UNIVERSITY OF MADRAS

M.Sc. DEGREE PROGRAMME IN ZOOLOGY

SYLLABUS WITH EFFECT FROM 2023-2024

431C1B

Course Objectives:		
The main objectives of this course are:		
1.	Exemplifying the vertebrate origin and the intermediary position of Prochordates between invertebrates and vertebrates.	
2.	Acquires the knowledge on evolution and adaptive radiation of Agnatha and Pisces.	
3.	Understanding knowledge about the first terrestrial vertebrates and the adaptive radiation of land animals	
4.	Imparting conceptual knowledge about the animal life in the air and their behaviours.	
5.	Understanding the origin and efficiency of mammals and evolutionary changes that occurred in the life of vertebrates.	
Course	**:**	**Core II**
Course title	**:**	**Comparative Anatomy of Vertebrates**
Credits	**:**	**5**
Pre-requisite:		
Students with knowledge and comprehension on zoology.		
Expected Course Outcome:		
On the successful completion of the course, student will be able to**:**		
1.	Remember the general concepts and major groups in animal classification, origin, structure, functions and distribution of life in all its forms.	**K1 & K2**
2.	Understand the evolutionary process. All are linked in a sequence of life patterns.	**K2 & K4**
3.	Apply this for pre-professional work in agriculture and conservation of life forms.	**K3 & K5**
4.	Analyze what lies beyond our present knowledge of life process.	**K4 & K6**
5.	Evaluate and to create the perfect phylogenetic relationship in classification.	**K5 & K6**

K1 - Remember; **K2** - Understand; **K3** - Apply; **K4** - Analyze; **K5** - Evaluate; **K6** – Create

Units	
I	Origin of vertebrates: Concept of Protochordata; The nature of vertebrate morphology; Definition, scope and relation to other disciplines; Importance of the study of vertebrate morphology.
II	Origin and classification of vertebrates; Vertebrate integument and its derivatives. Development, general structure and functions of skin and its derivatives; Glands, scales, horns, claws, nails, hoofs, feathers and hairs.

III	General plan of circulation in various groups; Blood; Evolution of heart; Evolution of aortic arches and portal systems. Respiratory system: Characters of respiratory tissue; Internal and external respiration; Comparative account of respiratory organs
IV	Skeletal system: Form, function, body size and skeletal elements of the body; Comparative account of jaw suspensorium, Vertebral column; Limbs and girdles; Evolution of Urinogenital system in vertebrate series.
V	Sense organs: Simple receptors; Organs of Olfaction and taste; Lateral line system; Electroreception. Nervous system: Comparative anatomy of the brain in relation to its functions; Comparative anatomy of spinal cord; Nerves-Cranial, Peripheral and Autonomous nervous systems.

Reading list

1. Swayam Prabha https://www.swayamprabha.gov.in/index.php/program/archive/9
2. Yong, J. Z. 1981. The life of Vertebrates, English language Book society, London, pp-645.
3. Romer, A.S. 1971. The Vertebrate body, W.B.S. Saunders, Philadelphia, pp-600.

Recommended texts

1. Waterman, A.J. 1972. Chordate Structure and Function, MacMillan Co., New York, pp.587.
2. Parker T. J. and W. A. Haswell. 1962. A text book of Zoology, Vol. 2, Vertebrates, 7th Edition, Mac Millan Press, London, pp-750.
3. Ekambaranatha Ayyar and T. N. Ananthakrishnan. 2009. Manual of Zoology, Vol – II, S. Viswanathan Pvt. Ltd. Chennai.
4. Kotpal, 2019. R.L. Modern Text Book of Zoology Vertebrates, 4th Edition, Rastogi Publications, Meerut, pp-968.

Mapping with Programme Outcomes*										
Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
CO1	S	M	L	S	M	S	M	S	M	S
CO2	S	L	L	S	M	S	M	M	M	M
CO3	S	M	L	S	M	S	M	L	M	M
CO4	S	L	L	S	L	S	M	L	M	L
CO5	S	M	L	S	S	S	M	S	M	M

*S - Strong; M - Medium; L - Low