

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



Programme	BS Zoology	Course Code	ZOOL-203	Credit Hours	2
Course Title	Animal Form And Function- I				
Course Introduction					
<i>The Objectives of the courses are:</i>					
<ol style="list-style-type: none"> To teach about animals' diversity adapted in different strategies' for performance of their similar functions through modifications in body parts in past and present times. To impart understanding of diverse strategic structural adaptations in each of the functions of integumentary, skeletal, muscular, nervous and sensory, endocrine, circulatory and respiratory systems for effective survival in their specific conditions. To understand the organ systems, their specialization and coordination with each other and constantly changing internal and external environment, inside and outside the animal's body. To embrace the phenomena in basic structure of each system that determines its particular function. 					
Learning Outcomes					
On the completion of the course, the students will:					
<ol style="list-style-type: none"> Acquire the concept that for the performance of a function for example exchange of respiratory gases the different forms are adapted in the environments e.g. gills in aquatic and lungs in terrestrial environment. Understand that diverse forms adapted to perform the same functions are because of the different past and present conditions. Solve of emergence of diversity of forms for the performance of similar function. Analyze the requirements of diverse forms for the performance of similar function in their past and present needs. Evaluate the adaptations in forms for its efficiency in managing the function in differing situations in the past and present times. Demonstrate that a form is successfully adapted to perform a function adequately and successfully. 					
Course Content					Assignments/Readings
Week 1	Protection: the integumentary system of invertebrates				
	Protection: the integumentary system of vertebrates				
Week 2	Movement and support: the skeletal system of invertebrates.				
	Movement and support: the skeletal system of vertebrates				
Week 3	Movement: non-muscular movement				
	Movement: an introduction to animal muscles				
Week 4	Movement: the muscular system of invertebrates				
	Movement: the muscular system of vertebrates				
Week 5	Nerves: Neurons: structure and function.				
	Neurons: The basic functional units of the nervous system.				
Week 6	Neuron communication: Resting membrane potential, Graded potentials				

	Neuron communication: Mechanism of neuron action.	
Week 7	Neuron communication: Transmission of the action potential between cells.	
	Invertebrate nervous systems: Evolutionary trends from simple to complex organization.	
Week 8	Vertebrate nervous systems: Evolutionary trends from simple to complex organization.	
	Sensory Reception: Senses, Sensory reception: baroreceptors of invertebrates	
Week 9	Sensory Reception: chemoreceptors, georeceptors	
	Sensory Reception: hygrometers, phonoreceptors of invertebrates	
Week 10	Sensory Reception: photoreceptors, proprioceptors of invertebrates	
	Sensory Reception: tactile receptors, and thermoreceptors of invertebrates	
Week 11	Lateral line system and electrical sensing, lateral-line system and mechanoreception,	
	Hearing and equilibrium in air and water	
Week 12	Skin sensors of mechanical stimuli, sonar	
	Smell, taste and vision in vertebrates	
Week 13	The Endocrine System and Chemical Messengers: Chemical messengers	
	The Endocrine System and Chemical Messengers: hormones chemistry; and their feedback systems	
Week 14	The Endocrine System and Chemical Messengers: mechanisms of hormone action	
	Hormones with principal function each of Porifera,	
Week 15	Cnidarians, Platyhelminthes, Nemertean, Nematodes	
	Molluscs, Annelids, Arthropods, and Echinoderms invertebrates	
Week 16	An overview of the vertebrate endocrine system; endocrine systems of vertebrates (other than birds and mammals)	
	Endocrine systems of birds and mammals	

Textbooks and Reading Material

Text Books:

1. Miller, S.A. and Harley, J.P., 2019. Zoology, 11th Ed. (International), Singapore: McGraw-Hill.

Reference Books:

1. Pechenik, J.A. 2013. Biology of Invertebrates, 4th Ed. (International), Singapore: McGraw-Hill.
2. Hickman, C.P., Roberts, L.S., Larson, A. 2004. Integrated Principles of Zoology, 11th Ed. (International), Singapore: McGraw-Hill.
3. Campbell, N.A. 2002. Biology, 6th Ed. Menlo Park, California: Benjamin/Cummings Publishing
4. Kent, G.C., Miller, S. 2001. Comparative Anatomy of Vertebrates. New York: McGraw-Hill.
5. Hickman, C.P., Kats, H.L. 2000. Laboratory Studies in Integrated Principles of Zoology. Singapore: McGraw-Hill.

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

Group Presentations:

- 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 Exam	35%	Written Assessment at the mid-point of the semester.
2.	Sessional Work	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 Exam	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.