

INSTITUTE	FACULTY OF SCIENCE
PROGRAM	BACHELOR OF SCIENCE (MICROBIOLOGY)
SEMESTER	6
COURSE TITLE	MEDICAL MICROBIOLOGY
COURSE CODE	02MB0359
COURSE CREDITS	4

Objective:

- 1 The course will provide the conceptual basis for understanding pathogenic microorganisms and particularly address the fundamental mechanisms of their pathogenicity.

Course Outcomes: After completion of this course, student will be able to:

- 1 Distinguish between normal and pathogenic microorganisms to assess their role in human infectious diseases.
- 2 Categorize bacterial diseases by evaluating their modes of transmission, symptoms, and impact on human health.
- 3 Select diagnostic approaches to differentiate between viral and fungal diseases based on their transmission routes and clinical symptoms.
- 4 Analyze the role and mechanism of action of various antimicrobial agents in controlling infectious diseases.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	Normal microflora of the human body and host pathogen interaction Normal microflora of the human body: Importance of normal microflora, normal microflora of skin, throat, gastrointestinal tract, urogenital tract Host pathogen interaction: Definitions - Infection, Invasion, Pathogen, Pathogenicity, Virulence, Toxigenicity, Carriers and their types, Opportunistic infections, Nosocomial infections. Transmission of infection, Pathophysiological effects of LPS.	10

Contents : Unit	Topics	Contact Hours
2	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 influenzae, Mycobacterium tuberculosis Gastrointestinal Diseases: Escherichia coli, Salmonella typhi, Vibrio cholerae, Helicobacter pylori Others: Staphylococcus aureus, Bacillus anthracis, Clostridium tetani, Treponema pallidum, Clostridium difficile.	15
3	Viral Diseases and fungal 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. 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.	20
4	Antibacterial agents Five modes of action with one example each: Inhibitor of nucleic acid synthesis; Inhibitor of cell wall synthesis; Inhibitor of cell membrane function; Inhibitor of protein synthesis; Inhibitor of metabolism. Antifungal agents: Mechanism of action of Amphotericin B, Griseofulvin Antiviral agents: Mechanism of action of Amantadine, Acyclovir, Azidothymidine. Antibiotic resistance, MDR, XDR, MRSA, NDM.	15
Total Hours		60

Textbook :

- 1 Textbook of Microbiology, Ananthanarayan R. and Paniker C.K.J. , University Press Publication, 2009

References:

- 1 Medical Microbiology, Medical Microbiology, Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner, T.A. , McGraw Hill Publication, 2013
- 2 Mims' Medical Microbiology, Mims' Medical Microbiology, Goering R., Dockrell H., Zuckerman M. and Wakelin D. , Elsevier, 2007
- 3 Harley and Klein's Microbiology, Harley and Klein's Microbiology, Willey JM, Sherwood LM, and Woolverton CJ. , McGraw Hill Higher Education, 2013

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
5.00	10.00	30.00	30.00	20.00	5.00

Instructional Method:

- 1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, etc. b. The internal evaluation will be done on the basis of continuous evaluation of students in the class-room in the form of attendance, assignments, verbal interactions etc.
- 2 The internal evaluation will be done on the basis of continuous evaluation of students in the class-room in the form of attendance, assignments, verbal interactions etc.
- 3 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

- 1 <https://www.youtube.com/watch?v=wLI6WSXUQq4>