



Master of Science (Zoology)  
M.Sc. Zoology Semester I

Course Code	PS01EZOO53	Title of the Course	Taxonomy and Animal Systematics
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	<ol style="list-style-type: none"><li>1. To learn about current tools in biological classification, phylogenetic inference, and taxonomy.</li><li>2. To correlate applications of both anatomical and molecular data in understanding taxonomy</li></ol>
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Course Content		
Unit	Description	Weightage* (%)
1.	Introduction to Biosystematics and Taxonomy, History of systematics, Importance and applications of biosystematics in biology, Materials basis of biosystematics: different attributes. Trends in biosystematics-concepts of different conventional and recent aspects-Chemotaxonomy, Cyto-taxonomy and Molecular taxonomy	25
2.	Systematic data: types of data, Polyploidy; Modes of speciation. Principles and criteria of taxonomic treatment: Taxonomic evidence: Characters and character states. Taxonomic features; OTUs, character weighting, cluster analysis; Phenetics, Evolutionary taxonomy, Cladistics. Constructing trees/dendrograms: Phenogram, phylogram and cladogram and correlating with classification	25
3.	Molecular phylogenetics: Molecular clocks, Tools in molecular phylogeny, classification and identification, Phylogeny estimation methods: Distance data, Maximum-parsimony, Maximum-likelihood, Computational Phylogenetic methods, Protein and nucleotide sequence analysis; Origin of new genes and proteins; Gene duplication and divergence	25
4.	Global code of Nomenclature: Identification, description and nomenclature of taxa. Keys: indented and racketed keys. Principles and rules of International Code of Nomenclature (ICN), Phylocode and Barcode of organisms, binominal system, type material, author citation, principles for publication, types of names, merits and demerits. Preservation of taxonomic collections. Taxonomic revision. Taxonomic literature. The relevance of systematics in conservation	25





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<b>Teaching-Learning Methodology</b>	Topics will be taught and discussed in interactive sessions using conventional black board and chalk as well as ICT tools such as power point presentations and videos. Practical sessions will be conducted in a suitably equipped laboratory either individually or in groups depending on the nature of exercise as well as availability of infrastructure. Course materials will be provided from primary and secondary sources of information.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Develop an insight on principles of classifying the animals based on their morphological features and molecular data
2.	Correlate diversity and evolutionary history of any taxa through the construction of a basic phylogenetic/ cladistics tree
3.	Learn phenotypic changes due to selection pressure may lead to evolution over a period of time

Suggested References:	
Sr. No.	References
1.	Mayr, E. and Ashlock, P.D. (1991). Principles of Systematic Zoology. (2nd edition) McGraw Hill, Inc., New York.
2.	Quicke, D. L. J. (1993). Principles and Techniques of Contemporary Taxonomy. Chapman and Hall, New York.





3.	Narendran, T. C., (2006). An introduction to Taxonomy. Zoological Survey of India, ZSI publications, Kolkata
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On-line resources to be used if available as reference material
On-line Resources
Relevant review articles/research papers/handouts of latest development in the subject

