

## UG MICROBIOLOGY

### UCMBG20- MEDICAL BACTERIOLOGY AND MYCOLOGY

Year 2020	Course Code	Title Of The Course	Course Type	Course Category	H/W	Credits	Marks
<b>SEM: V</b>	UCMBG20	Medical Bacteriology and Mycology	Theory	Core	5	5	100

**Course Objective:** To enable students understanding on medically important bacteria and fungi, the concepts, epidemiology and development of microbial diseases and the principles behind prevention and treatment of such diseases.

#### Course Outcomes (CO):

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

**CO1:** Outline the importance of Host-Parasite relationships and demonstrate the collection of various clinical specimens and processing it.

**CO2:** Explain about the diseases caused by the bacterial pathogens, prevention and treatment.

**CO3:** Discuss the different modes of transmission of bacterial diseases and its preventive measures.

**CO4:** Compare the morphological classification of fungi, and isolation of fungi from clinical specimen.

**CO5:** Compile the common mycotic diseases, their pathogenicity and various antifungal agents used for treatment.

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

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

**H – HIGH (3)**

**M – MODERATE (2)**

**L – LOW (1)**

## **COURSE SYLLABUS**

### **UNIT I: Infection, its types and processing of clinical specimens. (10 hours)**

- 1.1 Normal Microbial flora of human body. (K1,K2)
- 1.2 Host parasite relationship. (K1,K2)
- 1.3 Infection and types of infection (Primary, Secondary, Reinfection , cross infection, Nosocomial and Iatrogenic infection). (K1,K2)
- 1.4 Virulence factors of bacteria causing infection. (K1,K2)
- 1.5 Specimen collection, Transport and storage. (K1,K2,K3)
- 1.6 Specimen processing (Blood, Urine, CSF, Sputum and other body fluids). (K1,K2,K3)

### **UNIT II: Bacterial pathogens-I. (20 hours)**

- 2.1 Morphology, classification, antigenic structure, cultural characteristics, pathogenicity, laboratory diagnosis, preventive measures and treatment of Human pathogens – *Staphylococcus aureus*, *Streptococcus pyogenes*, *Streptococcus pneumoniae*. (K1,K2,K3)
- 2.2 *Neisseriae meningitidis* and *Neisseriae gonorrhoeae*, *Corynebacterium diphtheria*. (K1,K2,K3)
- 2.3 *Mycobacterium tuberculosis* and *Mycobacterium leprae*, *Bacillus anthracis*. (K1,K2,K3)
- 2.4 *Clostridium botulinum*, *Clostridium tetani* and *Clostridium perfringens*. (K1,K2,K3)
- 2.5 Family – Enterobacteriaceae- *Escherichia coli* and *Klebsiella*. (K1,K2,K3)
- 2.6 Family – Enterobacteriaceae - *Salmonella*, *Shigella* and *Proteus*. (K1,K2,K3)

### **UNIT III: Bacterial pathogens –II and Hospital waste disposal. (15 hours)**

- 3.1 Morphology, classification, antigenic structure, cultural characteristics, pathogenicity, laboratory diagnosis, preventive measures and treatment of *Vibrio cholerae* and *Vibrio parahaemolyticus*, *Pseudomonas aeruginosa*. (K1,K2,K3)
- 3.2 *Brucella abortus*, *Bordetella pertussis*, *Haemophilus influenzae*. (K1,K2,K3)
- 3.3 *Treponema pallidum*, *Chlamydiae* and *Rickettsiae*. (K1,K2,K3)
- 3.4 Zoonotic diseases. (K1,K2,K3)
- 3.5 Hospital acquired infection and their control. (K1,K2,K3)
- 3.6 Hospital waste disposal. (K1,K2,K3)

