

## Academic Plan of Zoology Department Year 2022-23

Part	Semester	Time Frame	Unit	Paper ZOOA-CC1-1--TH and PR / Module/ Assessments (NON-CHORDATES I)	Teachers	Other Activities
I	I	July August September October	3	Porifera	SG	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			PR 3	Identification with reason & Systematic position of <i>Sycon</i> , <i>Poterion</i> (Neptune's Cup), <i>Obelia</i> , <i>Physalia</i> , <i>Aurelia</i> , <i>Gorgonia</i> , <i>Metridium</i> , <i>Pennatula</i> , <i>Madrepora</i> , <i>Fasciola hepatica</i> , <i>Taenia solium</i> and <i>Ascaris lumbricoides</i> .	SG	
		November	1	Non-chordates I: Protists to Pseudocoelomates	DR	
			2	Protista and Metazoa	DR	
			5	Ctenophora	DR	
			PR 4	Staining/mounting of any protozoa/helminth from gut of <i>Periplaneta</i> sp.	SG	
		December	4	Cnidaria	DR	
			6	Platyhelminthes	DT	
			7	Nemathelminthes	DT	
			PR 2	Identification with reason & Systematic position of Amoeba, Euglena, Entamoeba, Paramecium, Plasmodium, Balantidium, Vorticella (from the prepared slides)	DT	
			PR 3	Identification with reason & Systematic position of <i>Obelia</i> , <i>Physalia</i> , <i>Aurelia</i> , <i>Gorgonia</i> , <i>Metridium</i> , <i>Pennatula</i> , <i>Madrepora</i> , <i>Fasciola hepatica</i> , <i>Taenia solium</i> and <i>Ascaris lumbricoides</i> .	DR	
		January		Semester- end Exams		
		February		Semester- end Exams		
		March		Study of whole mount of <i>Euglena</i> , <i>Amoeba</i> and <i>Paramoecium</i>	SG, DT	

Part	Semester	Time Frame	Unit	Paper ZOOA-CC1-2 TH and PR / Module/ Assessments (MOLECULAR BIOLOGY)	Teachers	Other Activities
I	I	July August September	1	Nucleic Acids	DT	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		October	PR 1	Demonstration of polytene and Lamp brush chromosome from photograph	SG	
			PR 2	Isolation and quantification of genomic DNA from goat liver.	SG	
			PR 3	Agarose Gel Electrophoresis	SG	
				Puja vacation		
		November	4	Translation	DT	
			3	DNA Replication	SG	
			6	Gene Regulation	DT	
			7	DNA Repair Mechanisms	DT	
			8	Molecular Techniques	DT	
		December	3	Transcription	SG	
			4	Post Transcriptional Modifications and Processing of Eukaryotic RNA	SG	
		January		Semester- end Exams	DT	
		February	PR 4	Histological staining of DNA and RNA in prepared slides	SG	
				Semester- end Exams		
		March	PR 1	Demonstration of polytene and lampbrush chromosome from photograph (repeat)	SG	
			PR 2	Isolation and quantification of genomic DNA from goat liver (repeat)	SG	
			PR 3	Agarose Gel Electrophoresis (repeat)	SG	

Part	Semester	Time Frame	Unit	Paper ZOOG-CC1-2 TH and PR / Module/ Assessments (ANIMAL DIVERSITY)	Teachers	Other Activities
I	I	July August September	1	Kingdom Protista	DR	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		October	2	Phylum Porifera	SG	
			13	Amphibia	SG	
			PR 1	Identification with reasons of the following specimens: <i>Sycon, Salamandra, Hyla</i>	SG	
				Puja Vacation		
		November	3	Phylum Cnidaria	DR	
			1	Kingdom Protista	DR	
			11	Agnatha	DR	
			12	Pisces	DR	
			PR 1	Identification with reasons of the following specimens: <i>Amoeba, Euglena, Paramecium, Obelia, Aurelia, Metridium, Taenia solium, Ascaris lumbricoides (Male and female), Aphrodite, Nereis, Hirudinaria, Palaemon, Cancer, Limulus, Apis, Chiton, Dentalium, Unio, Sepia, Octopus, Echinus, Cucumaria and Antedon, Balanoglossus, Branchiostoma, Petromyzon, Torpedo, Labeo rohita, Exocoetus, Chelone, Hemidactylus, Chamaeleon, Draco, Vipera, Naja, Bat, Funambulus</i>	DT, SG, DR	
			PR 3	Study of anatomy of digestive system, salivary gland, mouth parts of <i>Periplaneta</i> , Study of reproductive system of female cockroach	SG	
		December	4	Phylum Platyhelminthes	DT	
			7	Phylum Arthropoda	DR	
			10	Protochordates	DT	
			PR 2	Key for Identification of poisonous and non-poisonous snakes	SG	
		January	5	Phylum Nematelminthes	DT	
			10	Protochordates	DT	

