Course Specifications for Microbiology

	Chapter	ILOs
	GENERAL MICROBIOLOGY	
1	Introduction of microbiology	To differentiate between viruses, fungi and bacteria. To differentiate between Prokaryotes and eukaryotes. To recognize bacterial morphology and structure. To learn about bacterial physiology. To learn about major mechanisms of pathogenicity.
2	Microbial Genetics	describe bacterial chromosome and replication. recognize gene expression in bacteria. recognize bacterial plasmid, types and function describe transposons, and insertion sequences recognize bacterial variation and its types. illustrate types and methods of gene transfer between bacteria. define types of bacterial mutation. recognize and illustrate the steps of gene cloning. recognize the applications of recombinant DNA technology
3	Antimicrobial agents	Know different terms of antimicrobial processes Mention methods and uses of sterilization & disinfection Describe mechanisms of action and resistance of drugs Mention the origin of Microbial resistance to drugs and their methods of transfer Mention complication of antimicrobial therapy Factors induce resistance and their limitation
4	**IMMUNITY**	
5	Innate immunity	To know components of the innate and adaptive immune response Compare between innate and adaptive immune system The steps of phagocytosis and mechanisms of intracellular killing The meaning of Opsonization and the molecules involved The meaning of antigen , epitope and hapten , adjuvants and mitogen
6	Tissues & cells of the Immune System	To know the primary and secondary lymphoid organs and their functions The origin and functions of the cells of the immune system The structure and functions of antigen recognition molecules of Band T cells and maturation of them
7	Humoral immunity	The humoral response to thymus independent and dependent antigens The basic structures and effector functions of the five antibody isotypes The Classical and alternative complement pathways and their biologic functions
8	Cell Mediated Immunity	Define the role of CMI.

		Recognize the features of CMI. Describe the stages of Th cell activation. Describe the stages of Tc cell activation. Recognize the general features of cytokines. Mention the types of cytokines according to their function. Mention the types and uses of interferon.
9	Hypersensitivity reactions	recognize the different types of hypersensitivity reaction. recognize the mechanism, and clinical types of each type. recognize the diagnosis and management of hypersensitivity reactions.
10	Tolerance	Recognize the definition of tolerance. Describe the mechanism of autotolerance. Recognize how to induce tolerance
11	Autoimmune diseases	Recognize the definition of autoimmune diseases, Recognize the aetiology of autoimmune diseases. Recognize the mechanism of tissue damage in autoimmune diseases.
12	Transplantation Immunology	To recognize the types of grafts. To recognize the types and mechanism of graft rejection. To recognize how to prevent graft rejection. To define graft versus host disease.
13	Immunization	Differentiate between active and passive immunization. Mention the types of vaccines with giving examples. Recognize the advantages and disadvantages of killed versus living vaccines.
14	Tumor Immunology	Define immune surveillance. Describe the immune response against tumours. Mention the types of tumour Ags. Mention some tumour markers. Mention some approaches to cancer immunotherapy.
15	**SYSTEMATIC BACTERIOLOGY**	
16	Staphylococci	To recognize medically important Staph To know morphology , culture , biochemical reactions of Staph To recognize diseases caused by them , describe pathogenesis To know the outline of diagnosis , treatment , prevention and control of infection
17	Streptococci	To know methods of streptococci classification To recognize diseases caused by each species To describe pathogenesis and mode of transmission of the disease To know the diagnosis , treatment and prevention of infection
18	Neisseria	To know medically important Neisseria To know morphology , culture and biochemical reaction of microorganism Describe pathogenesis of the diseases Describe diagnosis , treatment and prevention of infection
19	Corynebacteria	To describe the morphology , culture of C.diphtheriae To describe pathogenesis and mode of transmission of diphtheria To know tests for toxigenicity of C.diphtheriae

