Semester	**6**
Course	**Major**
Paper Code	
Paper Title	Medical Microbiology
No. of Credits	**4**
Theory / Practical / Composite	**THEORY**
Minimum No. of preparatory hours per week a student has to devote	4 hours/week
Number of Modules	No modules
Syllabus	**Unit 1 - Normal microflora of the human body** Normal microflora of the human body: Establishment of normal microflora, normal microflora of skin, throat, gastrointestinal tract, urogenital tract. Benefits and drawbacks of normal microbiota. **Unit 2 - Host pathogen interaction** **Terminologies:** Infection, Pathogen, Pathogenicity, Virulence, Toxigenicity, Opportunistic infections, Adhesion, Colonisation, Invasion, Nosocomial infections, Iatrogenic infection. **Toxigenesis**- production of toxins, types and pathogenesis, Pathophysiologic effects of LPS. Evasion of host defence mechanisms, Transmission of infection, Carriers and their types. **Unit 3 - Bacterial diseases** Symptoms, development of pathogenesis, prophylaxis and control of: **Respiratory Diseases:** *Streptococcus pyogenes* and *Mycobacterium tuberculosis* **Gastrointestinal Diseases:** *Escherichia coli*, *Salmonella typhi*, *Vibrio cholera* and *Helicobacter pylori* **Others** - *Bacillus anthracis*, *Clostridium tetani* and *Treponema pallidum*. **Unit 4 -Viral diseases** Symptoms, pathogenesis, prophylaxis and control of: Polio, Herpes, Hepatitis, Rabies, Dengue, AIDS, Influenza and Ebola. **Unit 5 - Fungal diseases** Brief description of mycoses with respect to symptoms, transmission, and prevention: **Cutaneous mycoses:** *Tinea pedis* (Athlete's foot); **Systemic mycoses:** Histoplasmosis; Opportunistic mycoses: Candidiasis **Unit 6 - Protozoan diseases** Symptoms, mode of transmission, prophylaxis and control of– Malaria and Kala-azar. **Unit 7 - Antimicrobial agents and antibiotic resistance** General characteristics and mode of action of: 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 **Resistance to Antibiotics -** MDR, XDR, MRSA, NDM-1, Combinatorial and futuristic therapy	
Learning Outcomes	• To study the normal microflora of human body and diversion of normal microflora to bacterial pathogenesis. • The key knowledge on host pathogen interaction, bacterial invasion and replication within host cells, bacterial interference with host cell signalling pathways. • To learn significant role of bacterial colonization in shaping and instructing host immune responses.	
Reading/Reference Lists	1. Ananthanarayan R. and Paniker C.K.J. (2009) Textbook of Microbiology. 8th Edition, University Press Publication. 2. Brooks G.F., Carroll K.C., Butel J.S., Morse S.A. and Mietzner T.A. (2013), Jawetz, Melnick and Adelberg's Medical Microbiology. 26th edition. McGraw Hill Publication. 3. Goering R., Dockrell H., Zuckerman M. and Wakelin D. (2007) Mims' Medical Microbiology. 4th Edition. Elsevier. 4. Madigan MT, Martinko JM, Dunlap PV and Clark DP. (2014). Brock Biology of Microorganisms. 14th edition. Pearson International Edition. 5. Willey JM, Sherwood LM and Woolverton CJ. (2013) Prescott, Harley and Klein's Microbiology. 9th Edition. McGraw Hill International. 6. Pelczar MJ, Chan ECS and Krieg NR. (1993). Microbiology. 5th edition. McGraw Hill Book Company.	
Evaluation	Theory CIA: 30 Semester Exam:70	Practical (if applicable) CA: Semester Exam:
Paper Structure for Theory Semester Exam	**Full marks 70** Short questions: 10 (each 2 marks) from 12 (10x2=20) Long questions: 5 (each 10 marks) from 7 (5x10=50)	