

Lecture Plan		
Name of the College: Government College of Arts, Science and Commerce. Sanquelim- Goa		
Name of Faculty: Mouvin Francisco Fernandes	Subject: Zoology	
Paper code: ZOO 204 Vertebrate Anatomy	Program: B.Sc.	Division: A
Academic year: 2025- 2026	Semester: III	Total Lectures: 45 + 30h Practicals
<b>Course Objectives:</b> <ol style="list-style-type: none"> <li>1. Understand the basic principles of vertebrate anatomy and its significance in biology.</li> <li>2. Preparing learners for understanding the structural and functional body system of the vertebrates.</li> <li>3. Introducing the anatomy of different systems in vertebrates.</li> <li>4. Analysing the structural modifications in anatomy of different groups vertebrates.</li> </ol>		
Expected Course Outcome: At the end of this course, students will be able to:		

1. Explain structural and functional diversity of chordates
2. Understand anatomical structures and their functions in vertebrates including humans
3. Analyze the modifications and anatomical relationship among the vertebrates which will help them to have better understanding of physiological processes and evolution.
4. Take up research in biological sciences in the field of anatomy, physiology and evolutionary relationship amongst vertebrates

Month	Lecture From	Lecture To	No. of Lectures Allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
December	1st	6th	3	Integument: Basic structure and prominent functions of Vertebrate Integument .		PPT	1. G.C. Kent, R. K. Carr, Comparative anatomy of the vertebrates, IX Edition. The McGraw-Hill companies, 2000. 2. H.E. Walter, L.P. Sayles, Biology of vertebrates, New York, Macmillan Co, 1949. 3. J.Z. Young, The Life of Vertebrates, Oxford Universtiy Press, 2004.
December	8th	13th	3	Functions of derivatives of integument- Epidermal derivatives (Mucous glands and Mammary glands), Dermal derivatives ( Scales in fishes; Claws In reptiles and birds: Nails in mammals)		PPT	
December	15th	23rd	3	Skeleton system: Overview of axial and appendicular skeleton: Atlas and Axis vertebrae (Fish and Rat),		PPT	
January	2nd	10th	3	Pectoral and Pelvic girdles ( Frog and Fowl)		PPT	

January	12th	17th	3	Digestive System Content: Study of Monogastric, Avian and Ruminant vertebrates Digestive system and digestive glands		PPT	4. K.V. Kardong, Vertebrates comparative anatomy, Function and Evolution. IV Edition. McGraw-Hill Higher Education, 2005. 61 5. M. Hilgerbrand, G.E. Gaslow, Analysis of Vertebrate structure, John Wiley and Sons, 2001. 6. P.S. Verma, Chordate Zoology, S. Chand Publishing, 2010. 7. R.C. Gupta, G. Chopra, Comparative anatomy of chordates, R. Chand & Co., 1999. 8. R.K. Saxena, Comparative Anatomy of Vertebrates, Viva books, 2019. 9. R.L. Kotpal, Modern Textbook of Zoology Vertebrates, 2009.
January	19th	24th	3	Circulatory System: • Outline of the Single circulation two chambered heart and aortic arches - (Shark) • Outline of the Double circulation three chambered heart and aortic arches of Amphibian.		PPT	
January	26th	31st	3	Outline of the Double circulation four chambered Avian and mammalian hearts and aortic arches.		PPT	
February	2nd	7th	3	Respiratory system • Septal gills of Shark and Opercular gills of teleost • Cutaneous respiratory organs • Gross anatomy of the mammalian respiratory system		PPT	
February	9th	14th	3	Outline of the Brain of the Non-mammalians vertebrates ( Fish , Reptile and Bird) and Mammalian vertebrates (Rat)		PPT	
February	16th	21st	3	Overview of types and functions of sense organs. Types according to the source of stimuli: Types according to location of stimulus; Somatic and visceral receptors		PPT	
February	23rd	28th	3	Overview of the structure of Pronephros, Mesonephros and Metanephros Kidneys		PPT	

March	2nd	7th	3	Overview of the Urinogenital systems in anamniotes (Bony fish)		PPT	1. G.C. Kent, R. K. Carr, Comparative anatomy of the vertebrates, IX Edition. The McGraw-Hill companies, 2000.
March	9th	14th	3	Overview of the Urinogenital systems in amniotes (Reptiles)		PPT	
March	16th	21st	3	Outline of male reproductive systems in mammals (Rat/ humans)		PPT	
March	23rd	31st	3	Outline of female reproductive systems in mammals (Rat/ humans)		PPT	