

Course IV: Practical Zoology (BSCZO104)

Objectives:

1. Describe and explain the basic principles of animal classification, form and function among Invertebrate phyla.
2. Identify and classify the main groups of invertebrates through the study of available museum specimens/model/posters.
3. Classification of animals: basic structure and functional features of the Protozoa, Porifera, Radiata, Acoelomata, Pseudo-coelomata, Annelida, Arthropoda, Mollusca and Echinodermata.
4. To study the microscopic animals and larva of different invertebrate phyla through the permanent slide/ whole mount observation.
5. To study the cytological experiments i.e. cell division stages
6. To develop practical understanding on Mendalian and non Mendalian hereditary experiments.

Syllabus:

Museum Specimens study of Porifera, Coelentrata, Ctenophora, Platyhelminthes, Nematelminthes, Annelida, Arthropoda, Mollusca and Echinodermata. Dissection study including general anatomy of leech, Pila, Unio, Prawn and cockroach. Study of permanent slides/ museum specimens/ models belonging to following phyla: Protozoa, Annelida, Arthropoda, Mollusca and Echinodermata. Larval stages study of different non chordate groups using whole mount slides: Annelida, Mollusca, Arthropoda and Echinodermata. Permanent preparation of obelia colony: Ovary, pharyngeal and septal nephidium earthworm, parapodia of Nereis and Heteronereis; gill, radula and osphradium of Pila, salivary glands, mouth parts and trachea of cockroach, gill lamina of Unio, staeocyst and hastate plate of prawn. Study of mitosis and meiosis using available material. Experimentation on Mendalian and non Mendalian inheritance.

UNIT SCHEDULE

Block I: Museum Specimen study

Unit1: Protozoa (study of Permanent slides)

Unit2: Porifera (Study of permanent slides and Museum specimens)

Unit3: Coelentrata (Study of museum specimens and permanent slides)

Unit4: Platyhelminthes

Unit5: Nematoda

Unit6: Annelida (Study of museum specimens, permanent slide and slide preparation and study)

Unit7: Arthropoda (Museum specimens, whole mount and slide preparation)

Unit8: Mollusca(Museum specimens, whole mount/slides and slide preparation)

Unit9: Echinodermata (Museum specimens, whole mount/slides and slide preparation)

Block II: Experimentation

Unit10: Dissection

Unit11: Permanent slide preparation

Unit12: Cytological study

Unit13: Genetics experiment

UNIT WISE CONTENTS (BSCZO104)

Identification, systematic position up to order and general study of the following animal forms, microscopic slides / museum specimens:

- Unit 1:** Protozoa: *Amoeba*, *Paramecium*, *Euglena*, *Ceratium* and *Noctiluca*. *Plasmodium*, *Monocystis*, *Trypanosoma*, *Leishmania*, *Entamoeba* and *Giardia*
- Unit 2:** Porifera: *Leucosolenia*, *Grantia*, *Scypha*, *Hyalonema*, *Euplectella*, *Spongilla* and *Euspongia*. L. S. and T. S. of *Scypha* / *Grantia*
- Unit 3:** Coelenterata: Medusa of *Obelia*, larval stages of *Aurelia*, *Physalia*, *Porpita*, *Vellela*, *Tubipora*, *Millepora*, *Aurelia*, *Gorgonium*, *Pennatua*, *Alcyonium*, *Adamsia*
- Unit 4:** Platyhelminthes: *Dugesia*, *Fasciola* and *Taenia*. Transverse sections of *Fasciola* and *Taenia*, mature and gravid proglottids of *Taenia*, developmental stages of *Fasciola* and *Taenia*
- Unit 5:** Nematoda: *Ascaris*, *Ancylostoma*, *Dracunculus*, *Wuchereria*, *Trichinella*, *Schistosoma* and *Enterobius*
- Unit 6:** Annelida: *Nereis*, *Heteronereis*, *Aphrodite*, *Arenicola*, *Metaphire*, *Pontobdella*, and *Hirudinaria*. Transverse sections of *Nereis* and *Hirudinaria*, Trochophore larva of *Nereis*, Parapodium of *Nereis* and *Heteronereis*
- Unit 7:** Arthropoda : *Limulus*, Spider, *Palaemon*, *Apus*, *Lepas*, *Balanus*, *Sacculina*, *Palaemon*, Lobster, *Eupagurus*, Crab, *Lepisma*, *Odontotermes*, *Pediculus*, *Schistocerca*, *Papilio*, *Bombyx*, *Xenopsylla*, *Apis*, *Julus* and *Scolopendra*. Crustacean larvae (*Nauplius*, *Zoea*, *Megalopa* and *Mysis*), mosquito larva & pupa. *Sacculina*, Lice, flea, bedbug, tick and mites
- Unit 8:** Mollusca *Chiton*, *Dentalium*, *Sepia*, *Patella*, *Pila*, *Turbinella*, *Aplysia*, Slug, Snail, *Mytilus*, Octopus. Transverse sections of Lamellidens and Glochidium larva
- Unit 9:** Echinodermata: *Pentaceros*, *Asterias*, *Ophiothrix*, *Echinus*, *Holothuria* and *Antedon*. Pedicellariae of Star fish
- Unit 10:** Biology/General study Study of living animals: *Amoebia*, *Paramecium*, *Euglena*, *Hydra* and rectal ciliates

Unit 11: Permanent slide preparation/ Dissections

Permanent preparations / Minor dissections of the following:

Protozoa: *Paramecium*

Porifera: Sponge spicules and gemmules.

Coelenterata: *Obelia* colony, *Obelia* medusa.

Arthropoda: Mouth parts of honey bee, butterfly, cockroach and grasshopper.

Unit 12: Cytological study

- a. Study of mitosis and meiosis using available material.
- b. Study of permanent slides showing stages of cell division, giant chromosome, , mitochondria, Golgi body etc

Unit 13: Genetics experiment

Experimentation on Mendelian and non – Mendelian inheritance, study of mutants of *Drosophila* through charts/photographs