			15	Aves	DT	
			16	Mammals	DT	
			PR 4	An “animal album” containing photographs, cut outs, with appropriate write up about the above-mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose	SG	
				Semester- end Exams		
	February		PR 4	An “animal album” containing photographs, cut outs, with appropriate write up about the above-mentioned taxa. Different taxa/ topics may be given to different sets of students for this purpose	SG	
				Semester- end Exams		

Part	Semester	Time Frame	Unit	Paper ZOOA-CC35-TH and PR / Module/ Assessments (CHORDATES)	Teachers	Other Activities
II	III	July August	1	Introduction to Chordates	DR	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			3	Agnatha	DR	
		September	4	Pisces	DR	
			5	Amphibia	SG	
			6	Reptilia	SG	
			PR 1	Identification with Reasons – Protochordata, Agnatha, Fishes, Amphibia, Reptilia, Mammalia	DT SG	
		October	5	Amphibia	SG	
			PR 2	Dissection of Urino-genital system of Tilapia	SG	
			PR 3	Pecten from Fowl Head	SG, DT, DR	
		November	2	Protochordata	DT	
			7	Aves	DT	
		December	7	Aves (completed)	DT	
			8	Mammals	DT	

		January	PR 4	Power point presentation on study of habit, habitat or behaviour of any one animal by student – for internal assessment only	DR	
				Semester- end Exams		
		February	PR2	Dissection of brain and pituitary – ex situ, digestive	DR	
				Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-CC3-6 TH & PR / Module/ Assessments (ANIMAL PHYSIOLOGY: CONTROLLING AND CO-ORDINATING SYSTEM)	Teachers	Other Activities
II	III	July August	1	Tissues	DT	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		September	1	Tissues	DT	
			2	Bone and Cartilage	DT	
			3	Nervous System	DT	
			5	Reproductive System	SG	
			PR 3	Study of permanent slides of Mammalian skin, spinal cord, Pancreas, Testis, Ovary, Adrenal, Lung	SG	
			PR 4	Microtomy: Preparation of permanent slide of any five mammalian tissues (white rat)	SG	
		October	4	Muscular System	SG	
				Puja Vacation		
		November	6	Endocrine System	SG	
		December	PR 4	Microtomy: Preparation of permanent slide of any five mammalian tissues (white rat)	SG	
				Winter Recess		
		January		Semester- end Exams	SG, DT, DR	
		February	PR 2	Preparation of temporary mounts: Squamous epithelium, Striated muscle fibres and nerve cells	SG	

Part	Semester	Time Frame	Unit	Paper ZOOA-CC3-7 TH & PR / Module/ Assessments* (FUNDAMENTALS OF BIOCHEMISTRY)	Teachers	Other Activities
				Semester- end Exams	SG, DT, DR	
II	III	July August	2	Lipids	DR	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		September	1	Carbohydrates	DR	
			PR 1	Qualitative tests for carbohydrates, proteins and lipids	DR	
			PR 4	Quantitative estimation of water -soluble proteins following Lowry Method	SG	
		October		Puja Vacation		
		November	3	Proteins	DR	
			4	Nucleic Acids	DR	
			5	Enzymes	DR	
			6	Oxidative Phosphorylation	DR	
		December		Winter Recess		
		January	PR 3	Paper Chromatography of Amino Acids	SG	
				Semester- end Exams	SG, DT, DR	
		February		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-SEC(A)-3 TH / Module/ Assessments (SERICULTURE)	Teachers	Other Activities
II	III	July August	1	Introduction	SG	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing</li> </ul>
		September	2	Biology of Silk Worm	DR	
			4	Pests and Diseases	DR	
			3	Rearing of Silkworms	DR	
			5	Entrepreneurship in Sericulture	DR	
			October		Puja Vacation	
		November		Revision	DR	

