Department of Zoology

SEMESTER-IV
BSc (Hons.) Zoology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

DISCIPLINE SPECIFIC CORE COURSE -10 – :
Comparative Anatomy of Vertebrates
Zoo-DSC-10

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Comparative Anatomy of Vertebrates Zoo-DSC-10	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	Basic knowledge of Vertebrates

Learning Objectives

The learning objectives of this course are as follows:

- to impart in-depth knowledge about the structural patterns and a comparative account of the different organ systems of vertebrates.
- to understand the account of the functional and comparative morphology provides a deepunderstanding of animal diversity and the adaptive changes the vertebrates have gone throughduring evolution from common ancestors
- to help students identify the body plan types of complex chordates and their systematic organization based on evolutionary relationships, structural and functional affinities.
- to apprise the students about the correlation of comparative development to evolutionary biology and phylogeny, and how it helps in classifying animals.
- to enable students to establish the evolutionary links based on fossil records.

Learning Outcomes

By studying this course, students will be able to

- have a better understanding of the evolutionary significance of comparative anatomy.
- understand the importance of morphology and anatomy of organisms in relation to evolution.
- appreciate the comparative anatomy among vertebrates that provides evolutionary evidences.
- enhance collaborative learning and communication skills through practical sessions, teamwork, group discussions, assignments, and projects.

SYLLABUS OF DSC-10

UNIT 1: Integumentary System **4 hrs**

Structure and derivatives of integument.

UNIT 2: Digestive System **4 hrs**

Alimentary canal and associated glands; Dentition.

UNIT 3: Circulatory System **4 hrs**

General plan of circulation; Evolution of heart and aortic arches.

UNIT 4: Respiratory System **4 hrs**

Skin, gills, lungs, accessory respiratory organs in fishes, air sacs.

UNIT 5: Skeletal System **5 hrs**

Outline of axial and appendicular skeleton; Concept of neurocranium, dermatocranium and splanchnocranium; Structure of a typical vertebra and its classification based on centrum; Jaw suspensorium; General plan of girdles and limbs.

UNIT 6: Nervous System **3 hrs**

Comparative account of brain; Cranial nerves in mammals.

UNIT 7: Sense Organs **3 hrs**

Classification of receptors; Structure and function of mammalian eye and ear.

UNIT 8: Urinogenital System **3 hrs**

Succession of kidney; Evolution of urinogenital ducts; Types of uteri in mammals.

Practical **(60 hrs)**

(Laboratory periods: 15 classes of 4 hours each)

1. Study of different types of feathers of birds.
2. Study of the disarticulated skeleton of Frog, Varanus, Fowl, Rabbit (Vertebral Column, Sternum,Girdles, Ribs, Limb bones).
3. Study of the vertebrate Skull (i) one herbivorous and one carnivorous animal skull; (ii) one monocondylic and one dicondylic skull.
4. Study of carapace and plastron of turtle/tortoise.
5. Study of the digestive, circulatory and urinogenital system of frog/rat through videos ondissection or through virtual dissections.
6. Project related to topics covered in theory.
7. Field trips/Documentary film show on vertebrates/Visit to Zoological Park, Biodiversity Park or Sanctuary.