SOPHIA COLLEGE (AUTONOMOUS)

Affiliated to the University of Mumbai

Programme: Sciences

Zoology (Minor)

Syllabus for the Academic Year 2023-2024

based on the National Education Policy 2020

SOPHIA COLLEGE (AUTONOMOUS)

PROGRAMME SPECIFIC OUTCOMES	
1	Apply the field-based and the in-class knowledge of animal biology to identify and classify the animals in their natural habitat up to class level
2	Identify the various types of animal behaviour, and animal interactions with the ecosystem
3	Conduct basic research that involves application of critical thinking and experimental skills
4	Get career opportunities in a variety of fields such as conservation, research, education, and animal management

DEPARTMENT OF ZOOLOGY

COURSE DETAILS FOR MINOR:

	SEMESTER 1		SEMESTER 2
TITLE	**Diversity of Animal Kingdom**		
TYPE OF COURSE - DSC	**Minor**		
CREDITS	**4**		

SOPHIA COLLEGE (AUTONOMOUS)

Programme: Sciences **Zoology Minor**	**Semester – 1**
Course Title: Diversity of Animal Kingdom	**Course Code:**

COURSE OBJECTIVES:

1. To understand the general organization starting from Kingdom Protista and the invertebrate phyla
2. To understand the general organization Kingdom Animalia – Chordates
3. To orient students to the captivating world of animal kingdom and appreciate its diversity

COURSE OUTCOMES:

The learner will be able to :

4. Relate the characteristic features among different taxonomic groups
5. Interpret phylogenic relationships
6. Reflect on the marvels of certain biological phenomenon from the animal world

Lectures per week (1 Lecture is 60 minutes)		**3**	
Total number of Hours in a Semester		**45**	
Credits		**3**	
Evaluation System	**Semester End Examination**	**2 Hours**	**50 marks**
	Internal Assessment	**--**	**50 marks**

UNIT 1 General organization of Kingdom Protista & Kingdom Animalia (Non-chordata) (1 Credit)	Salient features up to phylum level of:		15 hours
	1.1	Unicellular organization Kingdom Protista - Phylum Protozoa	
	1.2	Multicellular organization: 1.2.1: Colonization level - Phylum Porifera 1.2.2: Division of labour – Phylum Cnidaria	

	1.3	Triploblastic acoelomate and pseudocoelomate organization 1.3.1: Acoelomate organization – Phylum Platyhelminthes 1.3.2: Pseudocoelomate organization – Phylum Nematoda	
	1.4	Triploblastic Coelomate organization 1.4.1: Animals with metameric segmentation: Phylum Annelida 1.4.2: Animals with jointed appendages: Phylum Arthropoda 1.4.3: Animals with mantle: Phylum Mollusca 1.4.4: Animals with enterocoel: Phylum Echinodermata	
UNIT 2 General organization of Kingdom Animalia (Chordata) (1 Credit)	2.1	General organization of Phylum Hemichordata	15 hours
	2.2	General organization of Sub-phylum Urorchordata and Cephalochordata	
	2.3	General organization of Sub-phylum Vertebrata 2.3.1: Cyclostomata 2.3.2: Pisces 2.3.3: Amphibia 2.3.4: Reptilia 2.3.5: Aves 2.3.6: Mammalia	
UNIT 3	3.1	Coral reefs	15 hours
	3.2	Parasitism in Helminths	
	3.3	Regeneration in Annelids	

Wonders of Animal Kingdom (1 Credit)	3.4	Pearl formation in molluscs	
	3.5	Parental care in fishes	
	3.6	Parental care in Amphibia	
	3.7	Venomous Snakes	
	3.8	Migration in birds	
	3.9	Echolocation in bats	

