



JYOTI NIVAS COLLEGE AUTONOMOUS BANGALORE – 560 095
DEPARTMENT OF ZOOLOGY
B.Sc. I SEMESTER ZOOLOGY PAPER I SYLLABUS (2024 SEP BATCH)
SYSTEMATICS AND ANIMAL DIVERSITY – I
(PROTOZOA TO HEMICHORDATA)

COURSE TITLE	SYSTEMATICS AND ANIMAL DIVERSITY - I
COURSE CODE	24IZL1T
COURSE CREDITS	03
TOTAL CONTACT HOURS	56
DURATION OF ESE	3 Hours
CONTINUOUS INTERNAL ASSESSMENT (CIA)	20Marks
END SEMESTER EXAMINATION (ESE)	80 Marks

Course Objectives
The course

enables the students to:

- Understand the basic concepts of levels of organization in animals.
- Identify and classify different invertebrate phyla based on their general characteristics, with specific examples.
- Study the systems and structures found in various invertebrate organisms.
- Explore the life cycles and larval forms exhibited by invertebrates.

Course Out comes (COs):

After the successful completion of the course, the student will be able to:

- CO1.** Group animals based on their morphological characteristics/structures.
- CO2.** Demonstrate comprehensive identification abilities of non-chordates diversity
- CO3.** Explain structural and functional diversity of non-chordates
- CO4.** Develop understanding on the diversity of life with regard to Protists, non-chordates and chordates.
- CO5.** Examine the diversity and evolutionary history of a taxon through the construction of a basic phylogenetic/cladistics tree.

UNIT 1

14 Hrs.
07 Hrs.

Chapter 1: Systematics:

- Concept and significance of taxonomy
 - Zoological classification- Uses, kinds of classification and Linnean hierarchy.
 - Rules and Codes of binomial nomenclature.
 - ICZN – features, code, ICZN rules.
- Phylogenic tree- Features and types- Dendrogram, phenogram, cladogram, curvogram and

phylogram. Significance of phylogram.

Recent trends in taxonomy- Chemotaxonomy, Cytotaxonomy and Molecular taxonomy (Barcoding of life).

- Collection and preservation of natural history specimens.

Chapter 2: Introduction to Animal Architecture:

07 Hrs.

- Outline classification of Kingdom Animalia up to the level of phyla.
- Body organization: Levels of organization- Protoplasmic, cellular, tissue, and organ.
- Body Symmetry - Definition and its types- asymmetry, spherical, radial, biradial and bilateral.
- Germ layers – Definition and its types- Diploblastic (Apparent and absolute) and Triploblastic
- Body Coelom – Definition, origin and its types- a coelom, pseudo coelom, eucoelom (Enterocoelom and schizocoelom).
- Development- Direct indirect, protostomes, deuterostomes.

Metamerism - Definition and its types with suitable examples- pseudometamerism, true metamerism- homonomous and heteronomous.

UNIT II

14 hrs.

Chapter 3: Protozoans, Poriferans and Coelenterates

Phylum Protozoa: General characteristics of the phylum; classification up to classes with suitable examples.

- Types of nutrition: Autotrophic, holozoic, saprozoic, holophytic and parasitic with an example for each.
- Locomotion: *Amoeba*-Amoeboid (Walking movement and Sol-Gel theory), *Euglena* – Flagellar and euglenoid, *Paramecium*-Ciliary movement-Paddle Stroke Theory in *Paramecium*.
- Reproduction: Binary fission and conjugation in *Paramecium caudatum*; significance of conjugation.
- **Phylum Porifera:** General characteristics of the phylum; classification up to classes with suitable examples.
- *Sycon* - Morphology, T.S of body wall
- Canal system and its evolution: Asconoid, Syconoid, Leuconoid and Rhagonoid types.
- **Phylum Coelenterata:** General characteristics of the phylum; classification up to classes with suitable examples.
- Polymorphism with reference to *Halistermma*
- Coral reefs: Definition and its types.

Ctenophora – Salient features and its affinities

UNIT III

14 hrs.

Chapter 4: Helminthes

- **Phylum Platyhelminthes:** General characteristics of the phylum; classification up to classes (At least two unique characters for each class) with suitable examples.
- **Phylum Nematoda:** General characteristics of the phylum; classification up to classes (At

least two unique characters for each class) with suitable examples

Chapter 5: Annelids

- **Phylum Annelida:** General characteristics of the phylum; classification up to classes (At least two unique characters for each class) with suitable examples.
- Type study of Earthworm (*Pheretima posthuma*)- Morphology, digestive system, and excretory system.
- Trochophore larva and its significance.

Chapter 6: Arthropods

- **Phylum Arthropoda:** General characteristics of the phylum; classification up to classes (At least two unique characters for each class) with suitable examples.
- *Peripatus*: Systematic position, Unique features and affinities with Annelida and Arthropoda.
- Respiratory organs: Gills, book gills, trachea and book lungs.
- Sense organs: Simple eye and compound eye
- Metamorphosis in insects and its types.

Neuro-endocrine regulation of metamorphosis in *Bombyx mori*.

UNIT IV

14 hrs.

Chapter 7: Molluscs

Phylum Mollusca: General characteristics of the phylum; classification up to classes (At least two unique characters for each class) with suitable examples.

- *Unio* - Morphology, respiratory system and life cycle.
- *Unio* shell – Structure (internal and external), sectional view.
- Modification of the foot: *Chiton*, *Dentalium*, *Pila*, *Aplysia*, *Mytilus*, *Sepia* and *Octopus*

Chapter 8: Echinoderms and Hemichordates

- **Phylum Echinodermata:** General characteristics of the phylum; classification up to classes (At least two unique characters for each class) with suitable examples.
- *Asterias* – morphology and Water vascular system

Structure and significance of Echinoderm larvae: Bipinnaria, Echinopluteus, Auricularia

- **Phylum Hemichordata:**

- *Balanoglossus*: morphology Modification of the coelom.

Tornaria larva and its significance.