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

Programme	BS Zoology	Course Code	ZOOL-405	Credit Hours	1
Course Title	**Lab. Principles of Systematics**				

Course Introduction
In this hands on course, students will explore the principles and methods of systematic biology, including taxonomy, phylogenetics and biogeography. Systematics has many real world applications such as conservation biology, evolutionary biology, biodiversity research, which are explored in the lab course.

Learning Outcomes
On the completion of the course, the students will: 1. Identify and classify organisms using various systematic methods. 2. Analyze and interpret phylogenetic tree and cladogram. 3. Design and conduct experiments to test evolutionary hypothesis 4. Analyze and interpret taxonomic data using statistical analysis

Course Content		Assignments/Readings
Week 1	Identification of a group of animals utilizing taxonomic Collection, preservation, labelling and identification of a group of specimen	Sample question
Week 2	Identification of a group of animals utilizing taxonomic (continued) Collection, preservation, labelling and identification of a group of specimen	Sample question
Week 3	Identification of a group of animals utilizing taxonomic (continued) Collection, preservation, labelling and identification of a group of specimen	Sample question
Week 4	Identification of a group of animals utilizing taxonomic (continued) Collection, preservation, labelling and identification of a group of specimen	Sample question
Week 5	Preparation of bracket key Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 6	Preparation of Indented key Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 7	Biometry Rationale Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 8	collection of statical data Identification of a group of animals utilizing taxonomic (continued)	
Week 9	statistical analysis (F test) Identification of a group of animals utilizing taxonomic (continued)	

Week 10	statistical analysis (Z test) Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 11	statistical analysis (T test) Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 12	statistical analysis (analysis of variance) Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 13	statistical analysis (regression and correlation) Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 14	Construction of Phenogram to a group of organisms Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 15	Construction of cladogram to a group of organisms Identification of a group of animals utilizing taxonomic (continued)	Sample question
Week 16	Identification of a group of animals utilizing taxonomic (continued)	Sample question

Textbooks and Reading Material

1. Textbooks.
    Mayer, E. , Ashlock, P.D. (1994). Principles of systematic zoology. New York: McGraw-Hil
2. Suggested Readings
    i.   Simpson, G. G. (2012). Principles of Animal Taxonomy. Columbia University Press.
    ii. Wiley, E. O. (2011). Phylogenetics: theory and practice of phylogenetic systematics. New Jersey: Wiley-Blackwell.
    iii. Heywood, V. H. (1975). Taxonomy and ecology. London: Academic Press.

Teaching Learning Strategies

1. Lecture
2. Discussion
3. simulations

Assignments: Types and Number with Calendar

1. Every week sample questions
2.
3.
4.

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, attitude and behavior, hands-on-activities, practical, etc.
3.	Final Assessment	40%	Written Examination at the end of the semester.