

## **SYLLABUS OF SEMESTER VI**

### **CORE COURSE 11 – FORMS AND FUNCTIONS IN CHORDATES**

### **CORE COURSE 12 – EVOLUTIONARY BIOLOGY AND GENETICS**

#### **CC - 11: FORMS AND FUNCTIONS IN CHORDATES**

**(Credit: 3)**

##### **Course Code:**

**Course Objectives:** The major objective of the course is to make students understand different structural forms and their function in chordates. The students will be able to identify and describe the major chordate groups and their evolutionary relationships based on morphological, anatomical and physiological evidence with their ecological roles. Students will demonstrate their understanding of these concepts through written assignments, quizzes, practical exams, and a final project. By the end of the course, the student will be able to understand the relative position of various systems, organs and associated structures in chordates.

**Learning Outcome:** After completion of the course the students will be able to learn different structural variations that occur across the chordates that help in identification and classification. The student will learn the functional variation in different groups of varied structural forms by comparing and contrasting the anatomical and physiological features of chordates. The student will be able to apply the principles of form and function to analyze the structure and function of chordates and communicate effectively the learnings of the subject and understanding the diversity of chordates and their significance.

##### **Unit - I**

Protochordate, Urochordate, Cephalochordate and Vertebrate diversity and interrelationship.

##### **Unit - II**

Skeleton and Locomotion: Structure and function of integument and its derivatives in chordates. Skeleton system in chordates from primitive to advanced types. Movement and locomotion variation in chordates

##### **Unit - III**

Food, feeding mechanisms and Respiration: Food intake mechanism, feeding patterns. Intracellular digestion and extracellular digestion. Dentition in chordates. Diversity of respiratory pigments and respiration in chordates.

##### **Unit - IV**

Circulation and Nervous Control: Diversity in circulatory systems, structural variation in the heart in chordates. Nervous system from primitive to advanced types in chordates.

Brain structures in chordates.

### **Unit - V**

Excretion and Reproduction: Diversity in excretory parts, organs and excretory products in chordates. Reproduction types and development in chordates. Cleidoic Egg, Placentation types in mammals. Metamorphosis, Paedogenesis and Neoteny.

### **REFERENCES:**

1. M. Ekambaranatha Ayyar. 1973A Manual of Zoology Part II. Chordata S. Viswanathan Printers and publishers, Pvt.Ltd., Madras
2. Jordan.E.L and P.S.Verma, 1989. Chordate Zoology and Elements of Animal Physiology, S.Chand & Co., Ltd., New Delhi
3. Jordan E.L and P.S.Varma, 1985. Invertebrate Zoology, S.Chand & Co., New Delhi
4. Young.J.Z, 1988. The Life of Vertebrates. Oxford at the clarendon press, London
5. Adam Sedgwick, 1960. A students Text Book of Zoology Vol. III. General Book Depot, Allahabad
6. Hyman.L.H, 1947. Comparative Vertebrate Anatomy. University of Chicago Press New
7. Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford University Press.
8. Pough H. *Vertebrate life*, VIII Edition, Pearson International
9. Darlington P.J. *The Geographical Distribution of Animals*, R.E. Krieger Pub.Co. York, Chicago.
10. Edwin H Colbert, 1969. Evolution of Vertebrate. Wiley Eastern University, Ansari Road, New Delhi

### **Practical CC - 11: FORMS AND FUNCTIONS IN CHORDATES**

**(Credit – 1)**

1. Study various integumentary variations and their derivatives in chordates.
2. Study variation in axial and appendicular skeleton in Chordates
3. Study comparative variation in the structure of Brain and Heart
4. Study comparative variation in the structure Heart in chordates.
5. Understanding the types of dentitions in chordates.