PRACTICAL Course Title: Diversity of Animal Kingdom		**Course Code:**	
<u>COURSE OUTCOMES</u>: The learner will be able to : 1. Identify the animals based on their observations of the external characteristics 2. Perform experiments based on temporary mountings 3. Prepare field report based on observations done during field excursions			
Lectures per week (1 Lecture is 120 minutes)		**1**	
Total number of Hours in a Semester		**30**	
Credits		**1**	
Evaluation System	**Semester End Examination**	**2 Hours**	**50 marks**
	Internal Assessment	**--**	

	1	Classification of Phylum Protozoa: (*Amoeba, Euglena, Paramoecium, Plasmodium*) & Porifera: (*Leucosolenia, Euplectella*, *Euspongia)*	30 hours

	2	Mounting of foraminiferan shells	
	3	Classification of Phylum Coelenterata: (*Hydra*, *Obelia* colony, *Aurelia, Fungia, Madrepora*) & Phylum Platyhelminthes:(*Planaria*, Liver fluke, Tapeworm)	
	4	Classification of Phylum Nematoda: (*Ascaris* - male and female) & Phylum Annelida: (*Nereis*, Earthworm, Leech)	
	5	Classification of Phylum Arthropoda: (Crab, lobster, *Lepisma*, beetle, dragonfly, butterfly, spider, tick, scorpion, centipede, millipede	
	6	Study of mouthparts in insects	
	7	Classification of Phylum Mollusca: (*Chiton, Dentalium, Pila, Unio, Sepia, Nautilus*) & Phylum Echinodermata:(Starfish, Brittle star, Feather star, Sea urchin, Sand Dollar, Sea cucumber)	
	8	Identification of Hemichordata (*Balanoglossus*), Urochordata: (*Herdmania*), Cephalochordata (*Amphioxus*), Cyclostomata (*Petromyzon, Myxine*)	
	9	Identification of Pisces: Chondrichthyes (Shark, Sting ray, Electric ray) & Osteichthyes (Mackerel, Flying fish, Puffer fish and Sea horse)	
	10	Mounting of scales in fish – Cycloid, Ctenoid and Placoid	
	11	Identification of Amphibia (Frog, Toad, Salamander, Caecilian) & Reptilia (Chameleon, *Calotes*, *Phrynosoma*, Russel's Viper, Cobra, Rat snake, Python, Turtle, Tortoise, Crocodile)	
	12	Identification of Aves (Kite, Duck, Parakeet) & Mammalia (Shrew, Hedgehog, Guinea pig, Bat and Marine Mammals - Dolphin, Seal, Dugong,	

		Blue Whale)	
	13	Types of Feathers, Beaks and Feet in birds	
	14	Study trip to local zoo / national park / aquarium / coastline / biodiversity park and submission of report.	

ASSESSMENT DETAILS:

I. Internal Assessment (IA): 50 marks

II. Semester End Examination (SEE): 50 marks

REFERENCES:

1. Wonders of the Animal World - University Text Book of Zoology, F.Y.B.Sc. Semester I Course 1. V.V. Dalvie, G.B. Raje, P. Sardesai, N.S. Prabhu, Mumbai University Press.
2. Vertebrate Zoology Volume I- Jordan and Verma, S. Chand and Co.
3. Invertebrate Zoology Volume II- Jordan and Verma, S. Chand and Co.
4. Invertebrate Zoology- T. C. Majupuria, S. Nagin and Co.
5. Chordate Zoology- P. S. Dhami and J. K. Dharmi, R. Chand and Co.
6. Invertebrate Zoology- P. S. Dhami and J. K. Dhami, R. Chand and Co.
7. Introduction to Vertebrates- Moore Cambridge University- Low Priced Edition
8. Zoology- S. A. Miller and J. B. Harley, Tata McGraw Hill
9. Modern Textbook of Zoology, Invertebrates, R. L. Kotpal
7. A Textbook of Zoology, Vol. I - T. Jeffery Parker and William. A. Haswell-Low Price Publications
7. A Textbook of Zoology, Vol. II- T. Jeffery Parker and William. A. Haswell-Low Price Publications