		December		Revision	DR	classes
				Winter Recess		
		January		Semester- end Exams	SG, DT, DR	
		February		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOG-CC3-3 TH & PR / Module/ Assessments (PHYSIOLOGY AND BIOCHEMISTRY)	Teachers	Other Activities
II	III	July August September	1	Nerve and Muscle	DT	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			6	Reproduction and Endocrine glands	SG	
			7	Carbohydrate Metabolism	DR	
			8	Lipid Metabolism	DR	
			9	Protein Metabolism	DR	
			PR 1	Study of permanent histological sections of mammalian, thyroid, pancreas.	SG	
		October		Puja Vacation		
		November	2	Digestion	SG	
			3	Respiration	DR	
			4	Cardio-vascular system	DT	
			5	Excretion	DR	
			10	Enzymes		
			PR 1	Study of permanent histological sections of mammalian pituitary, adrenal gland.	SG	
			PR 2	Study of permanent histological sections of mammalian duodenum, liver, lung, kidney.	SG	
		December		Winter recess		
		January	2	Digestion	SG	
			6	Reproduction and Endocrine glands	SG	
		Semester- end Exams	SG, DT, DR			

		February		Semester- end Exams	SG, DT, DR	
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Part	Semester	Time Frame	Unit	Paper ZOOA-CC5-11 TH & PR / Module/ Assessments (ECOLOGY)	Teachers	Other Activities
III	V	July August	2	Population	DR	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		September	1	Introduction to Ecology	DR	
			3	Community	DR	
			4	Ecosystem	DT	
			PR 2	Study of an aquatic ecosystem: zooplankton, Measurement of free CO <sub>2</sub>	SG	
		October	3	Community	DR	
			5	Applied Ecology	DT	
			PR 2	Study of an aquatic ecosystem: Phytoplankton, Measurement of Dissolved Oxygen content (Winkler's method)	SG	
				Puja Vacation		
		November	5	Applied Ecology	DT	
			PR 1	Determination of population density in a natural/hypothetical community by quadrat method and calculation of Shannon-Weiner diversity index for the same community	DR	
			PR 2	Measurement of Dissolved Oxygen content (Winkler's method) - repeat	SG	
			PR 3	Report on a visit to National Park/Biodiversity Park/Wild life sanctuary/ any place of ecological interest/ ecological uniqueness/ Zoological Garden	SG	
		December	PR 2	Measurement of salinity, determination of pH	DT	
				Winter Recess		
		January		Semester- end Exams	SG, DT, DR	



		February		Semester- end Exams	SG, DT, DR	
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Part	Semester	Time Frame	Unit	Paper ZOOA-CC5-12 TH & PR / Module/ Assessments (PRINCIPLES OF GENETICS)	Teachers	Other Activities
III	V	July August	1	Mendelian Genetics and its Extension	DT	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			PR 1	Chi-square analyses for genetic ratio test	SG	
			PR 2	Identification of chromosomal aberration in Drosophila and man from photograph	SG	
		September	1	Mendelian Genetics and its Extension	DT	
			2	Linkage Crossing Over and Linkage Mapping	DT	
			3	Mutations	SG	
			4	Sex Determination	SG	
			5	Extra-chromosomal Inheritance	SG	
		October	PR 1	Chi-square analyses for genetic ratio test	SG	
				Puja Vacation		
		November	4	Transposable Genetic Elements	SG	
		December		Winter Recess		
		January		Semester- end Exams	SG, DT, DR	
February		Semester- end Exams	SG, DT, DR			

Part	Semester	Time Frame	Unit	Paper ZOOA-DSE(A)-5-1 TH & PR / Module/ Assessments (PARASITOLOGY)	Teachers	Other Activities
III	V	July August	1	Introduction to Parasitology	DR	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> </ul>
			September	2	Parasitic Protists	
			5	Parasitic Arthropods	DT	

