

PG MICROBIOLOGY

PCMBD20: MEDICAL MICROBIOLOGY

Year 2020	Course Code	Title Of The Course	Course Type	Course Category	H/W	Credits	Marks
SEM: II	PCMBD20	Medical Microbiology	Theory	Core	5	5	100

Course Objective: To provide an in depth understanding of the pathogenic mechanism of microorganisms, the diseases caused, its laboratory diagnosis and control measures.

Course Outcomes (CO):

At the end of the course, the learners will be able to;

CO1: Outline the basics of Medical Microbiology and describe the mode of transmission of various pathogens.

CO2: Select methods to identify the causative agents for clinical diagnosis.

CO3: Analyse pathogenic microorganism of bacteria and its mechanism of pathogenesis.

CO4: Discuss on pathogenic fungi and parasites.

CO5: Compile virus structure, multiplication, classification and medical importance.

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	H	M	M	M	H	H
CO2	H	H	H	H	H	H
CO3	H	H	H	M	M	H
CO4	H	L	L	L	M	H
CO5	H	M	L	L	M	H

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	H	M	M	M	M	H
CO2	H	H	H	H	M	H
CO3	H	H	H	M	M	H
CO4	H	L	L	L	M	H
CO5	H	M	L	L	M	H

H – HIGH (3)

M – MODERATE (2)

L – LOW (1)

COURSE SYLLABUS

UNIT-I: Introduction to Medical Microbiology. (10 hours)

- 1.1 Basics in Medical microbiology - Infectious diseases overview. (K1,K2)
- 1.2 Medically important microbes. (K1,K2)
- 1.3 **Microbial diseases - sources, route of transmission.** (K1,K2)
- 1.4 Pathogenesis - adhesion, invasion, host cell damage, release of pathogens. (K1,K2)
- 1.5 Microbial virulence and virulence factors - Signs and symptoms of microbial diseases. (K1,K2)
- 1.6 Treatment, Prevention and control of microbial infections. (K1,K2,K3)

UNIT-II: Diagnostic Microbiology. (10 hours)

- 2.1 Diagnosis of microbial diseases – Collection and transport of clinical specimens. (K2,K3,K4,K5)
- 2.2 Preliminary processing of clinical samples- identification and cultural characteristics. (K2,K3,K4,K5)
- 2.3 Detection of Biochemical properties of pathogens. (K2,K3,K4,K5)
- 2.4 Immunodiagnosis. (K2,K3,K4,K5)
- 2.5 Molecular diagnosis of microbial diseases. (K2,K3,K4,K5)
- 2.6 Modern methods of microbial diagnosis. (K2,K3,K4,K5)

UNIT-III: Medical Bacteriology. (20 hours)

- 3.1 Bacteriology - Characteristics, classification, pathogenesis, pathology, diagnosis, treatment, prevention and control of diseases caused by *Staphylococci*, *Streptococci*. (K1,K2,K3,K4)
- 3.2 ***Neisseria***, *Bacillus*, *Clostridium*. (K1,K2,K3,K4)
- 3.3 *Corynebacterium* and *Mycobacteria*. (K1,K2,K3,K4)
- 3.4 Members of Family Enterobacteriaceae., (K1,K2,K3,K4)
- 3.5 *Vibrio*, *Pseudomonas*. (K1,K2,K3,K4)
- 3.6 ***Spirochaetes***, Rickettsiae and ***Chlamydiae***. (K1,K2,K3,K4)

UNIT-IV: Medical Mycology and Parasitology. (20 hours)

- 4.1 **Mycology - Human mycotic infections caused by Dermatophytes** (K1,K2)
- 4.2 *Histoplasma*, *Cryptococcus*, ***Candida***, (K1,K2)
- 4.3 Mycotic Mycetoma - Mycotoxins. (K1,K2)
- 4.4 Parasitology - Medical importance of *Entamoeba*, *Giardia*, *Lieshmania*, (K1,K2)
- 4.5 *Plasmodium*, *Taenia*, *Ascaris*, *Wucherhiria*. (K1,K2)
- 4.6 Laboratory techniques used in the diagnosis of fungal and parasitic diseases. (K1,K2,K3,K4)

UNIT-V: Virology. (15 hours)

- 5.1 Viruses – Structure, multiplication, classification and medical importance of DNA viruses – Adeno, Pox. (K1,K2)
- 5.2 Herpes, Hepatitis Virus. (K1,K2)
- 5.3 RNA viruses - Picorna, Orthomyxo, Paramyxo. (K1,K2)
- 5.4 Virus causing SARS, MERS and SARS-CoV2 (K1,K2)
- 5.5 **Oncogenic Viruses (Papilloma and Polyoma)**, (K1,K2)
- 5.6 Rhabdo and HIV virus(K1,K2)

TEXT BOOKS:

1. Ananthanarayan R & Paniker C.K.J. (2013). Text Book of Microbiology, 9th edition, Universities Press, Hyderabad.
2. Jawetz, Melnick, &Adelberg's. (2013). Medical Microbiology. 26th edition. McGraw-Hill, New York.
3. Mehrotra RS and Aneja KR (2006). An Introduction to Mycology. 1st edition, New age international publishers, Chennai.
4. Subhash Chandra Parija (2013). Text book of Medical Parasitology. 4th edition, All India Publishers and Distributors (Medical Books Publishers), New Delhi.
5. Dimmok N.J and Primrose S.B (1994). Introduction to modern virology 4th edition, Blackwell scientific company publications, United States.

REFERENCE BOOKS:

1. Tille P. Bailey and Scott (2013). Diagnostic Microbiology, 13th edition, Mosby Publishers, United States.
2. Satish Gupte (2005). The Short Textbook of Medical Microbiology. 8th edition, Jaypee Brothers, Medical publishers (P) Ltd., New Delhi.
3. Monica Cheesbrough (2003). District Laboratory Practice in Tropical Countries. Part 1 & 2, Cambridge University Press.
4. Jagadish Chander (1996). A text book of Medical Mycology. 1st edition. Interprint, New Delhi.
5. Chatterjee K.D (2016). Parasitology, Protozoology & Helminthology. 13th edition. Joe media Publishers. Calcutta.

OER:

1. <http://www.gutenberg.org/>
2. <http://www.free-ebooks.net/>
3. <http://www.bookrix.com>
4. <http://www.e-booksdirectory.com/>
5. <http://bookboon.com/>
6. <http://www.freebooks.com/ebooks/>