

CORE A1
DIVERSITY OF NON-CHORDATES

Code: ZOO-1011

Credit: 3 (T) + 1 (P)

Course Objectives:

1. The course would provide an insight to the learner about the existence of different life forms on the Earth, and appreciate the diversity of animal life.
2. It will help the student to understand the features of Kingdom Animalia and systematic organization of the animals based on their evolutionary relationships, structural and functional affinities.
3. The course will also make the students aware about the characteristic morphological and anatomical features of diverse animals; economic, ecological and medical significance of various animals in human life; and will create interest among them to explore the animal diversity in nature.

Learning Outcomes:

Upon completion of the course, students should be able to:

1. Learn about the importance of systematics, taxonomy and structural organization of animals.
2. Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
3. Critically analyze the organization, complexity and characteristic features of non-chordates making them familiarize with the morphology and anatomy of representatives of various animal phyla.
4. Comprehend the economic importance of non-chordates, the interaction with the environment and role in the ecosystem.
5. Enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions, assignments and projects.

THEORY

Unit1: General characteristics and Classification up to classes of Protista, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematelminthes. (Hours:7)

Unit2: Evolution of coelom and metamerism General characteristics and Classification up to classes of Annelida, Arthropoda, Mollusca and Echinodermata. (Hours:8)

Unit 3: Locomotion and Reproduction in Protista. (Hours:30)

Evolution of symmetry and segmentation of Metazoa.

Canal system and spicules in sponges.

Polymorphism in Cnidaria.

Corals and coral reef formation.

Parasitic adaptations in helminths- *Fasciola hepatica* and *Wuchereria bancrofti*.

Excretion in Annelida.

Vision and respiration in Arthropoda.

Evolutionary significance of Onychophora.

Torsion and detorsion in Gastropoda.

Water vascular system of Echinodermata.

PRACTICAL

Hours 30

1. Study of the whole mount of Euglena, Amoeba and Paramecium collected from different water sources.
2. Study of minimum of two representatives (specimen/slide/model) of each phylum of non-chordates.
3. Study of larval forms of Arthropoda/Echinodermata
4. T.S. through pharynx, gizzard and typhlosolar intestine of earthworm.
5. To submit a Project Report on life cycle of helminth parasite by students.

Suggested Readings:

1. Ruppert, E.E. and Barnes, R.D. (2006). Invertebrate Zoology, 8th Edition. Holt Saunders International Edition.
2. Pechenik, J. (2015). Biology of the Invertebrates. 7th Edition, McGraw Hill.
3. Schierwater, B. & DeSalle, R. (2021). Invertebrate Zoology: A Tree of Life Approach. 1st edition, CRC Press.
4. Jordan, K. and P. S. Verma (2019). Invertebrate Zoology, S. Chand and Co. Ltd.
5. Kotpal, R. L. (2020). Modern text book of Zoology, Invertebrates, 12th Edition, Rastogi Publications.