



Semester 6

BRANCH	Subject Title	Subject Code
B.Sc. (Microbiology -DSE2)	Microbes as pathogen	MBDSE2-161

Core Learning Outcome [CLO]

Upon successful completion of the course, the student:

1. Will have acquainted themselves with the terminology and scientific nomenclature used in describing disease causation and pathogenic features of microbial agents of disease.
2. Will have gained an in depth knowledge about the spectrum of diseases caused by bacterial and viral pathogens, and an understanding of the course of disease development and accompanying symptoms.
3. Will acquire knowledge on the causation of fungal and protozoan diseases and methods of prevention and control
4. Will get an idea about some important plant pathogens and diseases caused by them

Unit 1

Host pathogen interaction

Definitions-Infection, Invasion, Pathogen, Pathogenicity, Virulence, Toxigenicity, Carriers and their type,

Opportunistic infections, Nosocomial infections.

Transmission of infection, Pathophysiologic effects of lipopolysaccharide (LPS).

Bacterial and Viral disease

Bacterial diseases

List of diseases of various organ systems and their causative agents. The following diseases in detail with Symptoms, mode of transmission, prophylaxis and control: Respiratory Diseases: Streptococcus pyogenes, Haemophilus influenza, Mycobacterium tuberculosis. Gastrointestinal Diseases: Escherichia coli, Salmonella typhi, Vibrio cholerae, Helicobacter pylori. Others: Staphylococcus aureus, Bacillus anthracis, Clostridium tetani, Treponema pallidum, Clostridium difficile.



Viral diseases

List of diseases of various organ systems and their causative agents. The following diseases in detail with Symptoms, mode of transmission, prophylaxis and control: Polio, Herpes, Hepatitis, Rabies, Dengue, AIDS, Influenza with brief description of swine flu. Ebola, Chikungunya, Japanese Encephalitis

Unit 3

Protozoan and Fungal diseases

Protozoan diseases

List of diseases of various organ systems and their causative agents. The following diseases in detail with Symptoms, mode of transmission prophylaxis and control: Malaria, Kala-azar.

Fungal diseases

Brief description of each of the following types of mycoses and one representative disease to be studied with respect to transmission, symptoms and prevention Cutaneous mycoses: Tinea pedis (Athlete's foot). Systemic mycoses Histoplasmosis. Opportunistic mycoses: Candidiasis

Unit 4

Study of some important plant diseases

A. Important diseases caused by fungi-White rust of crucifers: Albugo candida, Downy mildew of onion-Peronospora destructor, Late blight of potato-Phytophthora infestans, Powdery mildew of wheat-Erysiphegraminis, Ergot of rye-Clavicepspurpure, Black stem rust of wheat Pucciniagraministritici, Loose smut of wheat-Ustilago mala, Wilt of tomato-Fusariumoxysporum Exp. bcopersici Rest not of sugarcane Colletotrichumfalcatom and Tarty blight of potato- Alemaniasolani

B. Important diseases caused by phytopathogenic bacteria Angular leaf spot of cotton, bacterial leaf blight of rice, crown gall, bacterial cankers of citrus

C. Important disease caused by phytoplasmas: Aster yellows, citrus

D. Important diseases caused by viruses: Papaya ring yellow, citrus yellow leaf curl, banana bunchy top, rice tungro

E. Important diseases caused by viral Papaya spindle tuber, coconut Cadangcadang

Microbes as Pathogen practical's

1. Identify E. coli, Salmonella, Pseudomonas, Staphylococcus, Bacillus (any three) on the basis of cultural, morphological and biochemical characteristics: IMVIC, TSI, nitrate reduction, urease production and catalase tests.
2. Study of composition and use of important differential media for identification of bacteria: EMD Agar, Mannitol salt agar, Deoxycholate citrate agar, TCBS..
3. Study symptoms of the diseases with the help of photographs: Polio, anthrax, herpes,



4. chicken pox, warts, AIDS (candidiasis), dermatomycoses (ring worms)
5. Study of various stages of Malaria parasite in RBCs using permanent mounts/Photomicrographs
6. Study of important diseases of crop plants by cutting sections of Infected plant material- Albugo, Puccinia, Ustilago, Fusarium, Colletotrichum
7. Any other experiment may be designed on the basis of theoretical aspects