

**Institute of Microbiology and Molecular Genetics**  
**Faculty of Life Sciences**  
**University of the Punjab, Lahore**  
**Course Outline**



<b>Programme</b>	BS	<b>Course Code</b>	MMG206	<b>Credit Hours</b>	3(2+1)
<b>Course Title</b>	<b>BIODIVERSITY OF PLANTS AND ANIMALS</b>				
<b>COURSE INTRODUCTION</b>					
<p>This Course is based on the Classification of Plants and Animal Kingdom. Characterization, diagnostic features, and general organization of all major Plants and Animal groups. Concept of Plants and Animal structure with reference to environmental adaptations and inter-relationship based on evolution. The course also introduces the study of morphology and diagnostic features of various major groups of Plants and Animal Phylum. The course combines theoretical learning with practical experiences to help students understand the significance of plant and animal biodiversity in maintaining ecosystems and supporting life on Earth.</p>					
<b>LEARNING OUTCOMES</b>					
<p>On the completion of the course, the students will be able to</p> <ol style="list-style-type: none"> <li>1. identify and classify different types of animals and plants, including their characteristics and evolutionary relationship.</li> <li>2. Describe and explain the adaptations and evolution of animals and plants.</li> <li>3. Analyze the ecological roles and importance of Plants and Animals in different ecosystems.</li> </ol>					
<b>COURSE CONTENT</b>					
<p><b>Plant Biodiversity:</b> Diagnostic features, classification, morphology/ cell structure, reproduction, adaptations, and ecological importance of algae, fungi, bryophytes, pteridophytes, gymnosperms, and angiosperms. Pollination mechanisms and Seed dispersal.</p> <p><b>Animal Biodiversity:</b> Diagnostic features, classification, morphology/cell structure, reproduction and development, nutritional mode, adaptations, and ecological importance of major invertebrate phyla (Protozoa, Porifera, Cnidaria, Anidaria, Platyhelminthes, Nematoda, Annelida, Mollusca, Arthropoda, Echinodermata, Hemichordata and vertebrate phyla (Chordata, Pisces, Amphibians, Reptiles, Aves, Mammals). Inter-relationships based on evolution.</p>					
<b>PRACTICALS</b>					
<p><b>Plant Biodiversity:</b> Field visit to a local botanical garden or natural habitat; Collection and identification of different plant species; Examination of bryophyte and pteridophyte specimens; Identification and study of gymnosperm specimens; Study of pollination and seed dispersal mechanisms; Observation of various fruit and seed types; Field study of plant adaptations to different habitats.; Visit to a local conservation area or Botanical Garden.</p> <p><b>Animal Biodiversity:</b> Diagnostic features of various major groups of animals. Identification of various types mentioned from prepared slides and fresh collection. Study of morphology and hierarchical classification: Kingdom, Phylum, Class, Order, Family, Genus, Species  Modern methods in taxonomy: molecular and genetic approaches</p>					
<b>TEXTBOOKS AND READING MATERIAL</b>					
<ol style="list-style-type: none"> <li>1. Campbell, N. A., Urry, L. A., Cain, M. L., Wasserman, S. A., Minorsky, P. V., &amp; Orr, R. B. (2020). <i>Campbell Biology</i>, 12<sup>th</sup> Edition, Pearson New York, NY.</li> </ol>					

Freeman, S., Quillin, K., Allison, L., Black, J., Podgorski, G., & Monroe, J. (2020). *Biological Science*. (7th Edition) Hoboken, NJ: Pearson Education.

Hillis, D. M., Sadava, D. E., Hillis, D. M., & Berenbaum, M. R. (2020). *Life: The Science of Biology*. New York, NY: Macmillan Learning.

Raven, P. H., & Johnson, G. B. (2022). *Biology*. 13th edition, New York, NY: McGraw-Hill Education.

Starr, C., & Taggart, R. (2022). *Biology: The Unity and Biodiversity of Life*, 15th edition. Boston, MA: Cengage Learning Asia.

### 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, practicals, 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, fieldwork , report writing etc.