosocomial infection.  General principles of diagnostic microbiology- collection, transport and processing of clinical samples.  General methods of laboratory diagnosis - cultural, biochemical, serological and molecular methods. |
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| **UNIT-IV No. of hours: 8** |
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| Antibacterial Agents- Penicillin, Streptomycin .  Antifungal agents – Amphotericin B, Griseofulvin  Antiviral substances - Amantadine and Acyclovir  Tests for antimicrobial susceptibility.  Brief account on antibiotic resistance in bacteria - Methicillin-resistant Staphylococcus aureus (MRSA).  Vaccines – Natural and recombinant. |
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| **UNIT-V No. of hours: 10** |
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| General account on microbial diseases – causal organism, pathogenesis, epidemiology, diagnosis, prevention and control  Bacterial diseases – Tuberculosis and Typhoid  Fungal diseases – Candidiasis.  Protozoal diseases – Malaria.  Viral Diseases - Hepatitis- A and AIDS |

**MBP- 401 IMMUNOLOGY AND MEDICAL MICROBIOLOGY**

**TOTAL HOURS: 48**  **CREDITS: 2**

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| 1. | 1. Identification of human blood groups. |
| 2. | 1. Separate serum from the blood sample (demonstration). |
| 3. | 1. Estimation of blood haemoglobin. |
| 4. | 1. Total Leukocyte Count of the given blood sample. |
| 5. | 1. Differential Leukocyte Count of the given blood sample. |
| 6. | 1. Immunodiffusion by Ouchterlony method. |
| 7. | 1. Identify bacteria (*E. coli, Pseudomonas, Staphylococcus, Bacillus*) using laboratory strains on the basis of cultural, morphological and biochemical characteristics: IMViC, urease production and catalase tests |
| 8. | Isolation of bacterial flora of skin by swab method. |
| 9. | Antibacterial sensitivity by Kirby-Bauer method |
| 10. | 1. Study symptoms of the diseases with the help of photographs: Anthrax,   Polio, Herpes, chicken pox, HPV warts, Dermatomycoses (ring worms) |
| 11. | 1. Study of various stages of malarial parasite in RBCs using permanent mounts. |
| **Additional Inputs:**  **Isolation of bacterial flora from different body parts.**  **Learning Out comes:**   1. **Explain No-specific body defenses and the immune response** 2. **Develop knowledge on disease transmission and control** 3. **Demonstrate on collection and handling of laboratory specimens** 4. **Develop a information making personal health decision in regard to infectious diseases.** | | |