

# Government Degree College Baramulla

SEMESTER – 1<sup>st</sup>

MAJOR / MINOR COURSE

**Subject: Zoology**

**Title: Introduction to Systematics & Invertebrates**  
(CREDITS (4+2): THEORY – 04, PRACTICALS -02)

**Course code: BZO22C101**  
Contact hours: 64 (T) + 64 (L)

**Part 1: Theory = (4 Credits)**

## **Course Objectives:**

*To impart a learner the fundamental understanding about taxonomy and diversity of phylum non-chordata and to acquaint them about their classification, structure, morphology and reproduction.*

## **Learning Outcomes:**

*After thoroughly understanding the course the student should 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*
- Understand how the animals have been categorized on evolutionary bases and level of complexity*

## **Unit I: Animal Taxonomy**

**(16 Contact hours)**

- 1.1 Introduction to systematics: terms & definitions
- 1.2 Utility and strategy of systematics with emphasis on  $\alpha$ ,  $\beta$  &  $\gamma$  taxonomy
- 1.3 Taxonomic characters with special reference to (Morphological and Molecular)
- 1.4 Outline classification of Kingdom Animalia

## **Unit II: Protozoa, Porifera and Cnidaria**

**(16 Contact hours)**

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

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## Unit III: Platyhelminthes, Nematoda & Annelida (16 Contact hours)

- 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 (16 Contact hours)

- 4.1 General Characters and classification of Arthropoda, Mollusca & Echinodermata up to class level
- 4.2 Mouth parts in Insects & Insect metamorphosis
- 4.3 Torsion in Gastropods
- 4.4 Water Vascular system & larval forms in Echinodermata

### Books recommended:

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 of Systematic Zoology by Mayer & Ashlock: (1991, McGraw Hill).
7. Text Book of Zoology, by Parker & Haswell: Vol. II (2005, Macmillan)
8. General Parasitology by Cheng

## Part 2: Laboratory Course (2 Credits)

### Course objectives

- *To make students to easily understand the morphology and structure of different animals of phylum non-chordates*
- *Understands the complex evolutionary processes and behaviour of animals*

### Course Outcomes

*On completion of course, the student should be able to*

- *Understand the basics morphology and structure of different animals of phylum*

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## *non-chordata*

- *To correlates the physiological processes of animals and relationship of organ systems.*

### **Section A:**

**(32 Contact hours)**

- 1.1 Slide study of Protozoa: Paramecium, Euglena, Amoeba, Entamoeba, Trypanosoma, Leishmania, and Plasmodium
- 1.2 Museum study of Porifera: Sycon, Spongilla, Euplectella, Hyalonema, Euspongia & Cnidaria: Obelia, Hydra, Physalia
- 1.3 Museum study of helminths: Taenia, Fasciola, Ascaris, Trichuris & Annelida: Pheritema , Hirudinaria
- 1.4 Dissection of Earthworm/ Nereis/ Prawn to expose its nerve system
- 1.5 Field trip for collection, identification and Fixation of fresh water protozoans.

### **Section B:**

**(32 Contact hours)**

- 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 (Virtual)
- 2.4 Dissection of digestive system of Palaemon and mounting of Hastate plate
- 2.5 Field trip for collection, identification and Preservation of invertebrate Fauna

### **Books recommended:**

1. Invertebrate Zoology by E.L Jordan and P.S Verma. S. Chand Publishers
2. Principles of Systematic Zoology by Mayer & Ashlock: (1991, McGraw Hill).
3. A Manual of Practical Zoology by P. S. Verma
4. A Textbook of Invertebrate Practical Zoology by Vivekanand Banerjee
5. Practical Zoology: Invertebrate (English, Rastogi Publications, S.S.Lal)
- .6. Theory and Practicals of Animal Taxonomy by Kapoor: (1988, Oxford & IBH)