UNIVERSITY OF MADRAS

M.Sc. DEGREE PROGRAMME IN ZOOLOGY

SYLLABUS WITH EFFECT FROM 2023-2024

431C1C

Course Objectives:		
The main objectives of this course are:		
1.	Understanding the different systems in invertebrates & vertebrates.	
2.	Learning about various animal species, their phylogenetic affinities and their adaptive features	
3.	Imparting conceptual knowledge about the salient features and functional anatomy.	
4.	Developing the skill in mounting techniques of the biological samples.	
5.	Gaining fundamental knowledge on the skeletal system	
Course	**:**	**Core III**
Course title	**:**	**Lab Course in Invertebrates & Vertebrates**
Credits	**:**	**4**
Pre-requisite:		
Basic knowledge on the animals living in different habitats		
Expected Course Outcome:		
On the successful completion of the course, student will be able to**:**		

1.	Understand the structure and functions of various systems in animals	**K2 & K4**
2.	Learn the adaptive features of different groups of animals	**K1 & K2**
3.	Learn the mounting techniques	**K2 & K3**
4.	Acquire strong knowledge on the animal skeletal system	**K2 & K4**

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

INVERTEBRATES

Dissection

Earthworm : Nervous system
Gryllotalpa : Nervous system and Reproductive system
Prawn : Nervous system
Pila : Nervous system

Mounting

Earthworm : Body setae
Cockroach : Mouth parts
Gnathochilarium : Millipede
Pedicellaria : Sea Urchin
Aristotle Lantern : Sea Urchin

Study of the following slides and spotters with special reference to their salient features and their modes of life

Pathological Importance

Amoeba
Leishmania
Tape worm
Ascaris
Wuchereria
Entamoeba histolytica
Plasmodium
Liver fluke

Larval stages

Redia larva
Trochophore Larva
Nauplius
Mysis
Bipinnaria
Glochidium Larva

Adaptations

Sea Anemone
Sacculina on Crab
Arenicola
Chaetopterus

Structural Organization and Affinities

Acanthocephala
Bugula
Lingula
Phoronis
Sagitta

Phylogenetic Importance

Archaeopteryx
Peripatus

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VERTEBRATES

Dissection and display of

1. Aortic arches in Shark and Teleost fish
2. Nervous system of *Scoliodon laticaudatus* – 5th or Trigeminal nerve
3. Nervous system of *Scoliodon laticaudatus* – 7th or Facial nerve
4. Nervous system of *Scoliodon laticaudatus* – 9th and 10th or Glossopharyngeal & Vagus nerve

Mounting

1. Weberian ossicles of cat fish
2. Scales in fishes
   - Cycloid scale
   - Ctenoid scale
   - Placoid scale

Study of the following slides and specimens with special reference to their salient features and their modes of life

1. Amphioxus (Lancelet)
2. Ascidia (sea squirt)
3. Trygon (Sting ray)
4. Torpedo (Electric ray)
5. Exocoetus poecilopterus (Flying fish)
6. Mugil cephalus (Mullet)
7. Tetrodon punctatus (Puffer fish)
8. Bufo
9. Rhacophorus
10. Dendrophis (Tree snake)
11. Chameleon
12. Bat

Study of the frog skeleton

1. Skull
2. Hyoid apparatus
3. Pectoral girdle and sternum
4. Pelvic girdle
5. Fore limb
6. Hind limb

Dentition

1. Dog
2. Rabbit

Text Books:

1. Lal, S.S. 2009. Practical Zoology, Rastogi Publications, pp-484.
2. Iuliis G. D. and D. Pulerà, 2007. The Dissection of Vertebrates: A Laboratory Manual. Academic Press, Imprint of Elsevier Publication, pp-416.
3. Verma, P.S. 2000. Manual of Practical Zoology: Chordates, S. Chand Publishing Company, pp-528

Reference Books:

1. Preeti, G., and C. Mridula, 2000. Modern Experimental Zoology, Indus International Publication.
2. Sinha, J., A. K. Chatterjeee, P. Chattopadhya. 2011. Advanced Practical Zoology, Arunabha Sen Publishers, pp-1070.

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

*S - Strong; M - Medium; L – Low