

SYLLABUS

Credits: 3

Course: I. Invertebrates (MSCZO- 501)

Course objectives:

1. To comprehend the systematic position, functional morphology, mode of life, and biodiversity of invertebrates
2. To study their economic importance, affinities and adaptations.
3. To study the parasitic forms of various invertebrate groups and their effect on human and animals.
4. Understand the general features of animal life cycles and forms of reproduction.
5. Describe the general features used to classify animal groups such as type of symmetry, number of tissue layers, body cavities, segmentation and cephalization and distinctive larval forms
6. Describe the structure and function of animals in general at the cellular, tissue and organ level of structural organization.
7. To understand the International Code of Zoological Nomenclature, Its operative principals, Zoological nomenclature and formation of scientific names of various taxa.
8. To understand the Causes, Processes, and Consequences of Evolution.
9. To understand the Principal Mechanisms of Evolution through the process of macro, micro and mega evolutionary process

Syllabus

Organisation of Coelom: Acoelomates, Pseudocoelomates, Coelomates: Protostomes and Deuterostome. Locomotion (Flagella and ciliary movement in Protozoa, Hydrostatic movement in coelenterata, Annelida and Echinodermata); Nutrition and digestion (Patterns of feeding and digestion in lower metazoa, Filter feeding in polychaeta, Mollusca and Echinodermata). Respiration (Organs of respiration Gills, lungs and trachea, Respiratory pigments, Mechanism of respiration. Excretion (Organs of excretion Coelom, Coelomoducts, Nephridia and Malpighian tubules, Excretion and Osmoregulation, Mechanisms of Excretion); Nervous System (Primitive nervous system: Coelenterata and Echinodermata; Advanced Nervous system: Annelida, Arthropoda and Mollusca. Invertebrate larvae (Larval forms of free-living invertebrates, larval forms of parasites, strategies and evolutionary significance of larval forms. Minor Phyla: Organization and general characters.

UNIT SCHEDULE

Invertebrates

Block I:

Unit 1: Organization of coelom

Unit 2: Locomotion

Unit 3: Nutrition and Digestion

Unit 4: Respiration

Block II:

Unit 5: Excretion

Unit 6: Nervous System

Unit 7: Invertebrate larvae

Unit 8: Minor Phyla

Course I: Invertebrates (MSZO- 501)

UNIT WISE CONTENTS (MSZO- 501)

Unit 1: Organization of Coelom

- 1.1 Objectives
- 1.2 Introduction
- 1.3 Acoelomates
- 1.4 Pseudocoelomates
- 1.5 Coelomates
- 1.6 Protostomia
- 1.7 Deuterostomia
- 1.8 Summary
- 1.9 Terminal Questions and Answers

Unit 2: Locomotion

- 2.1 Objectives
- 2.2 Introduction
- 2.3 Flagella and Ciliary movement in Protozoa
- 2.4 Hydrostatic movement
 - 2.4.1 Coelentrata
 - 2.4.2 Annelida
 - 2.4.3 Echinodermata
- 2.5 Summary
- 2.6 Terminal Questions and Answers

Unit 3: Nutrition and Digestion

- 3.1 Objectives
- 3.2 Introduction
- 3.3 Patterns of Feeding and Digestion in Lower Metazoa
- 3.4 Filter feeding
 - 3.4.1 Polychaeta
 - 3.4.2 Mollusca
 - 3.4.3 Echinodermata
- 3.5 Summary
- 3.6 Terminal Questions and Answers

Unit 4: Respiration

- 4.1 Objectives
- 4.2 Introduction
- 4.3 Organs of respiration
 - 4.3.1 Gills
 - 4.3.2 Lungs

- 4.3.2 Trachea
- 4.4 Respiratory Pigments
- 4.5 Mechanism of Respiration
- 4.6 Summary
- 4.7 Terminal Questions and Answers

Unit 5: Excretion

- 5.1 Objectives
- 5.2 Introduction
- 5.3 Organs of Excretion
 - 5.3.1 Coelom
 - 5.3.2 Coelomoducts
 - 5.3.3 Nephridia
 - 5.3.4 Malpighian tubules
- 5.4 Mechanisms of Excretion
 - 5.4.1 Osmoregulation
- 5.5 Summary
- 5.6 Terminal Questions and Answers

Unit 6: Nervous System

- 6.1 Objectives
- 6.2 Introduction
- 6.3 Primitive Nervous system
 - 6.3.1 Coelenterata
 - 6.3.2 Echinodermata
- 6.4 Advanced Nervous system
 - 6.4.1 Annelida
 - 6.4.2 Arthropoda (Crustacea and Insecta)
 - 6.4.3 Mollusca (Cephalopoda)
- 6.5 Trends in Neural Evolution
- 6.6 Summary
- 6.7 Terminal Questions and Answers

Unit 7: Invertebrate larvae

- 7.1 Objectives
- 7.2 Introduction
- 7.3 Larval Forms of Free-Living Invertebrates
- 7.4 Larval forms of Parasites (Helminths)
- 7.5 Strategies and Evolutionary Significance of Larval Forms
- 7.6 Summary
- 7.7 Terminal Questions and Answers

Unit 8: Minor Phyla

8.1 Objectives

8.2 Introduction

8.3 Organization and General Characters

8.4 Significance of Minor Phyla

8.4.1 Mesozoa

8.4.2 Gastrotricha

8.4.3 Ctenophora

8.4.4 Rhyncoela

8.4.5 Rotifera

8.4.6 Spincula

8.4.7 Protostomes

8.4.8 Entoprocta

8.4.9 Deuterostomes

8.5 Summary