			PR 1	Study of life stages of <i>Giardia intestinalis</i> , <i>Trypanosoma gambiense</i> , <i>Leishmania donovani</i> , <i>Plasmodium vivax</i> , <i>Plasmodium falciparum</i> through permanent slides/micro photographs	DR	<ul style="list-style-type: none"> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			PR 2	Study of adult and life stages of <i>Schistosoma haematobium</i> , <i>Taenia solium</i> through permanent slides/micro photographs	DR	
			PR 3	Study of adult and life stages of <i>Ancylostoma duodenale</i> through permanent slides/micro photographs.	DR	
	October		4	Parasitic Nematodes	DR	
				Puja Vacation		
	November		PR 4	Study of monogenea from the gills of fresh/marine fish [Gills can be procured from fish market as by product of the industry]	DT	
			PR 5	Study of nematode/cestode parasites from the intestines of Poultry bird [Intestine can be procured from poultry/market as a by-product] & Goat.	DT	
	December		5	Parasitic Vertebrates	DT	
			PR 6	Submission of a brief report on parasitic vertebrates	DT	
				Winter recess		
	January			Semester- end Exams	SG, DT, DR	
	February			Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-DSE(B)-5-2 TH & PR / Module/ Assessments (REPRODUCTIVE BIOLOGY)	Teachers	Other Activities
III	V	July August September	2	Functional anatomy of male reproduction	SG	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> </ul>
			3	Functional anatomy of female reproduction	SG	
			PR 2	Tissue fixation, embedding in paraffin, microtomy and slide preparation of any endocrine gland	SG	
			PR 3	H-E staining of histological slides	SG	
			PR 4	Examination of histological sections	SG	

		October		Puja Vacation		<ul style="list-style-type: none"> <li>doubt clearing classes</li> </ul>
		November	1	Reproductive Endocrinology	DT	
			4	Reproductive health	DT	
		December	PR 1	Study of animal house	DT	
				Winter Recess		
		January		Semester- end Exams	SG, DT, DR	
		February		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOG- SEC-A-5-3 TH / Module/ Assessments (SERICULTURE)	Teachers	Other Activities
III	V	July	1	Introduction	DR	<ul style="list-style-type: none"> <li>Assignments given &amp; checked</li> <li>Group discussion</li> <li>doubt clearing classes</li> </ul>
		August	2	Biology of Silkworm	DR	
		September	3	Rearing of Silkworms	DR	
			4	Pests and Diseases	DR	
			5	Entrepreneurship in Sericulture	DR	
		October		Puja Vacation		
		November		Revision	DR	
		December		Winter Recess		
		January		Semester- end Exams	SG, DT, DR	
		February		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOG- DSE-A-5-2 TH and PR / Module/ Assessments (AQUATIC BIOLOGY)	Teachers	Other Activities
III	V	July	1	Aquatic Bionics	SG	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		August	2	Freshwater Biology Lakes	SG, DT	
		September	PR 2	Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem.	SG	
			PR 3	Determine the amount of free Carbon dioxide, in water collected from a nearby lake / water body.	SG	
		October	3	Marine Biology	SG	
				Puja Vacation		
		November	PR 3	Determine the amount of dissolved Oxygen in water collected from a nearby lake / water body.	SG	
			PR 4	Visit to any aquatic Ecosystem and preparation and submission of report.	DT	
		December	4	Management of Aquatic Resources	DT	
				Winter Recess		
January		Semester- end Exams	SG, DT, DR			
February		Semester- end Exams	SG, DT, DR			

CBCS CURRICULUM [ODD SEMESTERS I, III and V] [Session- July 2022 to December 2022]									
Paper	Theory			Total Classes=50	Practical			Total Classes=30 (60 Hours)	
SEM V	Teachers				Teachers				
	SG	DT	DR		SG	DT	DR		
CC 11	--	20	30	50	15	12	3	30	
CC 12	30	20	--	50	30	---	--	30	
DSEA	--	15	35	50	--	12	18	30	
DSEB	25	25	--	50	24	6	--	30	
ZOOG SECA	--	--	30	30	---	--	---	--	
ZOOG DSEA	25	25	--	50	6	24	--	30	
SEM III									
CC5	12	19	19	50	18	6	6	30	
CC6	25	25	--	50	30	--	--	30	
CC7	--	--	50	50	15	--	15	30	
SEC	--	--	30	30	--	--	--	--	
ZOOG GE3	12	12	26	50	24	--	6	30	
SEM I									
CC1	10	20	20	50	10	10	10	30	
CC2	25	25	--	50	30	---	--	30	
GE1	10	20	20	50	12	6	12	30	

\*\*Number of working days=119, [Fall through classes due to shortage of teaching staff, to be compensated by arranging classes in between examination period- January February 2023]

