Master of Science (Microbiology)
M Sc (Microbiology) Semester II

Course Code	PS02EMIC53	Title of the Course	Medical Microbiology
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	1. To train students in the field of Medical Microbiology. Theoretical, as well as practical training is imparted to the candidates in the sub-specialities, namely, Bacteriology, Virology, Parasitology, and Mycology. 2. To impart and explain the students with the advanced molecular diagnostic techniques for the detection of medically important human microbial pathogens. 3. To train students to work as laboratory technicians and assist pathologist. …

Course Content

Unit	Description	Weightage* (%)
1.	**Basics in Medical Microbiology** Sources of infection, Modes of transmission, carriers and their types – investigation of epidemic diseases. Types of infectious diseases, Prevention and Control of Hospital acquired infections. Immunoprophylaxis. Vaccine: Types and their mode of action. Recent advances in diagnostic microbiology: Automation, Nucleic acid based detection methods.	25%
2.	**Bacteriology** Morphology, Cultural Characteristics, Antigenic structures, Pathogenesis, Laboratory Diagnosis, Epidemiology of following bacteria: *Staphylococcus, Streptococcus* including *Pneumococcus, Corynebacterium, Clostridium, Mycobacteria, Vibrios, E. coli, Salmonella, Brucella and Neisseria*	25%
3.	**Virology** The Nature and classification of viruses, Morphology: virus structure and Virus replication. General properties, diseases caused, lab diagnosis, epidemiology and prevention of Pox, Hepatitis (HAV & HAB), Orthomyxo (Influenza), Rabdo (Rabies), SARS, MARS, SARS-CoV-2 and HIV virus Antiviral compounds [chemical, plant metabolites and Ayurvedic	25%

	formulations] and their mode of action.	
4.	**Parasitology & Mycology** Parasitology: Laboratory techniques in parasitology. Morphology, life cycle, laboratory diagnosis, epidemiology of following parasites: *Parasites: Entamoeba, Giardia, Leishmania, Plasmodium,* *Helminths: Taenia, Ascaris, Wuchereria bancrofti, Schistosomes* Mycology: Morphology, diseases caused, epidemiology and lab diagnosis of:- Opportunistic fungi - *Cryptococcus, Candida, Aspergillus Mucormycosis* Fungi causing Cutaneous mycoses- *Dermatophytes* Subcutaneous mycoses - *Mycetoma,* Systemic mycoses-*Histoplasma*	**25%**
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Teaching-Learning Methodology	Topics will be taught and discussed in interactive sessions using conventional black board and chalk as well as ICT tools such as power point presentations and videos. Practical sessions will be conducted in a suitably equipped laboratory either individually or in groups depending on the nature of exercise as well as availability of infrastructure. Course materials will be provided from primary and secondary sources of information.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Get acquainted with the basis of pathogenesis and virulence of different bacterial, parasitological, viral and mycological pathogens, laboratory diagnosis techniques, and would also be sensitized to the social impact of most dreadful and emerging infections like HIV, MARS, SARS-CoV-2, Mucormycosis etc.
2.	Understand the specimen collection techniques and identification of pathogens by

	conventional and recent molecular methods.
3.	Appreciate the significance of Vaccine, antiviral compound and their mode of action.
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Suggested References:	
Sr. No.	References
1.	Textbook of Microbiology by Surinder Kumar
2.	Medical Parasitology by R. Karyakarte.
3.	Text Books of Medical Laboratory Technology by P. B. Godkar.
4.	A Text Book of Medical Microbiology by Anathanarayana & Panikar
5.	A Text Book of Microbiology by P. Chakraborthy
6.	Parasitology by Chatterjee, KD
7.	Textbook of medical mycology by Jagdish Chander,
8.	An Introduction to Viruses by Biswas SB and Biswas

On-line resources to be used if available as reference material
https://www.cdc.gov/
https://www.icmr.gov.in/
https://www.swayamprabha.gov.in/index.php/home

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