SEMESTER -III
DEPARTMENT OF ZOOLOGY
Category I

(B.Sc. Honours in Zoology in three years)

DISCIPLINE SPECIFIC CORE COURSE -7 –:
Diversity of Chordates
Zoo-DSC-7

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Diversity of Chordates Zoo-DSC-7	**04**	**02**	**Nil**	**02**	**Passed Class XII**	**NIL**

Learning Objectives

The learning objectives of this course are as follows:

- The course aims to impart in-depth knowledge about the diverse life forms from the taxonomic positions of Protochordates and Agnatha to Mammalia.
- It will help the students to identify the body plan types of complex chordates and their systematic organization based on evolutionary relationships, structural and functional affinities.
- The course will help the students to understand the characteristic morphological, adaptive and anatomical features of diverse animals.
- The course will help students to understand the economic and ecological significance of various animals in human life.
- The course will create interest among them to explore and appreciate the animal diversity in nature.

Learning Outcomes

By studying this course, students will be able to

- Correlate the importance of systematics, taxonomy, and structural organization of chordates.
- Recognize the diversity of chordates living in varied ecological habitats.
- critically analyse the organization, complexity and characteristic features of chordates.
- comprehend the economic importance of chordates, their interaction with the

environment and their role in the ecosystem.

- enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions, assignments, and projects.

SYLLABUS OF DSC-7

UNIT-I: Introduction to Chordates **2 hrs**

General characteristics and outline classification.

UNIT-2: Protochordata **3hrs**

General characteristics of Hemichordata, Urochordata and Cephalochordata; Study of Tornaria and Ascidian larval forms in protochordates.

UNIT-3: Origin of Chordates **2 hrs**

Theories of Origin of chordates with detailed concept of Dipleurula and the Echinoderm theory.

UNIT-4: Agnatha **2 hrs**

General characteristics and classification of cyclostomes up to Class.

UNIT- 5: Pisces

3 hrs

General characteristics of Chondrichthyes and Osteichthyes; Classification up to order; Osmoregulation; Swimbladder in fishes

UNIT- 6: Amphibia

4 hrs

General characteristics and classification up to order; Origin of Tetrapods (Evolution of terrestrial ectotherms); Parental care in Amphibians.

UNIT-7: Reptilia

4 hrs

General characteristics and classification up to order; Affinities and evolutionary significance of *Sphenodon*; Poison apparatus and biting mechanism in snakes.

UNIT- 8: Aves

4 hrs

General characteristics and classification up to order; Flight adaptations; Migration in birds.

UNIT- 9: Mammalia **4 hrs**

General characteristics and classification up to order; Adaptive radiation with reference to locomotory appendages.

UNIT- 10: Zoogeography **2 hrs**

Zoogeographical realms, Platetectonics and Continental drift theory.

Practical **60 hrs**

(Laboratory periods: 15 classes of 4 hours each)

1. **Protochordata**: *Balanoglossus, Herdmania, Branchiostoma,* Colonial Urochordata, Sections of *Balanoglossus* through proboscis and branchio-genital regions, Sections of *Amphioxus* through pharyngeal, intestinal and caudal regions. Permanent slide of *Herdmania* spicules.
2. **Agnatha**: *Petromyzon, Myxine.*
3. **Pisces**: *Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetrodon/Diodon, Anabas*, Flatfish. Permanent slides of Placoid and Cycloid Scales.
4. **Amphibia**: *Ichthyophis/Ureotyphlus, Necturus, Bufo, Hyla, Alytes, Salamandra.*
5. **Reptilia**: *Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus*; Key for Identification of poisonous and non-poisonous snakes.
6. **Aves**: Study of six common birds from different orders. Types of beaks and claws.
7. **Mammalia**: *Sorex,* Bat (Insectivorous and Frugivorous), *Funambulus, Loris, Herpestes*, *Erinaceous.*
8. **Student Presentation**: Power point presentation on any two animals from two different classes.

**__Note__: Refer Young, J.Z. (2004) for the classification of Protochordates and Tetrapods, and Parker T.J. and Haswell W.A. (1972) for the classification of Agnatha and Pisces.*

Essential/recommended readings

1. Young, J.Z. (2004). **The Life of Vertebrates**. III Edition, Oxford University Press.

2. Parker T.J. and Haswell W.A. (1972).**Text book of Zoology Vertebrates**.VII Edition, Volume II.

Suggestive readings

1. Pough H. (2018). **Vertebrate Life**. X Edition, Pearson International.
2. Darlington P.J. (1966).**The Geographical Distribution of Animals**. R.E. Krieger Pub. Co.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.