Part	Semester	Time Frame	Unit	Paper ZOOA-CC2-3-TH and PR/ Module/ Assessments (NON- CHORDATES II -COELOMATES)	Teachers	Other Activities
I	II	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup> March 2023</li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		April	2	Annelida	SG	
			3	Arthropoda	DR	
			6	Echinodermata	DR	
			PR 1 b, d	Study of following specimens: Arthropods, Echinoderms	DR	
		May	1	Introduction	DR	
			5	Mollusca	SG	
			PR 1 a, c	Study of following specimens: Annelida, Mollusca	SG	
		June	PR 2	Anatomy study: Nervous system, Reproductive system (Male & female), Mouth parts & Salivary apparatus in <i>Periplaneta</i> sp.	SG, DR	
		July	4	Onychophora	DT	
			7	Hemichordata	DT	
				Semester- end Exams	SG, DT, DR	
		August		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-CC2-4-TH and PR/ Module/ Assessments (CELL BIOLOGY)	Teachers	Other Activities
I	II	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		April	2	Cytoplasmic organelles I	DR	
		May	3	Cytoplasmic organelles II	DT	
			7	Cell Signalling	DT	
			1	Preparation of temporary stained squash of onion/arum root tip to study various stages of mitosis	SG	
			PR 2	Study of various stages of meiosis from grasshopper testis	SG	
		June	7	Cell Signalling	DT	
			PR 2	Study of various stages of meiosis from grasshopper testis	SG	
		July	1	Plasma Membrane	SG	
			6	Cell Cycle	DT	
			7	Cell Signalling	DT	
			PR 2	Study of various stages of meiosis from grasshopper testis	SG	
			PR 4a	DNA by Feulgen reaction	SG, DT	
			PR 4b	Cell Viability by Trypan Blue Staining	SG	
				Semester- end Exams	SG, DT, DR	
		August	PR 3	Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.	SG	
				Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOG-CC2-2-TH and PR/ Module/ Assessments (COMPARATIVE ANATOMY & DEVELOPMENTAL BIOLOGY)	Teachers	Other Activities
I	II	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		April	1	Integumentary System	DR	
			3	Respiratory System	DR	
			4	Circulatory System	DT	
			6	Early Embryonic Development	DR	
			PR 2	Larval stages: Veliger, Nauplius, Trochophore, Mysis.	SG	
			PR 4	Developmental stages of chick embryo: 24 Hrs., 48 Hrs, 72 Hrs., 96 Hrs.	SG	
		May	5	Urinogenital System	DT	
			7	Late Embryonic Development	SG	
			PR 2	Osteology: Limb bones, girdle and vertebra of Pigeon & Guineapig, Mammalian skulls: One herbivorous; Guinea pig and one carnivorous; Dog.	SG	
			PR 3	Study of the different types of placentas, histological sections through photomicrographs.	SG	
		June		Revision		
		July	2	Digestive System	SG	
				Semester- end Exams	SG, DT, DR	
August	PR 3	Semester- end Exams	SG, DT, DR			

Part	Semester	Time Frame	Unit	Paper ZOOA-CC4-8-TH and PR/ Module/ Assessments (COMPARATIVE ANATOMY OF VERTEBRATES)	Teachers	Other Activities
I	IV	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> </ul>
		April	1	Integumentary System	DR	



