

CORE A2
DIVERSITY OF CHORDATES

Code: ZOO-1021

Credit: 3 (T) + 1 (P)

Course Objectives:

The course is designed with an aim to provide scope and historical background of chordates. It will impart knowledge regarding basic concepts of origin of chordates and make the students understand the characteristics and classification of animals with notochord. The exclusive phenomenon in chordates like biting mechanism in snakes, flight adaptations in birds etc. will be explained. The adequate explanation to the students regarding various mechanisms involved in thriving survival of the animals within their geographic realms will create interest among students.

Learning Outcomes:

Upon completion of the course, the students will be able to:

1. Understand different classes of chordates, level of organization and evolutionary relationship between different subphyla and classes, within and outside the phylum.
2. Study about diversity in animals making students understand about their distinguishing features.
3. Appreciate similarities and differences in life functions among various groups of animals in Phylum Chordata.
4. Comprehend the circulatory, nervous and skeletal system of chordates.
5. Know about the habit and habitat of chordates in marine, freshwater and terrestrial ecosystems.

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THEORY	Hours
Unit 1: Origin of Chordates-Dipleurula concept and Echinoderm theory General characteristics and outline classification	8
Unit 2: General characteristics of Hemichordata, Urochordata and Cephalochordata Study of larval forms of protochordates.	7
Unit 3: Advanced features of vertebrate over protochordata	30

Overview of axial and appendicular skeleton, Jaws suspensorium, Visceral arches
 General characteristics and classification of cyclostomes upto class
 General characteristics of Chondrichthyes and Osteichthyes, classification upto order.
 Origin of Tetrapoda
 General characteristics and classification of Amphibia, Reptilia, Aves and Mammalia upto order
 Migration in Fishes; Parental care in Amphibia; Biting mechanism in snakes; Archaeopteryx as a connecting link; Flight adaptation in birds; Affinities in Prototheria.

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PRACTICAL	Hours
1. Study of museum specimens/ Models -Protochordata (<i>Balanoglossus</i> , <i>Herdmania</i> , <i>Amphioxus</i>), Agnatha (<i>Petromyzon</i> , <i>Myxine</i>), Fishes (<i>Scoliodon</i> , <i>Torpedo</i> , <i>Mystus</i> , <i>Heteropneustes</i> , <i>Labeo</i> , <i>Hippocampus</i> , <i>Tetraodon</i>), Amphibia (<i>Ichthyophis</i> , <i>Necturus</i> , <i>Bufo</i> , <i>Hyla</i>), Reptilia (<i>Chelone</i> , <i>Hemidactylus</i> , <i>Varanus</i> , <i>Chamaeleon</i> , <i>Bungarus</i> , <i>Naja</i>), Aves (ten different species of birds commonly found in Assam), Mammalia (Bat, common primates, common ungulates, Gangetic River Dolphin).	30
2. Study of T.S. of <i>Amphioxus</i> through pharyngeal, intestinal and caudal regions.	
3. Identification key of venomous and non-venomous snakes.	
4. PowerPoint presentation on the study of any two vertebrates from two different classes by students.	

Suggested Readings:

1. Young, J. Z. (2004). The Life of Vertebrates. 3rd Edition. Oxford University press.
2. Pough F. H. & Janis, C. M. (2018). Vertebrate Life. 10th Edition, Sinauer Associates
3. Verma, P. S. & Jordan, E. L. (2013). Chordate Zoology. 14th edition, S. Chand
4. Kotpal, R. L. (2019). Modern text book of zoology: Vertebrates (Z-3). 5th edition, Rastogi Publications