

Theory**Introduction of the course:**

The course is organized to provide an adequate knowledge about classification of organisms; definition, concept, evolutionary relationships and tree diagrams; patterns of organization and biodiversity.

Course Objectives:

The course is designed:

1. To introduce students about the key introductory concepts of classification of organisms and their evolutionary relationships.

Contents:**INVERTEBRATE DIVERSITY:**

Classification of organisms; definition, concept, evolutionary relationships and tree diagrams; patterns of organization. Biodiversity.

Animal-Like Protists: The Protozoa:

Evolutionary perspective; life within a single plasma membrane; symbiotic life-styles. Protozoan taxonomy: (up to phyla, subphyla and super classes, wherever applicable). Pseudopodia and amoeboid locomotion; cilia and other pellicular structures; symbiotic ciliates; further phylogenetic considerations.

Multicellular and Tissue Levels of Organization:

Evolutionary perspective: origins of multicellularity; animal origins. Phylum porifera: cell types, and skeletons; body forms; maintenance functions. Phylum cnidaria (coelenterata) the body wall and nematocysts; alternation of generations; maintenance functions; reproduction and classification up to class.

Phylum ctenophora; further phylogenetic considerations.

The Triploblastic, Acoelomate Body Plan:

Evolutionary perspective; phylum platyhelminthes: classification up to class; the free-living flatworms and the tapeworms; phylum nemertea; phylum gastrotricha; further phylogenetic considerations.

The Pseudocoelomate Body Plan: Aschelminths:

Evolutionary perspective; general characteristics; classification up to phyla; Some important nematode parasites of humans; further phylogenetic considerations.

Molluscan Success:

Evolutionary perspective: relationships to other animals; origin of the coelom; molluscan characteristics; classification up to class. Diversity in gastropods, bivalves and cephalopods; further phylogenetic considerations.

Annelida: The Metameric Body Form:

Evolutionary perspective: metamerism and tagmatization; classification up to class. External structure and locomotion, feeding.

The Arthropods:

Evolutionary perspective: classification and relationships to other animals; classification up to class.

The Hexapods and Myriapods:

Insect and humans; further phylogenetic considerations.

Practicals:

- 1) Study of Euglena, Amoeba, Entamoeba, Plasmodium, Trypanosoma, Paramecium as representative of animal like protists. (Prepared slides).
- 2) Study of sponges and their various body forms.
- 3) Study of principal representative classes of phylum Coelentrata.
- 4) Study of principal representative classes of phylum Platyhelminthes.
- 5) Study of representative of phylum Rotifera, phylum Nematoda.
- 6) Study of principal representative classes of phylum Mollusca.
- 7) Study of principal representative classes of phylum Annelida.
- 8) Study of principal representative classes of groups of phylum Arthropoda.
- 9) Brief notes on medical/economic importance of the following: Silkworm, Citrus butterfly.

Teaching-learning Strategies

1. Lectures
2. Group Discussion
3. Laboratory work
4. Seminar/ Workshop

Learning Outcome:

1. Students are expected to get acquire the basic knowledge of classification of organisms and their evolutionary relationships.

Assessment Strategies:

1. Lecture Based Examination (Objective and Subjective)
2. Assignments
3. Class discussion
4. Quiz
5. Tests

Recommended Readings:

1. Campbell, N.A., 2002. Biology 6th Ed. Menlo Park, California: Benjamin/Cummings Publishing Company, Inc.
2. Hickman, C.P., Roberts, L.S. and Larson, A., 2004. Integrated Principles of Zoology, 11th Edition (International). Singapore: McGraw Hill.

3. Kent, G.C. and Miller, S., 2001. Comparative Anatomy of Vertebrates. New York: McGraw Hill.
4. Miller, S.A. and Harley, J.B., 1999 & 2002. Zoology, 4th & 5th Edition (International). Singapore: McGraw Hill.
5. Pechenik, J.A., 2000. Biology of Invertebrates, 4th Edition (International). Singapore: McGraw Hill.