			2	Digestive System	DT	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			3	Respiratory System	DR	
			4	Circulatory System	DT	
			7	Skeletal System	SG	
			PR 2	Study of disarticulated skeleton of toad, Pigeon, Guineapig (limb bones, vertebrae, limb and girdle)	DR	
			PR 4	Identification of skulls: Pigeon, one herbivore (Guineapig) and one carnivore (Dog) animal	SG	
	May		5	Urinogenital System	DT	
			7	Skeletal System	SG	
			PR 2	Osteology: Limb bones, girdle and vertebra of Pigeon & Guineapig, Mammalian skulls: One herbivorous; Guinea pig and one carnivorous; Dog.	SG	
	June		2	Digestive System	SG	
			6	Comparative account of brain in vertebrates; cranial nerves; olfactory and auditory receptors in vertebrates	DT	
	July		2	Digestive System	SG	
			PR 3	Comparative study of heart and brain, with the help of model/picture	DT	
			PR 2	Osteology: Limb bones, girdle and vertebra of Pigeon & Guineapig, Mammalian skulls: One herbivorous; Guinea pig and one carnivorous; Dog.	SG	
				Semester- end Exams	SG, DT, DR	
	August		PR 1	Study of placoid, cycloid and ctenoid scales through permanent slides/photographs	SG	
				Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-CC4-9-TH and PR/ Module/ Assessments (ANIMAL PHYSIOLOGY: LIFE SUSTAINING SYSTEMS)	Teachers	Other Activities
I	IV	January		Semester- end Exams	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		February		Introductory classes		
		March	6	Renal Physiology	DT	
		April	1	Physiology of Digestion	SG	
			2	Physiology of Respiration	DT	
			5	Thermoregulation and Osmoregulation	DR	
			6	Renal Physiology	DR	
			PR 2	Estimation of haemoglobin using Sahli's haemoglobin meter	SG	
			PR 3	Identification of blood cells from human blood	SG	
			PR 6	Demonstration of blood pressure by digital meter	SG	
		May	PR 1	Determination of ABO Blood group	SG	
			PR 4	Preparation of haemin crystals and haemochromogen crystals	SG	
		June	PR 4	Preparation of haemin crystals and haemochromogen crystals	SG	
			PR 5	Identification of blood cells from cockroach haemolymph	SG	
		July	4	Physiology of Heart	DT	
			PR 4	Preparation of haemin crystals and haemochromogen crystals	SG	
		Semester- end Exams	SG, DT, DR			
August		Semester- end Exams	SG, DT, DR			

Part	Semester	Time Frame	Unit	Paper ZOOA-CC4-10-TH and PR/ Module/ Assessments (IMMUNOLOGY)	Teachers	Other Activities
I	IV	January		Semester- end Exams	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> </ul>
		February		Introductory classes		
		March				
		April	1	Overview of Immune System	DR	
			2	Innate and Adaptive Immunity	DR	
3	Antigens		DR			

			9	Vaccines	DR	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
	May	4	Immunoglobulins	DR		
		5	Major Histocompatibility Complex	DR		
		6	Cytokines	DR		
		7	Complement System	DR		
		8	Hypersensitivity	DR		
		PR 1	Demonstration of lymphoid organs (by picture).	DR		
		PR 2	Histological study of Bursa fabricius, spleen, thymus and lymph nodes through slides/photographs	DR		
	PR 3	Demonstration of ELISA	DR			
	June		Revision	DR		
	July		Semester- end Exams	SG, DT, DR		
	August		Semester- end Exams	SG, DT, DR		

Part	Semester	Time Frame	Unit	Paper ZOOA-SEC(B)-4-1 TH / Module/ Assessments (AQUARIUM FISH KEEPING)	Teachers	Other Activities
I	IV	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		April	1	Introduction to Aquarium Fish Keeping	DT	
			2	Biology of Aquarium Fishes	DT	
		May	3	Food and feeding of Aquarium fishes	DT	
			4	Fish Transportation	DT	
		June	5	Maintenance of Aquarium	DT	
		July		Semester- end Exams	SG, DT, DR	
August		Semester- end Exams	SG, DT, DR			

Part	Semester	Time Frame	Unit	Paper ZOOG-CC4-4- TH and PR/ Module/ Assessments (GENETICS AND EVOLUTIONARY BIOLOGY)	Teachers	Other Activities
I	IV	January		Semester- end Exams	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		February		Introductory classes		
		March	3	Mutation	SG	
			4	Sex Determination	SG	
		April	1	Mendelian Genetics and its Extension	DT	
			5	Origin of Life	DR	
			6	Evolutionary Theories	DR	
			7	Process of Evolutionary changes	DR	
			8	Speciation	DR	
			PR 1	Verification of Mendelian Ratio using Chi square test.	SG	
			PR 2	Identification of Human Aneuploidy using photo graph of karyotype.	SG	
		May	PR 4	Study and identification of Darwin Finches from photographs.	DR	
			PR 5	Visit to natural history museum and submission of report.	DR	
			2	Linkage and Crossing over	DT	
			PR 1	Verification of Mendelian Ratio using Chi square test.	SG	
		June		Revision	SG, DT, DR	
		July	PR 3	Phylogeny of horse with diagram of limb and skull.	DT	
	Semester- end Exams		SG, DT, DR			
August		Semester- end Exams	SG, DT, DR			

