



जम्मू केन्द्रीय विश्वविद्यालय
Central University of Jammu

राया-सुचानी (बगला), जिला: सांबा-181143, जम्मू (जम्मू और कश्मीर), भारत
Rahya-Suchani (Bagla), District- Samba, 181143, Jammu (Jammu and Kashmir), India

Course Title: Non-chordate Biology

Credit: 4 (L-4, T-0, P-0)

Course code:

Contact Hrs/Week: 4 Hrs

Course Outcomes

The course aimed to provide comprehensive understanding of the diversity, structure, and function of non-chordates and understanding their ecological significance

Course Learning Outcomes (CLO): The students will be able to:

1. Understand about the structural organization of non-chordates.
2. Learn about the diversity of locomotion in non-chordates.
3. Will understand the mechanism of feeding and respiration in non-chordates.
4. Will learn about the process of nervous system and excretion across the non-chordates
5. Reproduction and various larval forms and their significance in non-chordates.

Unit I

Structural organization of non-chordates – Origin of Protozoa, parazoa, metazoa, radiata and bilateria, Body plan and symmetry, Origin, characters and types of metamerism, Coelom organization: Origin, evolution and types of coelom, Minor phyla: origin, significance and salient features.

Unit II

Locomotion in non-chordates – Locomotory organs and types of locomotion: Amoeboid locomotion, Ciliary locomotion, Flagellar locomotion, Non-jointed appendages, Jointed appendages, Hydrostatic movements, Mechanism of locomotion

Unit III

Feeding and digestion: Feeding types and methods, Microphagy, Macrophagy, Herbivores, Omnivores, Carnivores, Filter feeding, Ciliary feeding, Intracellular and extracellular digestion. Respiration in non-chordates, Organs of respiration, Respiratory pigments, Mechanism of respiration

Unit IV

Primitive nervous system, Advanced nervous system, Neurosecretory cells. Endocrine structure and role of hormones in moulting and metamorphosis in insects and crustaceans. Excretion in non-chordates, specialized excretory organs and mechanism, Osmoregulation

Unit V

Reproduction in non-chordates: Asexual reproduction, Sexual reproduction, Parthenogenesis, Regeneration. Significance of Larval forms in non-chordates.

Suggested Readings:

1. Hyman, L.H. The Invertebrate series, Vol I, II, III, IV & V, McGraw Hill Book Co., New York, London.



जम्मू केन्द्रीय विश्वविद्यालय
Central University of Jammu

राया-सुचानी (बगला), जिला: सांबा-181143, जम्मू (जम्मू और कश्मीर), भारत
Rahya-Suchani (Bagla), District- Samba, 181143, Jammu (Jammu and Kashmir), India

2. Brusca, R. C., Moore, W., and S. M. Schuster. 2016. Invertebrates, 3rd edition. Sinauer Associates, Sunderland
3. Parker and Haswell, Vol.1, McMillan & Co. 1986, New York, Text Book of Zoology.
4. Kotpal, R.L. 2021 Modern Textbook of Zoology Invertebrates. 12th Edition. Rastogi Publications.
5. Smith, S. A., Wilson, N. G., Goetz, F. E., Feehery, C., Andrade, S. C. S., Rouse, G. W., et al. (2011). Resolving the evolutionary relationships of molluscs with phylogenomic tools. Nature 480, 364–367
6. M. Ekambaranatha Ayyar, 1973, A Manual of Zoology Part-I, Invertebrata S.Viswanathan (Printers and Publishers) Pvt.Ltd.Madras.
7. Martindale, M.Q., Henry, J.Q. (1998). The development of radial and biradial symmetry: the evolution of bilaterality. Am. Zool. 38, 672-684.

Course Title: Non-chordate Biology Lab

Credit: 2 (L-0, T-0, P-4)

Course code:

Contact Hrs/Week: 4 Hrs

Lab component

1. To demonstrate the body plan, symmetry, body segmentation and structural organization of non-chordates.
2. To demonstrate locomotor organs in non-chordates and feeding mechanism in non-chordates.
3. To demonstrate respiration in non-chordates and nervous system in non-chordates.
4. To determine osmoregulation and larval forms.