		To recognize the outline of diagnosis , treatment , prevention and control of diphtheria
20	Listeria monocytogens:	To know general character of Listeria monocytogens To know the most important clinical condition caused by M.O. and its pathogenesis. The outline of diagnosis , prevention and treatment of diseases
21	Bacillus	To know morphology , culture , pathogenesis and transmission of B.anthracis The outline of diagnosis ,prevention and treatment of anthrax B.cereus food poisoning Compersion between B.anthracis and anthracoids
22	Clostridium	Morphology , culture characteristics of this anaerobic genus The important pathogenic Closteridia and diseases caused by them Pathogenesis , mode of transmission of each of them Diagnosis , prevention , treatment of each of them
23	Mycobacteria	General characters of Mycobacteria Diseases caused by pathogenic organism Pathogenesis , diagnosis , prevention and treatment of tuberculosis and leprosy
24	Enterobacteriaceae	General characters of this family lactose and Non-lactose fermenter members Important diseases produced by pathogenic members Pathogenesis and mode of transmission of the agents Outlines of diagnosis , prevention and treatment of diseases
25	Pseudomonas	General characters of Ps.aeruginosa Reservoir , Transmission and pathogenesis of infection Outline of diagnosis , treatment and prevention
26	Vibrio , Camplyobacter , Heliocobacter	General characters of each genus Reservoir , transmission and pathogenesis of each infection Outline of diagnosis , prevention and treatment
27	Brucella	General charcetrs of this zoonotic organism Reservoir , transmission and pathogenesis of infection Outline of diagnosis , treatment and prevention
28	Haemphilus , Bordetella and legionella	General characters of each genus Reservoir , transmission and pathogenesis of each infection Outline of diagnosis , prevention and treatment
29	Spirochetes	The 3 important pathogenic genera of spirochetes The important disease they caused Reservoir , mode of transmission , pathogenesis of each Diagnosis , prevention and treatment of each disease
30	Mycoplasma	General characters of Mycoplasma 2-Important Mycoplasma diseases 3-Reservoir , transmission , pathogenesis , diagnosis and treatment of atypical pneumonia
31	Rickettsia	General characters of Rickettsia Human diseases they caused and diagnosis Difference between Coxiella and other rickettsia

32	Chlamydia	General characters of Chalmydiae Diseases they caused by pathogenic members Diagnosis , treatment , prevention of the infection Compersion between typical bacteria and Rickettsia , Mycoplasma , Chlamydiae
33	**VIROLOGY**	
34	Poxvirus	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by these viruses? 3- Recognize the pathogenesis and mode of transmission of caused diseases. 4- Outline the prevention and control of the diseases?
35	Herpes virus	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by these viruses? 3- Recognize the pathogenesis and mode of transmission of caused diseases. 4- Recognize the target cell and the site of latency of each virus in this family. 5- Outline the diagnosis, treatment, prevention and control
36	DNA Non-enveloped viruses (Papavoviruses- Adenovirus –Parvovirus)	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by these viruses? 3- Recognize the pathogenesis and mode of transmission of caused diseases. 4- Outline the prevention and control of the diseases?
37	Picornaviruses	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by these viruses? 3- Recognize the pathogenesis and mode of transmission of caused diseases. 4- Outline the prevention and control of the diseases?
38	Orthomyxoviruses	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by these viruses? 3- Recognize the pathogenesis and mode of transmission of caused diseases. 4- Outline the prevention and control of the diseases?
39	Paramyxoviruses	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by these viruses? 3- Recognize the pathogenesis and mode of transmission of caused diseases.
40	Rhabdovirus	1- Recognize the general characters of this family. 2- Mention the important diseases caused by the Rabies virus? 3- Recognize the pathogenesis and mode of transmission of such diseases. 4- Outline the diagnosis, treatment, prevention and control of the disease
41	ARTHROPOD-BORNE and RODENT-BORNE VIRUSES	1- Recognizes the general characters of these families. 2- Mention the important diseases caused by the theses viruses? 3- Recognize the pathogenesis and mode of transmission of caused diseases. 4- Outline the diagnosis, treatment, prevention and control of the

		diseases?
42	REOVIRUSES	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by the Rota virus? 3- Recognize the pathogenesis and mode of transmission of such disease. 4- Outline the diagnosis, treatment, prevention and control of the disease?
43	RETROVIRUSES	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by the Retroviruses? 3- Recognize the pathogenesis and mode of transmission of such diseases. 4- Outline the diagnosis, treatment, prevention and control of the disease?
44	Hepatitis viruses	1- Recognizes the general characters of this family. 2- Mention the important diseases caused by the Retroviruses? 3- Recognize the pathogenesis and mode of transmission of such diseases. 4- Outline the diagnosis, treatment, prevention and control of the disease?