

Introduction:

Systematics is the exciting and ever-changing discipline which treats the kinds and the diversity of organisms and of any and all relationships which exist among them. As such this field deals with the processes and the products of evolutionary change and with the ways in which the evolutionary relationships of these products can best be understood and classified. Any comparative study, be it behavioral, biochemical or biogeographical, should have at its base an understanding of the systematic relationships of the organisms being compared. Attempts to understand the origins of the biological diversity within ecosystems or aimed at the conservation of this diversity should have a strong systematic component.

Course Objectives:

The course aims to:

1. Provide in-depth knowledge of taxonomy in animal sciences Develop concepts about importance of the systematics.
2. Study the history of systematics with basic rules
3. Demonstrate about identifications and naming of the organisms according to international code of zoological nomenclature.

Course Contents:

Contribution of systems to biology. Concepts of taxon, phenon and category. Species concepts and its problems (Typological, Nominalistic, Biological, Evolutionary, Mate recognition, Genetic cohesion, Phylogenetic and Phenetic concepts). Subspecies concepts, Clines and hybrid zones, Polytypic species, superspecies. Modes of speciation. Intrapopulational variation. Different kinds of taxonomic characters. Weightage of taxonomic characters. Classification and its types: Phenetic, cladistic and Evolutionary classifications. Difference between types of classification. Taxonomic collections and the process of identification. Types of taxonomic publications, major features of taxonomic articles. The rules of zoological nomenclature (interpretation and application of the code (Stability, priority, first reviser principle), range of authority of code, concept of availability, type method, formation of specific names, synonym, homonym.

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

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work:	25 marks
Midterm Exam:	35 marks
Final term Exam:	40 marks

Text Books:

1. Ridley, M. 2004. Evolution, 3rd Ed. Blackwell Science.
2. Mayer, E. and Ashlock, P. D. Principles of Systematic Zoology. McGraw Hill, New York.

Books Recommended:

1. Bell, G. 2012. Selection: the mechanism of evolution. Chapman and Hall, NY.
2. Dawkins, R. 2015. The blind watchmaker. Longman Scientific and Technical. Essex, England.
3. Dawkins, R. 2016. The selfish gene. Oxford University Press, NY.
4. Freeman, S. and Herron, J. C. 2015. Evolutionary analysis, 3rd ed. Pearson Prentice Hall.
5. Futuyma, D. J. 1997. Evolutionary Biology, 3rd ed. Sinauer Associates, Inc. Sunderland, Massachusetts.
6. Gould, S. J. 2012. Ever since Darwin. W. W. Norton and Company, NY.
7. Ridley, M. 2000. Genome. New York: Perennial. Great reading.
8. Stearns, S. C. and Hoekstra, R. F. 2000. Evolution, an introduction. Oxford University Press.
9. Strickberger, (3rd or latest Ed.) Evolution. Jones and Barrett Publishers.
10. Freeman Dyson, (1999). Origin of life, Cambridge University press.
11. Simpson, G, G. 1965 (latest Ed.). Principle of animal taxonomy. Columbia University Press, New York.
12. Sokal R., and Sneath P.H. A. 1963 (latest Ed.). Principles of numerical taxonomy. W.H. Freeman and company, London.

Z-4804 Principles of Systematic Zoology (Lab.)

Cr(1)

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Course Contents:

The study of a group of organisms while utilizing Key.Collection, preservation, labeling and identification of a group of specimen according to expertise available in the institute.Preparation of bracket and indent key.Biometry Rationale, collection of data, statistical analysis (F test, t test, Z test, analysis of variance, regression and correlation) and interpretation.Phylogeny Reconstruction.Application of phenetic (similarity and dissimilarity matrix and unweighted pair group method) and cladistic (compatibility method) analysis to a group of mock "organisms."

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