UNIVERSITY OF MADRAS

B.Sc. DEGREE PROGRAMME IN PLANT BIOLOGY AND PLANT BIOTECHNOLOGY

SYLLABUS WITH EFFECT FROM 2023-2024

SEMESTER - II

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
139E2A	**Zoology II**	Elective	Y	-	-	-	2	2	25	75	100

Learning Objectives	
CO1	To enable students to learn basic concepts relating to aspects of respiratory, circulatory, excretory nervous and sensory physiology.
CO2	To enable students to comprehend the processes involved during development
CO3	To enable students to learn basic concepts of immunity and the working of immune organs and familiarize them with the recommended vaccination schedule
CO4	To enable students to comprehend the basic concepts of human genetics and patterns of inheritance
CO5	To enable students to learn about ecosystem, cycling of minerals and water conservation

UNIT	Details	No. of Hours	Course Objectives
.I	Human Physiology: Respiration- Respiratory pigments and transport of gases. Mechanism of blood clotting., Structure of Heart, BP, Types of excretory products– Structure of Kidney, Ornithine cycle. Structure of neuron–Conduction of nerve impulse, Mechanism of vision, Endocrine glands- Hormones and feedback mechanism- Pituitary, Thyroid, Pancreas .	12	CO1
II	Developmental Biology: Gametogenesis, Fertilization, Cleavage, Gastrulation in chick	12	CO2
III	Immunology : Innate and Acquired - Active and Passive immunity; Antigens and Antibodies; Immunological organs–responses in humans; Vaccination schedule	12	CO3
IV	Human Genetics: Human Chromosomes – Sex Determination in Humans; Syndromes Patterns of Inheritance: Autosomal Dominant, Autosomal Recessive, X-linked, Y-linked, Mitochondrial, Multiple Allelic and Polygenic; Genetic Counselling.	12	CO4

V	Hydrosphere and Lithosphere- Physico-chemical factors, Bio-geo chemical cycles-Carbon, Oxygen , Nitrogen and Phosphorus Cycle, Sewage water treatment	12	CO5
	Total	**60**	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Recall the parts and working of body organs and developmental stages, name the patterns of inheritance and list different types of animal behaviour	PO1	
CO2	Analyse the different developmental stages	PO1,PO3	
CO3	Analyse the working of body and immune systems	PO4, PO6	
CO4	Analyse the different patterns of inheritance	PO4, PO5, PO6	
CO5	Relate the behaviour of animals to physiology. Analyse the different types of behaviour	PO3, PO8	
Text Books (Latest Editions)			
1.	Verma P.S. & Agarwal - Developmental Biology, Chordata embryology S. Chand & Co.		
References Books (Latest editions, and the style as given below must be strictly adhered to)			
1.	Owen, J. A., Punt, J. &Stranford, S. A. - Kuby Immunology. New York: W.H. Freeman & Company		
2.	Klug, W. S., Cummings, M. R. & Spencer, C - Concepts of Genetics. (12th ed.). New Jersey: Pearson Education		
3.	Mathur, R.- Animal Behaviour. Meerut: Rastogi.		
4.	VermaP.S.&Agarwal-DevelopmentalBiology,ChordataembryologyS.Chand&Co.		
Web Resources			
1.	Continuous Internal Assessment Test		
2.	Assignments		
3.	Seminars		
4.	Attendance and Class Participation		
5.	End Semester Examination		

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Methods of Evaluation		Total
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Simple definitions, MCQ, Recall steps, Concept definitions	
	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
External Evaluation	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	75 Marks
	Longer essay/ Evaluation essay, Critique or justify with pros and cons	100 Marks
Methods of Assessment	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Mapping with Programme Outcomes:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
CO 1	S							
CO 2	M		S					
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S

S-Strong(3) **M-Medium (2)** **L-Low (1)**