

**Institute of Zoology
Faculty of Life Sciences
University of the Punjab, Lahore
Course Outline**



Programme	BS Zoology	Course Code	ZOOL-312	Credit Hours	1
Course Title	Lab. General Microbiology				
Course Introduction					
This course will build knowledge and skills of students studying microbiology. The students will learn about basic methods of microbial detection and identification, microbial control, microbial diseases and epidemiology. They will study the applications of food microbiology and medical microbiology.					
Learning Outcomes					
On the completion of the course, the students will:					
<ol style="list-style-type: none"> 1. Attain the fundamental knowledge regarding microorganisms 2. Comprehend the basic concepts of microbial diversity 3. Grasp the microbiological techniques and use them efficiently 4. Explore the microbial diversity and role of microorganisms 5. Validate practical skills in the design and execution of experiments 6. Apply the scientific method of investigation and hypothesis testing 					
Course Content				Assignments/Readings	
Week 1	Preparation of culture media			Assignments + Readings	
Week 2	Pure culturing and cultivation of microbes			Assignments + Readings	
Week 3	Simple staining of different genera of bacteria			Assignments + Readings	
Week 4	Gram staining of different genera of bacteria			Assignments + Readings	
Week 5	Capsular staining of different genera of bacteria			Assignments + Readings	
Week 6	Endospore staining of different genera of bacteria			Assignments + Readings	
Week 7	Flagellar staining of different genera of bacteria			Assignments + Readings	
Week 8	Acid-fast staining of different genera of bacteria			Assignments + Readings	
Week 9	Vital staining and microscopic analysis of protozoa			Assignments + Readings	
Week 10	Isolation of bacteriophages			Assignments + Readings	
Week 11	Bacteriological examination of water			Assignments + Readings	
Week 12	Isolation coliform bacteria			Assignments + Readings	
Week 13	Isolation and identification of Normal throat flora			Assignments + Readings	
Week 14	Inhibition of microorganisms by physical agents			Assignments + Readings	
Week 15	Action of disinfectants on bacteria			Assignments + Readings	
Week 16	Isolation of microorganisms from the diseased ear			Assignments + Readings	
Textbooks and Reading Material					
<ol style="list-style-type: none"> 1. Microbiology: An Introduction, 12th ed. (2018) by Gerard J. Tortora, Berdell R. Funke, Christine L. Case. 2. Prescott's Microbiology, 10th ed. (2017) by Joanne Willey, Linda Sherwood and Christopher J. Woolverton. 3. Laboratory Experiments in Microbiology, 11th ed. (2015) by Ted R. Johnson and Christine L. Case. 4. Brock Biology of Microorganisms, 14th ed. (2014) by Michael T. Madigan, John M. Martinko, Kelly S. Bender, Daniel H. Buckley, David A. Stahl and Thomas Brock. 5. Alcamo's Fundamentals of Microbiology, 9th ed. (2012) by Jeffrey C Pommerville. 6. Bergey's Manual of Systematic Bacteriology (2012). 7. Microbiology Principles and Explorations (2001) by Jacquelyn, G.G. 					

Teaching Learning Strategies

The basic learning strategies for this course will be:

- Lectures
- Presentations
- Group discussions
- Assignments
- Quiz

Assignments: Types and Number with Calendar

Each student will be assigned a separate topic as his/her assignment related to the subject matter for his/her better understanding and having grip on the subject.

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, practical, 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, field work and report writing etc.