### **UNIT IV: General Mycology - yeasts of Medical importance.(15 hours)**

- 4.1 General introduction to Mycology. (K1,K2)
- 4.2 Morphology of fungi. (K1,K2,K3)
- 4.3 Classification of fungi of medical importance. (K1,K2)
- 4.4 Detection and recovery of fungi from clinical specimens. (K1,K2,K3)
- 4.5 Yeasts of medical importance – *Candida albicans*, (K1,K2,K3)
- 4.6 *Cryptococcus neoformans*. (K1,K2,K3)

### **UNIT V: Common Mycotic diseases. (15 hours)**

- 5.1 *Dermatophytes and agents of superficial mycosis* – *Trichophyton*, *Epidermophyton* and *Microsporium*. (K1,K2,K3)
- 5.2 Dimorphic fungi causing systemic mycoses – Histoplasmosis. (K1,K2)
- 5.3 Coccidioidomycosis. (K1,K2)

5.4 Blastomycosis. (K1,K2)

5.5 Mycotic mycetoma. (K1,K2)

5.6 Antifungal agents. (K1,K2,K3)

#### **TEXT BOOKS:**

1. Ananthanarayan R & Paniker C.K.J. (2013). Text Book of Microbiology, 9<sup>th</sup> edition, Universities Press, Hyderabad.
2. Tille P. Bailey and Scott (2013). Diagnostic Microbiology, 13<sup>th</sup> edition, Mosby Publishers, United States.
3. Jawetz, Melnick, & Adelberg's. (2013). Medical Microbiology. 26<sup>th</sup> edition. McGraw-Hill, New York.
4. Mehrotra RS and Aneja KR (2006). An Introduction to Mycology. 1<sup>st</sup> edition, New age international publishers, Chennai.

#### **REFERENCE BOOKS:**

1. Chakraborty P (2003). A Text book of Microbiology. 2<sup>nd</sup> edition, Published by New central Agency (P) Ltd., Kolkata.
2. Satish Gupte (2005). The Short Textbook of Medical Microbiology. 8<sup>th</sup> edition, Jaypee Brothers, Medical publishers (P) Ltd., New Delhi.
3. Rajan S (2009). Medical Microbiology. 1<sup>st</sup> edition, MJP Publishers, Chennai.
4. Rajesh Bhatia and Ratan Lallchhpujani (2004). Essentials of Medical Microbiology. 3<sup>rd</sup> edition, Jaypee Brothers, Medical Publishers (P) Ltd., New Delhi.
5. Monica Cheesbrough (2003). District Laboratory Practice in Tropical Countries. Part 1 & 2, Cambridge University Press.
6. Jagadish Chander (1996). A text book of Medical Mycology. 1<sup>st</sup> edition. Interprint, New Delhi.

#### **OER:**

#### **E-BOOKS:**

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/>

## UCMBJ20 : MEDICAL VIROLOGY & PARASITOLOGY

Year 2020	Course Code	Title Of The Course	Course Type	Course Category	H/W	Credits	Marks
<b>SEM:</b> VI	UCMBJ20	Medical Virology and Parasitology	Theory	Core	5	5	100

**Course Objective:** To provide in depth knowledge on diseases caused by medically important, its epidemiology and control measures.

### Course Outcomes (CO):

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

CO1: Explain the properties, classification and cultivation of viruses.

CO2: Outline on the zoonotic and arthropod borne diseases.

CO3: Discuss about the oncogenic viruses and brief out on the importance of antiviral drugs and vaccines.

CO4: Describe the classification of parasites and demonstrate the laboratory diagnosis of parasitic diseases.

CO5: Compile the information on common parasites, protozoan and metazoan diseases.

