

Clinical Microbiology

Skill Based Elective - I

(Semester – III)

Human Anatomy and Microbial Interactions

Unit -I

Anatomy of skin, Respiratory track, Gastrointestinal tract, Genitourinary system – General Structure and Physiology. Cardio Vascular System, Central Nervous System.

Unit -II

Anatomy and Physiological process of Human beings – Circulatory System, Nervous System, Lymphoid System, Cells of Immune System.

Unit- III

Non-specific and specific Defense mechanism of Human, Normal flora of healthy human host, Host microbe interaction.

Unit- IV

Epidemiology of Infectious disease, A brief account on biology of immune system and role of vaccination – Immunization schedule.

Unit -V

Laboratory rules and regulation to handle various pathogenic strains of Bacteria, Fungi and Protozoa. Microscopes used for Laboratory investigation, Staining and Serological methods, Universal precaution, HIV.

References

Kathleen Talaro, Arthur Talaro. Foundations in Microbiology, 2nd Ed., W.M.C. Brown Publishers Chigago, 1996.
Lansing M.Prescott, John P.Harley, Donald A.Klein. Microbiology, 4th Ed & 5th Ed, W.C.B. McGraw Hill, 1999, 2001.

Ronald M.Atlas, Principles of Microbiology, 2nd Ed., Wm.C.Brown Publishers, 1977.

Tortora. J., Funke.R. Case L. Microbiology an Introduction. 6th Ed. Addition Wesley Longman 1997.

Skill Based Elective – II

(Semester – IV)

Clinical Bacteriology

Unit- I

Historical development in Bacteriology, Classification of Pathogenic bacteria, General methods of isolation and identification of pathogenic bacteria.

Unit- II

Infections associated with following Gram-positive bacteria – Bacillus anthracis. Clostridium, Pneumococcus, Corynebacterium, Streptococcal infections, Staphylococcal infections.

Unit -III

Infections associated with following Gram-negative bacteria – Enterobacteriaceae – Salmonella, Shigella, Klebsiella, Proteus, Yersinia and Escheichia. Vibrio, Pseudomonas, Neisseria, Haemophilus, Campylobacter, Bordetella, Brucella.

Unit- IV

Infections associated with Mycoplasma, Mycobacterium tuberculosis and Mycobacterium leprae. Spirochetes – Treponema, Borrelia and Leptospira. Actinomycetes. Rickettsiae and Chlamydiae.

Unit- V

Nosocomial infections and Zoonotic diseases, Sterilization, disinfection and antimicrobial agents, culturing Techniques and sensitivity Testing; MPN count for water Quality.

References

Moselio Schaechter, Cary Engleberg, N.Barry I. Eisenstein, Gerald medoff. Mechanisms of microbial disease, 3rd ed, Lippincott Williams & Wilkins, 1999.

Ananthanarayan and Jayaram Paniker. Textbook of Microbiology, 4th ed. Orient Longman, 2000.

Mandel, G.L. Bennet, J.E. and Dolin, R. 1995. Principles and practice of infectious disease. 4th edi. Churchill Living stone. New York.

LAB IN HUMAN ANATOMY AND LABORATORY CLINICAL MICROBIOLOGY

1. Laboratory Rules and Regulations.
2. Isolation of Bacteria from Pus, Sputum, Blood, Stool and Urine – Using Selective and Differential medium.
3. Various microscopic methods to assess the morphology of bacteria.
4. Serogrouping of Bacteria.
5. Identification of different Gram – negative bacteria.
6. Identification of different Gram-positive bacteria.
7. Antibiotic sensitivity assay – Disc Diffusion method.
8. Assessing Minimum Inhibitory Concentrations.
9. Precipitation Techniques.
10. Agglutination Techniques
11. ELISA
12. PCR
13. Application of DNA probes for diagnosis
14. Immuno Electrophoresis.

References

- Kathleen Talaro, Arthur Talaro. Foundations in Microbiology, 2nd Ed., W.M.C. Brown Publishers Chicago, 1996.
- Lansing M.Prescott, John P.Harley, Donald A.Klein. Microbiology, 4th Ed & 5th Ed, W.C.B. McGraw Hill, 1999, 2001.
- Ronald M.Atlas, Principles of Microbiology, 2nd Ed., Wm.C.Brown Publishers, 1977.
- Tortora. J., Funke.R. Case L. Microbiology an Introduction. 6th Ed. Addition Wesley Longman 1997.
- Moselio Schaechter, Cary Engleberg, N.Barry I. Eisenstein, Gerald medoff. Mechanisms of microbial disease, 3rd ed, Lippincott Williams & Wilkins, 1999.
- Ananthanarayan and Jayaram Paniker. Textbook of Microbiology, 4th ed. Orient Longman, 2000.
- Mandel, G.L. Bennet, J.E. and Dolin, R. 1995. Principles and practice of infectious disease. 4th edi. Churchill Living stone. New York.

