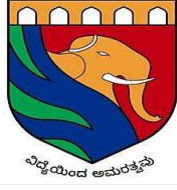


RAICHUR
UNIVERSITY



RAICHUR UNIVERSITY, RAICHUR

**Under Graduate Curriculum for Degree of
Bachelor of Science (B.Sc) in**

**ZOOLOGY
(I & II Semester)**

**As per Revised NEP 2024
With Effect from the Academic year from
2024-25 and onwards**

Zoology
B.Sc., Semester – I (SEP) w.e.f 2024-25
Theory Syllabus

Course Title: Systematics and Biology of Non-Chordates

Course Code:

Course Outcomes (COs):

At the end of the course, students will be able to:

1. **Group animals on the basis of their morphological characteristics/structures.**
2. **Demonstrate identification characters among non-chordates.**
3. **Explain structural and functional differences among of non-chordates.**
4. **Examine the diversity and evolutionary history of a taxa through the construction of a basic phylogenetic/ cladistics tree.**
5. **Understand basics of classification of non-chordates.**
6. **Learn the habit and habitat of the species.**
7. **Develop the skills to identify different species and assign them to respective phyla / classes.**
8. **Distinguish uniqueness of a particular animal and its importance.**

Units	Description
1	<p>Introduction to taxonomy: Principles of taxonomy, history of biological classification, theories of biological classification, levels of taxonomy: alpha, beta, gamma, Cytotaxonomy, Chemotaxonomy, Numerical taxonomy, Molecular taxonomy, Dendrograms and Cladistics.</p> <p>Species concept: Typological, phenetic, biological, evolutionary, aberrant species concept. Concept of ICZN, Binomial nomenclature, trinomial nomenclature, Linnaean hierarchy. Phylogenetic relationship between major invertebrate phyla.</p>
2	<p>Protozoa: General Characters and classifications up to classes with examples. <i>Paramecium</i> (Morphology and Reproduction)</p> <p>Porifera: General Characters and classifications up to classes with examples. Canal System in porifera.</p> <p>Coelenterata: General Characters and classifications up to classes with examples. <i>Obelia</i> (Morphology and Reproduction).</p> <p>Ctenophora: General Characters and classifications up classes with examples.</p> <p>Platyhelminthes: General Characters and classifications up to classes with examples. <i>Taenia</i> (Morphology and Reproduction).</p> <p>Nemathelminthes: General Characters and classifications up classes with examples. <i>Ascaris lumbricoides</i> (Morphology and Reproduction).</p>
3	<p>Annelida: General Characters and classifications up to classes with examples. Earthworm (Morphology and Reproduction).</p> <p>Arthropoda: General Characters and classifications up to classes with examples. Cockroach (Morphology, Appendages, Nervous System and Reproduction).</p> <p>Mollusca: General Characters and classifications up to classes with examples. <i>Pila</i> (Morphology, Shell, Respiration, Nervous System and Reproduction).</p> <p>Echinodermata: General Characters and classifications up to classes with examples. <i>Asterias</i> (Morphology and Water Vascular System)</p>

4	<p>Locomotion: Principles of hydrostatic movements, amoeboid and flagellar movement, locomotion in Annelida and Arthropoda.</p> <p>Nutrition: Food and feeding habits in non-chordates.</p> <p>Respiration: Organs of respiration; gills, trachea, lungs. Respiratory pigments, Mechanisms of respiration.</p> <p>Excretion: Coelomoducts, nephridia, malpighian tubules, coxal glands, mechanism of excretion.</p> <p>Nervous integration: Primitive & advanced nervous system, sense organs.</p> <p>Reproduction: Patterns of reproduction and larval forms of invertebrates.</p>
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Suggested Reading:

1. Barnes R.S.K. Calow P. Olive P.J.W. Golding D.W. Spicer J.I. (2002). **The Invertebrates: Synthesis**, Blackwell Publishing.
2. Barrington E.J.W (1979). **Invertebrate Structure and Functions**. II Edition. E.L.B.S. and Nelson.
3. Boradale L.A. and Potts E.A. (1961). **Invertebrates: A Manual for the use of Students**. Asia Publishing Home.
4. Colbert *et al*: **Colbert's Evolution of the Vertebrates: A history of the backboneed animals through time**. (V-Ed. 2002, Wiley-Liss).
5. Ernst Mayer and Peter D. Ashlock: **Principal Elements of Taxonomy**.
6. G. G. Simpson. **Principle of animal taxonomy**; Oxford IBH Publishing Company.
7. Hickman C. Roberts L.S. Keen S.L. Larson A. and Eisenhour D. (2018). **Animal Diversity**, McGraw-Hill.
8. Kenneth V. Kardong (2015). **Vertebrates: Comparative Anatomy, Function, Evolution** McGraw Hill.
9. Marshall AJ and Williams W D (Eds). (1995). **Text book of Zoology- Invertebrates**. VII Ed.
10. **Modern Text Book of Zoology: Invertebrates**: R. L. Kotpal Rastogi Publications.
11. Parker T. S. and Haswell W. A. (1978). **Text Book of Zoology**, Vol. II, ELBS.
12. Ruppert and Barnes, R.D. (2006). **Invertebrate Zoology**, VIII Edition. Holt Saunders International Edition.
13. Russell-hunter. W D. (1968). **Biology of lower invertebrates**, Macmillan Company, New York.

Zoology
B.Sc., Semester – I (SEP)
Practical Syllabus

Course Title: Systematics and Biology of Non-Chordates	Course Code:
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Course Outcomes (COs):

At the end of the course, students will be able to:

1. Understand basics of microscopes and classification of non-chordates.
2. Learn the diversity of habitat and habitat of the species.
3. Develop the skills to identify different classes and species of animals.
4. Know uniqueness of a particular animal and its importance.
5. Enhancement of basic laboratory skills like keen observation and drawing.
6. Demonstrate comprehensive identification abilities of non-chordates.
7. Explain structural and functional characteristics of invertebrates.
8. Understand evolutionary relationship amongst invertebrates.
9. Take up research in biological sciences.
10. Realize that similar physiological mechanisms are used in very diverse organisms.
11. Get a flavor of research by working on projects along with their writing skills.
12. Think and interpret individually.

Expt. No.	List of Experiments
1.	Study of microscopes.
2.	Protozoa: Systematics of slides of <i>Amoeba</i> , <i>Euglena</i> and <i>Noctiluca</i> .
3.	Porifera: Systematics of specimens of <i>Sycon</i> , <i>Euplectella</i> , <i>Spongilla</i> , <i>Euspongia</i>
4.	Coelenterata: Systematics of <i>Hydra</i> , <i>Aurelia</i> , <i>Obelia</i> , Corals
5.	Platyhelminthes: Systematics of Planaria, Tape worm, Liver fluke
6.	Aschelminthes: Systematics of <i>Ascaris</i>
7.	Annelida: Systematics of <i>Nereis</i> , <i>Aphrodite</i> , <i>Leech</i> , <i>Earthworm</i> and sections of earthworm. Mounting of nephridia, setae. Study of digestive and nervous system in earthworm.
8.	Arthropoda: Systematics of <i>Panaeus</i> , Scorpion, Ant, Cockroach, Termite, Spider, Millipede, Centipede, Butterfly, Moth, larvae of crustacea and insecta.
9.	Mollusca: Systematics of Chiton, Lamellidens, Aplysia, Pila, Sepia, Octopus and larval forms. Shell patterns in different molluscans.
10.	Echinodermata: Systematics of Sea star, Brittle star, Sea urchin, Sea cucumber, Clypeaster and larval forms.
11.	
12.	Virtual dissection /mounting / cultured specimens: Earthworm, Cockroach and Prawn (dissect and display organ system and mounting).

***Note: Students should draw the diagrams rather than just pasting the pictures in the records.**