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

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

**H – HIGH (3)**

**M – MODERATE (2)**

**L – LOW (1)**

## **COURSE SYLLABUS**

### **UNIT I: General properties of virus. (15 hours)**

- 1.1 General properties of virus. (K1,K2)
- 1.2 Detection of viruses and antigens in clinical specimens. (K1,K2,K3)
- 1.3 Serological diagnosis of virus infections. (K1,K2,K3)
- 1.4 Cultivation of viruses – egg inoculation and tissue culture. (K1,K2,K3)
- 1.5 Structure and properties of viroids. (K1,K2)
- 1.6 Prions. (K1,K2)

### **UNIT II: Viral diseases - I. (15 hours)**

- 2.1 Arthropod borne virus (Chickungunya virus, Dengue, Japanese Encephalitis, West Nile fever, Yellow fever). (K1,K2)
- 2.2 Rodent borne viral diseases (Lassa, Hanta and Ebola virus). (K1,K2)
- 2.3 Picorna viruses (Polio, Rhino Virus). (K1,K2)
- 2.4 **Hepatitis viruses** ( Type A, B and C), Rabies virus. (K1,K2)
- 2.5 Orthomyxo ( H1N1 Influenza) and Paramyxo viruses ( Measles, Mumps). (K1,K2)
- 2.6 SARS, MERS, SARS CoV2. (K1,K2)

### **UNIT III: Viral diseases -II. (15 hours)**

- 3.1 Pox viruses, Adeno viruses, Herpes Simplex virus. (K1,K2)
- 3.2 Reo virus, Rota virus. (K1,K2)
- 3.3 **Human immunodeficiency virus.** (K1,K2)
- 3.4 **Oncogenic virus (Papilloma virus and Polyoma virus).** (K1,K2)
- 3.5 Antiviral drugs and Interferon. (K1,K2)
- 3.6 Viral vaccines. (K1,K2)

### **UNIT IV: Introduction to Medical parasitology and common protozoan diseases. (15 hours)**

- 4.1 Introduction to Medical Parasitology – Classification of parasites. (K1,K2)
- 4.2 Laboratory diagnosis of common parasitic diseases. (K1,K2)
- 4.3 Common protozoan diseases – Amoebiasis, Giardiasis. (K1,K2)
- 4.4 Trypanosomiasis. (K1,K2)
- 4.5 Malaria. (K1,K2)
- 4.6 **Toxoplasmosis** and Leishmaniasis. (K1,K2)

### **UNIT V: Common metazoan diseases. (15 hours)**

- 5.1 Morphology, Pathogenicity, clinical manifestation and Lab diagnosis of Ascariasis. (K1,K2, K3)
- 5.2 Hookworm. (K1,K2,K3)
- 5.3 Filariasis. (K1,K2,K3)
- 5.4 Hydatidosis. (K1,K2,K3)
- 5.5 Fasciolopsis. (K1,K2,K3)
- 5.6 Taenia infection.(K1,K2,K3)

**TEXT BOOKS:**

1. Jawetz, Melnick, & Adelberg (2013). Medical Microbiology. 26<sup>th</sup> edition, Mc Graw-Hill. New York.
2. Ananthanarayan R & Paniker C.K.J. (2013). Text Book of Microbiology, 9<sup>th</sup> edition, Universities Press, Hyderabad.
3. Subhash Chandra Parija (2013). Text book of Medical Parasitology. 4<sup>th</sup> edition, All India Publishers and Distributors (Medical Books Publishers), New Delhi.
4. Chatterjee K.D (2016). Parasitology, Protozoology & Helminthology. 13<sup>th</sup> edition. Joe media Publishers. Calcutta.

**REFERENCE BOOKS:**

1. Dimmok N.J and Primrose S.B (1994). Introduction to modern virology 4<sup>th</sup> edition, Blackwell scientific company publications, United States.
2. Saravanan P (2006). Virology. 1<sup>st</sup> edition, MJP Publishers, A Unit of Tamil Nadu Book House, Chennai.
3. Luria S.E, Darnell J.E, Baltimore D and Compare A (1978). General virology. 3<sup>rd</sup> edition, John Wiley and Sons, New York.
4. Jayaram Paniker C.K (2004). Text book of Medical Parasitology. 5<sup>th</sup> edition, Jaypee Brothers Publishers (P) Ltd., New Delhi.
5. Karyakarte R.P and Damle AS (2005). Medical Parasitology. Revised edition, Books and Allied (P) Ltd., Kolkata.

**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/>