Part	Semester	Time Frame	Unit	Paper ZOOA-CC6-13-TH and PR/ Module/ Assessments (DEVELOPMENTAL BIOLOGY)	Teachers	Other Activities
I	VI	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> </ul>

		April	1	Early Embryonic Development	DR	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			2	Late Embryonic Development	SG	
			PR 1	Study of whole mounts of developmental stages of chick embryo through permanent slides: 24, 48, and 96 hours of incubation	SG	
			PR 2	Study of the developmental stages and life cycle of Drosophila	SG	
			PR 3	Study of different sections of placenta (photomicrograph/ slides)	SG	
		May	1	Early Embryonic Development	DR	
			4	Implications of Developmental Biology	DR	
			PR 4	Identification of Invertebrate larva through slides/ photographs of Phylum Annelida, Arthropoda, Mollusca and Echinodermata	SG	
		June	3	Post Embryonic Development	SG, DR	
		July		Semester- end Exams	SG, DT, DR	
		August		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-CC6-14-TH and PR/ Module/ Assessments (EVOLUTIONARY BIOLOGY)	Teachers	Other Activities
I	VI	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing</li> </ul>
			1	Origin of Life (Chemical basis), RNA world hypothesis	DR	
			6	Origin and Evolution of Man, Unique Hominid characteristics contrasted with primate characteristic	DR	
			7	Population genetics: Hardy-Weinberg Law; factors disrupting H-W equilibrium (Genetic Drift, Migration and Mutation and Selection in changing allele frequencies (only derivations required). Simple problems related to estimation of allelic and gene frequencies.	DR	
			8	Extinction, back ground and mass extinctions, detailed example of K-T extinction	DR	

			9	Phylogenetic trees, construction and interpretation of Phylogenetic tree using parsimony, convergent and divergent evolution.	DR	classes
	April		2	Historical review of Evolutionary concepts: Lamarkism, Darwinism and Neo Darwinism	DR	
			4	Natural Selection: Modes with Examples;	DR	
			PR 1	Study of fossils from models/ pictures: Dickinsonia, Paradoxides (Trilobita), Asteroceas (Ammonoid), Pentremites (Blastoid Echinoderm), Ichthyosaur, Archaeopteryx, Cynodont.	DR	
			PR 2	Study of homology and analogy from suitable specimens.	DR	
	May		9	Phylogenetic trees, construction and interpretation of Phylogenetic tree using parsimony, convergent and divergent evolution.	DR	
			PR 3	Phylogenetic trees, Construction & interpretation of Phylogenetic tree using parsimony, Construction of dendrogram following principles of phenetics & cladistics from a data table.	DR	
	June			Revision	DR	
	July			Semester- end Exams	SG, DT, DR	
	August			Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-DSE(A)-6-1-TH and PR/ Module/ Assessments (ANIMAL CELL BIOTECHNOLOGY)	Teachers	Other Activities
I	VI	January February March		Semester- end Exams Introductory classes	SG, DT, DR	<ul style="list-style-type: none"> <li>Celebrated International Tuberculosis Day on 24<sup>th</sup> March</li> </ul>
		April	3	Animal Cell Culture	SG	
			4	Fermentation	SG	

			PR 1	Packing and sterilization of glass and plastic wares for cell culture.	SG	<ul style="list-style-type: none"> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
			PR 2	Preparation of culture media.	SG	
			PR 5	Techniques	SG	
		May	1	Introduction	DT	
			2	Techniques in Gene Manipulation	DT	
			5	Application in Health	SG	
			PR 4	Plasmid DNA isolation (pUC 18/19) and DNA quantitation using agarose gel electrophoresis (by using lambda DNA as standard).	DT	
		June	PR 3	Preparation of genomic DNA from E. coli/animals/ human.	SG	
		July		Semester- end Exams	SG, DT, DR	
		August		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOA-DSE(B)-6-2-TH and PR/ Module/ Assessments (FISH AND FISHERIES)	Teachers	Other Activities
I	VI	January February March		Semester- end Exams	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		April	1	Introduction and Classification	DT	
			3	Fisheries	DT	
			PR 3	Study of different types of scales (through permanent slides/ photographs).	DT	
			PR 4	Study of crafts and gears used in Fisheries (Photographs)	DT	
		May	2	Morphology and Physiology	DT	
			4	Aquaculture	DT	
			PR 1	Morphometric and meristic characters of fishes	DT	
			PR 2	Identification of <i>Petromyzon</i> , <i>Myxine</i> , <i>Pristis</i> , <i>Exocoetus</i> , <i>Hippocampus</i> , <i>Gambusia</i> , <i>Labeo</i> , <i>Heteropneustes</i> , <i>Anabas</i>	DT	

