ST. JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

III SEMESTER   **ZOOLOGY** TIME:3HRS/WEEK

Z-Ma1-3501(3) **ANIMAL DIVERISTY-II BIOLOGY OF CHORDATES** MARKS:100

w.e.f 2024-2025 (23AK Batch) **SYLLABUS**

# LEARNING OBJECTIVES

* To understand the animal kingdom.
* To understand the taxonomic position of Protochordata to Mammalia.
* To understand the general characteristics of animals belonging to Fishes to Reptilians.
* To understand the body organization of Chordata.
* To understand the taxonomic position of Protherian mammals.

**LEARNING OUTCOMES:** By the completion of the course the graduate should able to –

* **CO1**: Describe the general characteristics and classification of Chordata and the salient features of Cephalochordata, Urochordata and Protochordates emphasing the affinities with other chordate groups.
* **CO2**: Apply knowledge of the and major architectural features of the integumentary, skeletal, nervous, muscular, digestive, respiratory, circulatory, excretory, and reproductive systems to describe their structures and functions.
* **CO3**: List the unique features of chordates and use key features to differentiate between

vertebrate groups. Relate the ecological role of different groups of vertebrates.

* **CO4**: Define the term migration, discuss migration in fishes and birds.
* **CO5**: Summarise the significance of dentition in mammals and evolutionary significance.

**UNIT – I:**

* 1. General characters and classification of Chordata up to classes
  2. Salient features of Cephalochordata, Salient features of Urochordata
  3. Structure and life history of *Herdmania*, Retrogressive metamorphosis – Process and Significance
  4. Cyclostomata, General characters, Comparison of *Petromyzon* and *Myxine*

# UNIT - II

* 1. General characters of Fishes, Salient features Dipnoi
  2. *Scoliodon*: External features, Digestive system, Respiratory system
  3. *Scoliodon* Structure and function of Heart, Structure and functions of the Brain.
  4. Migration in Fishes, Types of Scales

# UNIT - III

* 1. General characters of Amphibia, General characters of Reptilia
  2. *Rana hexadactyla*: External features, Respiratory system, Structure and function of Heart
  3. *Rana hexadactyla* structure and functions of the Brain
  4. *Calotes*: External features, Digestive system, structure and function of Brain
  5. Identification of Poisonous snakes and non-poisonous snakes.

Z-Ma1-3501(3) ::2::

# UNIT - IV

* 1. General characters of Aves
  2. *Columba livia*: External features, Digestive system, Respiratory system
  3. *Columba livia*: Structure and function of Heart, structure and function of Brain
  4. Migration in Birds, Flight adaptation in birds.

# UNIT - V

* 1. General characters of Mammalia
  2. Classification of Mammalia up to sub - classes with examples
  3. Comparison of Prototherians, Metatherians and Eutherians
  4. Dentition in mammals, Aquatic mammals Adaptations

# Co-curricular activities (suggested)

* Preparation of charts on Chordate classification (with representative animal photos) and retrogressive metamorphosis
* Clay models of *Herdmania* and *Amphioxus*
* Visit to local fish market and identification of local cartilaginous and bony fishes
* Maintaining of aquarium by students
* Model of fish heart and brain
* Preparation of slides of scales of fishes
* Visit to local/nearby river to identify migratory fishes and prepare study notes
* Preparation of Charts on above topics by students (Eg: comparative account of vertebrate heart/brain/lungs, identification of snakes etc.)
* Collecting and preparation of Museum specimens with dead frogs/snakes/lizards etc., and/or their skeletons.
* Additional input on types of snake poisons and their antidotes (student activity).
* Collection of bird feathers and submission of report on Plumology
* Taxidermic preparation of dead birds for Zoology Museum
* Map pointing of prototherian and metatherian mammals
* Chart preparation for dentition in mammals

# REFERENCE BOOKS

* J.Z. Young, 2006. The life of vertebrates. (The Oxford University Press, New Delhi). 646 pages. Reprinted
* Arumugam, N. Chordate Zoology, Vol. 2. Saras Publication. 278 pages. 200 figs.
* A.J. Marshall, 1995. Textbook of zoology, Vertebrates. (The McMillan Press Ltd., UK). 852 pages. (Revised edition of Parker &Haswell, 1961).
* M. Ekambaranatha Ayyar, 1973. A manual of zoology. Part II. (S. Viswanathan Pvt. Ltd., Madras).
* P.S. Dhami & J.K. Dhami, 1981. Chordate zoology. (R. Chand & Co.). 550 pages.
* Gurdarshan Singh & H. Bhaskar, 2002. Advanced Chordate Zoology. Campus Books, 6 Vols., 1573 pp., tables, figs.
* A.K. Sinha, S. Adhikari& B.B. Ganguly, 1978. Biology of animals. Vol. II. Chordates. (New Central Book Agency, Calcutta). 560 pages.
* R.L. Kotpal, 2022. Modern textbook of zoology, Vertebrates. (Rastogi Publ., Meerut). 632 pages.
* E.L. Jordan & P.S. Verma, 1998. Chordate zoology. (S. Chand & Co.). 1092 pages.
* G.S. Sandhu, 2005. Objective Chordate Zoology. Campus Books, vii, 169 pp.
* Sandhu, G.S. & H. Bhaskar, H. 2004. Textbook of Chordate Zoology. Campus Books, 2 vols., xx, 964 p., figs.
* Veena, 2008. Lower Chordata. (Sonali Publ.), 374 p., tables, 117 figs.

\*\* \*\* \*\*