Skill Based Elective - IV

(Semester – V)

Clinical Mycology and Virology

Unit -I

Classification of Medically important fungi. General identification process of medically important fungi.

Unit- II

Detailed study about etiology, Lab diagnosis, Pathogenesis and Treatment of Superficial, Subcutaneous, Systemic mycoses of human.

Unit- III

Classification of animal viruses. Isolation, Identification, Cultivation and Purification of animal viruses. Antiviral chemotherapy. Viral Zoonotic infection. Viral vaccines. Interferons.

Unit -IV

DNA viruses- Poxvirus, Herpes virus, Adeno virus, Hepatitis B virus.

Unit -V

RNA viruses – Retrovirus, Picorna virus, Reo virus, Herpes virus, Rhabdo virus, Toga virus, Paramyxo virus.

References

Richman, Whitley, Hayden. Clinical virology. Churchill Livingstone, New York. 1997.
David. M.Knipe & Peter M.Harley. Fundamental Virology, 4th Ed., Lippincott Williams & Wilkins, 2001.
S.J. Flint Enguist, L.W. Krug RM, Racaniello V.R., A.M.Skalka. Principles of Virology, A.S.M. Press, Wasington, 2000.

Skill Based Elective - V

(Semester - VI)

Clinical Parasitology

Unit -I

Classification and Brief history of Protozoa and helminthic infections – mechanism of disease production by parasites.

Unit -II

Etiology, Pathogenesis, Clinical diagnosis of following protozoans – Entamoeba histolytica, Giardia lamblia, Trypanosoma, Leishmania, Trichomonas, Balantidium, Plasmodium, Toxoplasma, Isospora, Cryptosporidium.

Unit -III

Etiology, Pathogenesis, Clinical diagnosis of following Nematodes – Trichonella, Trichuris, Ancylostoma, Enterobius, Dracunculosis, Wucheria bancrofti, Brugia, Loa loa.

Unit -IV

Etiology, Pathogenesis, Clinical diagnosis of following Cestodes – Tinea, Diphyllobotrium, Cysticercus, Echinococcus.

Unit -V

Etiology, Pathogenesis, Clinical diagnosis of following Trematodes – Schistosoma, Medical entomology.

References

Moselio Schaechter, Cary Engleberg, N.Barry I. Eisenstein, Gerald medoff. Mechanisms of microbial disease, 3rd Ed, Lippincott Williams & Wilkins, 1999.

Samuel Baron. Medical Microbiology, 2nd Ed, Addison – Wesley Publication & Co., New York. 1986.

Lab in Mycology, Virology and Parasitology

1. Sample collection procedures for common fungal infections.
2. Fungal KOH mount.
3. Lacto phenol Cotton Blue Test.
4. Germ Tube Test
5. Common methods for isolation of common laboratory fungi.
6. Slide culture technique.
7. Identification of some pathogenic fungi.
8. Giemsa Staining.
9. Leishman Staining.
10. Iodine and Saline wet mount.
11. Concentration technique to examine stool parasite.
12. Identification of common Protozoa, Nematodes and Trematodes.
13. Haemagglutination inhibition Test.

References

- Murray, P.R.1995. Manual of Clinical Microbiology 6th ed. ASM Press. Washington DC.
- Monica chesbrough. Medical laboratory manual for Tropical Countries, Educational low priced books scheme, Volume II, 1984.
- Lennette HE, Balows A, Hausser WJ et al. Collection, Handling and Processing of Specimen. In Manual of Clinical Microbiology, 4th Ed., ASM Washington, DC, 73-98, 1985.
- McGinnis M.R. Laboratory handbook of medical mycology. Academic Press, New York, 1980.
- Callaway C.J. and L.D. Haley. Laboratory methods in Medical mycology 4th ed. Centres for Disease Control. Atlanta, Ga. 1978.
- Koneman, E.W., G.D. Roberts and S.F. Wright: Practical laboratory mycology 2nd Ed. The Williams and Wilkins Co. Baltimore 1978.