			PR 6	Study of air breathing organs in <i>Channa, Heteropneustes, Anabas</i> and <i>Clarias</i>	DT	
	June		5	Fish in research	DT	
			PR 5	Water quality criteria for Aquaculture: Assessment of pH, alkalinity, Salinity.	DT	
			PR 7	Project Report on a visit to any fish farm/ pisciculture unit/Zebrafish rearing Lab.	DT	
	July			Semester- end Exams	SG, DT, DR	
	August			Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOG-DSE-B-6-2-TH and PR/ Module/ Assessments (ECOLOGY& WILD LIFE BIOLOGY)	Teachers	Other Activities
I	VI	January		Semester- end Exams	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		February	PR 1	Identification of flora, mammalian fauna, avian fauna	DR	
		March	PR 2	Demonstration of basic equipment needed in wildlife studies use, care and maintenance (Compass, Binoculars, Spotting scope, Range Finders, Global Positioning System, Various types of Cameras and lenses)	DR	
			PR 3	Familiarization and study of animal evidences in the field; Identification of animals through pug marks, hoof marks, scats, pellet groups, nest, antlers, etc.	DR	
		April	2	Population	DR	
			3	Community	DR	
		May	1	Introduction to Ecology	DR	
			4	Ecosystem	DT	
			5	Wild Life	DT	



		June	PR 4	Study of an aquatic ecosystem: Phytoplankton and zooplankton, Measurement of area, temperature, salinity, determination of pH, and Dissolved Oxygen content (Winkler's method), Chemical Oxygen Demand and free CO <sub>2</sub>	DT SG	
		July		Semester- end Exams	SG, DT, DR	
		August		Semester- end Exams	SG, DT, DR	

Part	Semester	Time Frame	Unit	Paper ZOOG-SEC-B-6-4-TH/ Module/ Assessments (MEDICAL DIAGNOSIS)	Teachers	Other Activities
I	VI	January February March		Semester- end Exams	SG, DT, DR	<ul style="list-style-type: none"> <li>• Celebrated International Tuberculosis Day on 24<sup>th</sup></li> <li>• Assignments given &amp; checked</li> <li>• Group discussion</li> <li>• doubt clearing classes</li> </ul>
		April	4	Infectious Diseases	SG	
			5	Clinical Biochemistry	SG	
		May	1	Diagnostics Methods Used for Analysis of Blood	SG	
			2	Diagnostic Methods Used for Urine Analysis	SG	
			3	Non-infectious Diseases	SG	
			6	Clinical Microbiology	SG	
			June	7	Tumours	
		8		Visit to pathological Laboratory and Submission of Project	SG	
		July		Semester- end Exams	SG, DT, DR	
August		Semester- end Exams	SG, DT, DR			

CBCS CURRICULUM [EVEN SEMESTERS II, IV and VI] [Session- January 2023 to June 2023]									
Paper	Theory			Total Classes=50	Practical			Total Classes=30 (60 Hours)	
SEM VI	Teachers				Teachers				
	SG	DT	DR		SG	DT	DR		
CC 13	25	---	25	50	30	--	--	30	
CC 14	---	---	50	50	--	--	30	30	
DSEA	30	20	---	50	30	--	--	30	
DSEB	---	50	---	50	--	30	--	30	
ZOOG SECB	30	---	---	30	---	--	---	--	
ZOOG DSEB	---	20	30	50	6	6	18	30	
SEM IV									
CC8	15	15	20	50	24	--	6	30	
CC9	10	20	20	50	15	--	15	30	
CC10	--	--	50	50	--	--	30	30	
SEC	--	30	--	30	--	--	--	--	
ZOOG GE3	15	10	15	50	12	6	12	30	
SEM II									
CC3	15	15	20	50	30	--	--	30	
CC4	20	30	--	50	30	--	--	30	
GE2	10	20	20	50	15	--	15	30	

\*\*Number of working days=135, [Fall through classes due to shortage of teaching staff, to be compensated by arranging classes in between examination period- July August 2023]