

Programme: M.Sc. (Biochemistry)

Course Code: BCO 107

Title of the Course: MICROBES IN HEALTH AND DISEASE [T]

Number of Credits: 3

Effective from Academic Year: 2018-19

Prerequisites	Basic knowledge in cell biology.	
Objective:	Develop concepts about pathogens and the process of infection.	
Content:		
1	Introduction	(03)
1.1	Prokaryotic and Eukaryotic cell structure, organelles and their function	
1.2	Microorganisms: Bacteria; Fungi; Viruses	
1.3	Sterilization and Disinfection: Physical sterilants; Gas vapour sterilants; Chemical sterilants	
2	Bacteria	(11)
2.1	Growth	
A.	Bacterial structure; Gram characteristics	
B.	Nutritional requirements	
C.	Respiration (aerobic and anaerobic) and Fermentations	
D.	Growth cycle; Biphasic growth; Continuous culture; Synchronous growth	
E.	Toxins, Enzymes; Pigments	
2.2	Pathogens and Chemotherapy	
A.	Commensals	
B.	Pathogens; Opportunistic pathogens; Nosocomial infections.	
C.	Infections: Gastroenteric (<i>E. coli</i> , <i>H. pylori</i>); Respiratory (Streptococcal); Skin (Staphylococcal); Wound infections; Deep-seated (on prosthesis/ post-surgical intervention).	
D.	Secondary infections.	
E.	Antibacterial agents; Drug resistance; Chemotherapy	
3	Fungi	(11)
3.1	Structure and Growth	
3.2	Secondary metabolites: pigments; mycotoxins; antibiotics	
3.3	Mycoses and Chemotherapy	
3.4	Applications of fungi – enzymes, bioremediation	

4	Viruses	(11)
4.1	Structure and Classification; Plant and animal viruses	
4.2	Viral multiplication	
4.3	Infections and therapy: Herpes group; Hepatitis group; H1N1 series; Rabies; HIV	
Pedagogy:	Lectures/ tutorials/ assignments/ students' seminars/ interactive learning/ self-study.	
References/ Readings	Davis, B.D., Dulbecco, Renato, Eisen, Herman N., Ginsberg, Harold S., Microbiology, Lippincott Williams and Wilkins	
	Ingraham, John L., Ingraham, Catherine A., Introduction to Microbiology, Thomas Asia.	
	Pelczar Microbiology, Tata McGraw-Hill Education	
	Madigan, Michael T., Martinko, John M., Stahl D., Clark D. P., Brock Biology of Microorganisms, Benjamin Cummings (editor)	
	Moat, Albert G., Foster, John W., Spector, Michael P., Microbial Physiology. John Wiley	
	Stanier, R.Y., General Microbiology.	
Learning Outcomes	Explain the modes of infection of different groups of pathogens.	