UNIVERSITY OF MADRAS

M.Sc. DEGREE PROGRAMME IN ZOOLOGY

SYLLABUS WITH EFFECT FROM 2023-2024

531C3D

Course Objectives:		
The main objectives of this course is		
	Practical course aims at demonstrating the theoretical foundation in, Genetics , Evolution and Animal Physiology into practical understanding.	
Course	**:**	**Core X**
Course title	**:**	**Lab Course in Genetics, Evolution and Animal Physiology**
Credits	**:**	**4**
Pre-requisite:		
Students should have acquired basic knowledge relevant to this particular lab course.		
Expected Course Outcome:		
Upon completion of this lab course, students		

1.	Understands the various genetic principles.	**K2**
2.	Acquire skills to analyse the human karyotyping and chromosome mapping to identify abnormalities	**K3**
3.	Attains knowledge in understanding the adaptive feature and evolutionary significance of fossils	**K6**
4.	Understand the physiological process of respiration through simple experiment by assessing the RQ in fishes	**K1 & K2**
5.	To understand the process of salt loss and salt gain in fishes. To perform basic haematology experiments on clotting time, bleeding time and haematin crystal formation	**K1 & K2**

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

GENETICS AND EVOLUTION

1. Identification of blood group in man.

2. Karyotype of healthy men and women.

3. Identification of human syndromes.

4. Observation of simple Mendelian traits in Man - Identification of color blindness using color charts.

5. Verification of the Mendelian laws of inheritance using colored beads. Observation on genetic traits.

7. Population analysis of color blindness-Screening the students.

8. Genetic testing of Tasters and- Non-Tasters - Screening the students.

9. Adaptation in Birds- Beak and feet.

10. Study of Living Fossil.

11. Identification and Study of fossils.

ANIMAL PHYSIOLOGY

1. Estimation of RQ in fish with reference to temperature
2. Estimation of Protein in animal tissue.
3. Estimation of carbohydrates in animal tissue.
4. Survey of digestive enzymes in invertebrates
5. Salt loss and Salt gain in fish-Hypertonic and Hypotonic medium
6. Qualitative urine test for pregnancy (β-HCG)- Kit
7. Haematology- Clotting time, Bleeding time, Rouleaux formation, Haemin crystals, Haemoglobin estimation
8. Principles and Applications- Sphygmomanometer, Kymograph, Haemoglobinometer ESR.

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

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