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

Programme	BS Zoology	**Course Code**	**ZOOL-301**	**Credit Hours**	2
Course Title	**Entomology**				

Course Introduction

This course provides a comprehensive exploration of insect structure and function. Which include study of anatomical and physiological features of the insects for clear understanding of entomology. It includes study of general characters of insects, coloration, metamorphosis, mouthparts, comparative structures of all systems and reproduction

Learning Outcomes

On the completion of the course the student will be able to:
1. Learn the basic and advanced anatomical features of insects including external and internal structures.
2. explore physiological processes such as digestion, respiration, circulation, excretion and reproduction
3. Understand the ecological roles of insects, including their interactions with other organism and their impact on ecosystem.
4. Investigate the adaptations of insects to exploit diverse environments

	Course Content	**Assignments/Readings**
Week 1	1. General characteristics of insects 2. Relationships with other Arthropods	
Week 2	1. General segmentation 2. Cuticle; detailed structure 3. Epidermal layer, its structure and function	
Week 3	1. cuticular outgrowths and appendages 2. sclerotization, Metamorphosis	
Week 4	1. head 2. Antennae	
Week 5	1. Different mode of ingestion 2. different types of mouthparts	
Week 6	1. legs, modifications and functions 2. wings: different regions, Main veins and branches	
Week 7	1. secondary appendages and external genitalia 2. Endoskeleton	
Week 8	1. Digestive system of insects 2. excretory system	
Week 9	1. Respiratory system 2. circulatory system	
Week 10	1. sense organs 2. sound and light producing organs	
Week 11	1. Exocrine glands 2. Endocrine glands	
Week 12	1. pheromones 2. Function of pheromones	

Week 13	1. Reproductive organs 2. different types of reproduction in insects	
Week 14	1. Types of larvae 2. Types of pupae	
Week 15	Beneficial insects	
Week 16	Harmful insects	

Textbooks and Reading Material

Textbook
1. General Text Book of Entomology. Imm. Richards and Davies, Vol.1.
Additional Readings
2. The Insects: Structure and Function, 2000. Chapman.
3. Insect Physiology. Wiggles Worth.
4. Insect Physiology. Pattons.
5. Insect Ecology. Price.
6. Ecology: The Experimental Analysist Abundance. Krebs.
7. Modern Entomology, 1997. Tembhare.
8. Ecological Methods, 1978. T.R.E. Southhood.
9. Elements of Insect Ecology, 1997. S.S. Yasbani and M.L. Agarwal.

Teaching Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos/films will be shown on occasion.

Assignments: Types and Number with Calendar

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

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. class Attendence
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.