

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



Programme	BS Zoology	Course Code	ZOOL-202	Credit Hours	1
Course Title	Lab. Animal Diversity-III				
Course Introduction					
This course provides an in-depth exploration of the diversity, structure, function, and evolutionary relationships of chordates, focusing on fishes, amphibians, reptiles, birds, and mammals. Students will study the taxonomy, morphology, physiology, ecological roles, and evolutionary significance of these groups, with a focus on comparative analysis.					
Learning Outcomes					
On the completion of the course, the students will:					
<ol style="list-style-type: none"> 1. Understand the distinguishing features and classification of major chordate groups. 2. Explore the evolutionary relationships and phylogeny of chordates. 3. Examine the anatomical and physiological adaptations of each chordate group. 4. Investigate the ecological roles and life histories of these organisms. 5. Develop skills in comparative analysis and scientific observation. 					
Course Content				Assignments/Readings	
Week 1	Dissection of representative fish specimens (e.g., lamprey, shark, bony fish <i>etc.</i>)				
Week 2	Comparative study of fish anatomy, physiology and adaptations				
Week 3	Analyzing fish habitat preferences and ecological interactions				
Week 4	Dissection of representative amphibian specimens (e.g., frog, salamander)				
Week 5	Comparative study of amphibian anatomy, physiology and adaptations				
Week 6	Analyzing reptile habitat preferences and ecological interactions				
Week 7	Analyzing amphibian habitat preferences and ecological interactions				
Week 8	Dissection of representative reptile specimens (e.g., turtle, lizard)				
Week 9	Comparative study of reptile anatomy and physiology and adaptations				
Week 10	Dissection of a bird specimen (Pigeon)				
Week 11	Comparative study of bird anatomy, physiology and adaptations				

Week 12	Analyzing bird habitat preferences and ecological interactions	
Week 13	Dissection of a mammal specimen (Rabbit)	
Week 14	Comparative study of mammal anatomy, physiology and adaptations	
Week 15	Analyzing mammal habitat preferences and ecological interactions	
Week 16	Construction of phylogenetic trees of Chordates	

Textbooks and Reading Material

1. Campbell, N.A. Biology. 9th Ed. 2011. Menlo Park, California Benjamin/Cummings Publishing Company, Inc.
2. Miller, S.A. and Harley, J.B. 2010. Zoology, 8th Edition (International) Singapore: McGraw Hill.
3. Miller, S.A. 2002. General Zoology Laboratory Manual. 5th Ed. (International), Singapore: McGraw Hill.
4. Hickman, C.P., Roberts, L.S. and Larson, A. Integrated Principles of Zoology, 14th Edition (International), 2009. Singapore: McGraw-Hill.
5. **Suggested Readings**
 - 5.1. Verma P. S. Chordate Zoology 2010 S. Chand Publishing, 2010

Teaching Learning Strategies

Course Overview:

This course covers the biology, diversity, and evolutionary relationships of fishes, amphibians, reptiles, birds, and mammals. It includes lectures, laboratory work, field trips, and group discussions to provide a comprehensive understanding of these groups' structure, function, and ecological roles. Teaching the topic of chordates, which includes fishes, amphibians, reptiles, birds, and mammals, can be made engaging and effective through a variety of learning strategies.

Learning Objectives:

1. Identify and describe the key characteristics and classifications of fishes, amphibians, reptiles, birds, and mammals.
2. Understand the evolutionary relationships among these groups and other deuterostomes.
3. Analyze the anatomical and physiological adaptations of these organisms.
4. Explore the ecological roles and life histories of fishes, amphibians, reptiles, birds, and mammals.
5. Develop skills in comparative analysis, critical thinking, and scientific research.

Teaching Strategies:

1. Interactive Lectures:

Objective: Provide foundational knowledge on the taxonomy, morphology, physiology, and evolution of fishes, amphibians, reptiles, birds, and mammals.

Strategy:

- Use multimedia presentations (slides, videos, animations) to illustrate concepts.
- Incorporate real-life examples and case studies to enhance understanding.
- Encourage active participation through question-and-answer sessions and small group discussions.

2. Laboratory Sessions:

Objective: Develop hands-on skills in identifying and analyzing anatomical structures and physiological processes.

3. Field Trips and Guest Speakers

Zoo, Safari Park or Aquarium Visits: Organize trips to local zoos, Safari Parks, aquariums, or natural history museums where students can see live specimens and learn from experts.

Guest Lectures: Invite biologists, veterinarians, or conservationists to speak about their work and experiences with chordates.

4. Real-Life Applications

Case Studies: Use real-life case studies to discuss issues like endangered species, the impact of climate change on various chordates, and the role of different animals in ecosystems.

Conservation Projects: Engage students in local conservation projects or citizen science initiatives to give them practical experience in preserving biodiversity.

Group Work (20 minutes)

Divide students into groups and assign each group a specific chordate to research.

Groups prepare a short presentation on their chordate, covering habitat, behavior, and adaptations.

Conduct a quick quiz or use flashcards to review key concepts.

By combining these strategies, you can create a dynamic and comprehensive learning experience that helps students understand and appreciate the diversity and complexity of chordates.

Assignments: Types and Number with Calendar

Group Presentations:

Objective: Foster collaboration and deeper understanding through research and peer teaching.

Strategy:

- Assign group projects on specific topics such as evolutionary relationships, ecological roles, or conservation issues.
- Require groups to prepare and deliver presentations, promoting peer learning.
- Incorporate peer assessment and feedback to improve learning outcomes and presentation skills.

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.