

Institute of Microbiology and Molecular Genetics
Faculty of Life Sciences
University of the Punjab, Lahore
Course Outline



Programme	BS	Course Code	MMG310	Credit Hours	3(2+1)
Course Title	DIAGNOSTIC MICROBIOLOGY				
COURSE INTRODUCTION					
<p>Diagnostic Microbiology is a lecture cum discussion-based course that provides in-depth, up-to-date and hands-on exposure to diagnostic strategies for various microbial infections. Lectures are aligned on the principles of microbial pathogenesis in the host. Moreover, the course covers the strategies related to the incidence of conventional as well as novel pathogens, their transmission and diverse diagnostic modalities. Likewise, there would be exposure to various approaches for various infections associated with numerous human anatomical sites. Additionally, various strategies related to control of those infections will be part of this course.</p>					
LEARNING OUTCOMES					
<p>On the completion of the course, the students will:</p> <ol style="list-style-type: none"> 1. Develop a working acquaintance of techniques and procedures commonly used in the clinical microbiology laboratory 2. Use of appropriate safety protocol and laboratory techniques for processing of clinical specimens 3. Acquire knowledge of culture techniques appropriate for the primary culture sites. 4. Associate selected infectious diseases with appropriate culture requirements and causative agents. 					
COURSE CONTENT					
<p>Epidemiology & Transmission of Infectious diseases: Principles of Epidemiology, Types of outbreaks, Morbidity & Mortality rates, Normal Microflora & its role in health & disease causation: Source and Transmission of infection – person to person, healthy Human carriers, animal carriers, Zoo noses, Principles & procedures of Diagnostic Microbiology: Specimen collection & precautions, Microscopic Examination of patient specimens, Culture & Isolation of Microorganisms, Media, identification, Detection of pathogen-specific Macromolecules. Microbial infections of the respiratory tract: Structure of upper & lower respiratory system, Bacterial diseases of upper respiratory tract sinusitis pharyngitis – common cold- influenza, Laryngitis, Epiglottitis sore – throat, otitis media, scarlet fever, Bacterial diseases of the lower respiratory tract, Bronchitis, bronchiolitis, pneumonia acute & chronic- hospital – acquired & community, Pulmonary tuberculosis. Microbial infections of gastro – intestinal tract: Infectious diarrhea, summer, winter diarrhea, Food poisoning, enteritis, Enterocolitis Infection of urinary (tract) systems (kidney and UT infections): UTI, Urethritis, Cystitis. Types of genito-urinary infections, Microbial diseases of central nervous system: Bacterial meningitis, Aseptic meningitis, Cryptococcal meningitis. Hospital infections (Nosocomial). Infection control – Asepsis, operation room, hospital ward, equipment, delivery room, outpatient clinic. Isolation procedures.</p>					
PRACTICALS					
<p>Collection, transport, general examination & culture & sensitivity test of Urine sample, Stool sample Sputum specimen, Swabs (Throat, Eye, Ear, Vaginal, Abscesses & wound, Skin), Blood specimen, Determination of viable count of bacteria in serial dilution of sample, Bacteriological testing of water,</p>					

TEXTBOOKS AND READING MATERIAL

1. Tille. P., (2015). *Bailey & Scott's Diagnostic Microbiology* 14th Edition. Elsevier Health Sciences.
2. Procop, G. W., Church, D. L., Hall, G. S., & Janda, W. M. (2020). *Koneman's Color Atlas and Textbook of Diagnostic Microbiology*. Jones & Bartlett Learning.
3. Cheesbrough, M. (2006). *District Laboratory Practice in Tropical Countries, part 2*. Cambridge University Press.
4. Baron, E.J., Miller, J.M., Weinstein, M.P., Richter, S.S., Gilligan, P.H., (2019). *Principles and Practice of Clinical Bacteriology*. 2nd Edition. Wiley Blackwell. Hoboken, NJ.
5. Veralovic, J., Carroll, K., Funke, G.,(2021). *Diagnostic Microbiology and Infectious Disease*. 4th Edition, ASM Press. USA

ASSESSMENT

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on activities, short tests, projects, practicals, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, fieldwork , report writing etc.