

SEMESTER 1st

MAJOR / MINOR COURSE

ZOL122M: ZOOLOGY (INTRODUCTION TO SYSTEMATICS & NON-CHORDATES)

CREDITS: 4 + 2

Course objective: This course is designed to give a learner the fundamental understanding of taxonomy and the diversity of non-chordate phyla with emphasis on their key characteristics, classification and functioning.

Learning outcome: After the completion of this course, a student will be able to

- Learn basic taxonomy skills and demonstrate identification and classification of non-chordates
- Understand the general and distinct characters of non-chordate phyla
- Comprehend and explain evolutionary relationship among various non-chordate groups

THEORY: (4 CREDITS)

Unit I: Animal Taxonomy

- 1.1 Introduction to systematics: terms & definitions
- 1.2 Utility and strategy of systematics with emphasis on α , β & γ taxonomy
- 1.3 Taxonomic characters: introduction & types
- 1.4 Outline classification of Kingdom Animalia

Unit II: Protozoa, Porifera and Coelentrata

- 2.1 General characters and classification of Protozoa, Porifera & Coelentrata up to class level
- 2.2 Locomotion & nutrition in Protozoa
- 2.3 Canal system & skeletal elements in Porifera
- 2.4 Polymorphism in coelenterates

Unit III: Platyhelminthes, Nematoda & Annelida

- 3.1 General characters and classification of Platyhelminthes, Nematoda & Annelida upto class level
- 3.2 Morphology, life cycle and pathogenicity of *Taenia solium*
- 3.3 Morphology, life cycle & pathogenicity of *Ascaris lumbricoides*
- 3.4 Filter feeding in polychaetes

Unit IV: Arthropoda, Mollusca & Echinodermata

- 4.1 General Characters and classification of Arthropoda, Mollusca & Echinodermata up to class level
- 4.2 Mouth parts in insects & insect metamorphosis
- 4.3 Modification of foot in molluscs & torsion in gastropods
- 4.4 Water Vascular system & larval forms in Echinodermata

PRACTICALS: (2 CREDITS)

Section I:

- 1.1 Slide study of Protozoa: *Paramecium*, *Euglena*, *Amoeba*, *Entamoeba*, *Trypanosoma*, *Leishmania*, *Plasmodium*
- 1.2 Museum study of Porifera: *Sycon*, *Spongilla*, *Euplectella*, *Hyalonema*, *Euspongia* & Coelenterata: *Obelia*, *Hydra*, *Physalia*
- 1.3 Museum study of helminths: *Taenia*, *Fasciola*, *Ascaris*, *Trichuris* & Annelida: *Pheritema*, *Hirudinaria*
- 1.4 Dissection of Earthworm/ *Nereis* to expose its nerve ring

Section II:

- 2.1 Museum study of Arthropoda: *Palaemon*, *Julus*, *Scolopendra*, *Apis*, wasp; Mollusca: *Octopus*, *Chiton*, *Pila*, *Unio*, *Aplysia* & Echinodermata: *Asterias*, *Echinus*, *Antedon*, *Holothuria*
- 2.2 Preparation of temporary mount of insect mouth parts & sting apparatus of honey bee
- 2.3 Dissection of *Sepia/ Loligo* to expose nervous system
- 2.4 Water vascular system in Echinodermata

SUGGESTED BOOKS:

1. Invertebrate Structure & Function by E.J. Barrington Nelson, London Publishers.
2. Invertebrate Zoology by P.S Dhami and J.K Dhami. R-Chand & Company
3. Invertebrate Zoology by Ruppert and Barnes. Holt Saunders Publishers
4. Modern Textbook of Zoology: Invertebrates by R.L Kotpal. Rastogi Publishers
5. Invertebrate Zoology by E.L Jordan and P.S Verma. S. Chand Publishers
6. Principles and Practices of Animal Taxonomy by V.C Kapoor. Science Publishers
7. A Manual of Practical Zoology by P. S. Verma
8. A Textbook of Invertebrate Practical Zoology by Vivekanand Banerjee
9. Practical Zoology: Invertebrate (English, Rastogi Publications, S.S.Lal)