## CC - 8: ANIMAL SYSTEMATICS AND TAXONOMY (Credit – 3)

Course Code - IZOOSC0004T

**Course Objective:** This course develops concepts in animal taxonomy and systematic, modern methods of taxonomy and systematics and their application. The student will get familiarize with Molecular basis of animal taxonomy and systematics including of basic techniques.

**Learning Outcome:** To understand historical and modern methods of animal classification and systematics and get acquainted with concepts and techniques including basic and advance type used in studying Animal Taxonomy and systematics. Knowledge gained could be applied to study the principles of taxonomy and its practical approach in Biology and communicate the same effectively.

### UNIT-I

Animal Systematics and Taxonomy Overview - Basic concepts, principles and methods. Historical resume of systematic, Domain Concept in Systematics, two, three, four, five and six kingdom classification. Concept of species-taxonomic diversity within species. Molecular Phylogeny-use of Proteins, DNA and RNA. Phylogenetic trees.

### UNIT-II

Species concepts and Theories of biological classification. Evolutionarily significant units. Principles of classification; Linnean System of classification; Binomial Nomenclature. Taxonomy, Types of Taxonomy, Alpha Taxonomy, Beta Taxonomy, Pre-Linnean Taxonomy, Linnean Taxonomy. Nomenclature and Classification

### UNIT-III

Taxonomic procedures: collection, preservation, curetting, Identification process. Taxonomic keys- types, merits and demerits. Systematic publications. Taxonomic Characters, types of lineages, lineage change, artificial lineage.

### UNIT-IV

International Code of Zoological Nomenclature (ICZN), interpretation and application of important rules of zoological nomenclature. Formation of scientific names of various taxa,

### UNIT-V

Modern trends in systematic and taxonomy - Numerical taxonomy, cytotaxonomy, chemotaxonomy, molecular taxonomy, cryo-taxonomy, neo-taxonomy, and behavioral taxonomy. Applications and significance of animal systematics and taxonomy in biology. Tree of Life. Geometric Morphometrics.

REFERENCES:


1. M. Kato. The Biology of Biodiversity, Springer.

2. J.C. Avise. Molecular Markers, Natural History and Evolution, Chapman & Hall, New York.

3. E.O. Wilson. Biodiversity, Academic Press, Washington.

4. G.G. Simpson. Principle of animal taxonomy, Oxford IBH Publishing Company.

5. E. Mayer. Elements of Taxonomy.

6. E.O. Wilson. The Diversity of Life (The College Edition), W.W. Northem& Co.

7. B.K. Tikadar. Threatened Animals of India, ZSI Publication, Calcutta.


**Practical CC – 8: ANIMAL SYSTEMATICS AND TAXONOMY** **(Credit: 1)**

1. Preparation of cladogram and Tree of Life
2. Preparation of Taxonomic keys for any animal and animal group
3. Preparation of animal models for understanding various taxonomic attributes of animal classification
4. Taxonomic procedures and systematic publication methods
5. Animal taxonomic studies using geometric morphometrics

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1. M. Kato. The Biology of Biodiversity, Springer.
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**Practical CC – 8: ANIMAL SYSTEMATICS AND TAXONOMY** **(Credit: 1)**

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