

DEPARTMENT: ZOOLOGY
LESSON PLAN,
SEMESTER-II (CCF)

NAME OF FACULTY: DR. DEBJANI DAS GHOSH, SUCHONA CHAKRABORTY & DR. SUMALLYA KARMAKAR

Subject: Zoology Hons. (Major)

Paper: Core Course (Biochemistry) - CC-2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	<u>Carbohydrate</u> Structure Classification Properties of Monosaccharide, Disaccharide & Polysaccharide	4	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
	Isomerism of monosaccharide	4			
	Importance	1			
Unit 2	<u>Protein</u> Structure of amino acid Classification of amino acid Properties (General & electrochemical) Essential & nonessential amino acid	4			
	Structure of protein (primary, secondary, tertiary & quaternary)	3			
Unit 3	<u>Lipid</u> Classification	2			

	Saturated & unsaturated fatty acid Essential & non-essential fatty acid				
	Structure & Formation of triglyceride	1			
Unit 4	<u>Enzymes</u> Nomenclature, classification; cofactors; specificity of enzyme action; isozymes; Mechanism of enzyme action; Enzyme kinetics; Derivation of Michaelis-Menten equation; Lineweaver-Burk plot; Factors affecting rate of enzyme catalysed reactions; Enzyme inhibition	9	Cox and Nelson: Lehninger's principles of biochemistry, Hames and Hooper:Harper's illustrated biochemistry, D. Das: Fundamentals of Biochemistry etc.	1. chalk and talk 2. Peer teaching 3. class test 4. Study materials 5. reference notes	Dr. Debjani Das Ghosh
Unit 5	<u>Carbohydrate metabolism</u> Glycolysis Citric acid cycle	3	1)Biochemistry by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
	Pentose phosphate pathway	1			
	Gluconeogenesis	1			
	Glycogenesis & Glycogenolysis	2			
Unit 6	<u>Protein metabolism</u> Transaminaton, Deamination, Glycogenic & Ketogenic amino acid	4			
Unit 7	<u>Lipid metabolism</u> Beta –oxidation of – Palmitic acid & Linoleic acid	3			
	Fatty acid biosynthesis	1			
Unit 8	<u>Nucleic acid Metabolism</u>				Dr.Sumallya Karmakar

	Degradation of purine; Purine Salvage pathway and significance.		1)Biochemistry by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	
Unit 9	Free radicals & antioxidants	1	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
Practical Group -A	<u>Qualitative test</u> Carbohydrate	6	1)Practical Zoology by Chatterjee & Chakraborty	Chemicals & lab apparatus	Suchona Chakraborty
	Protein	3	2)Practical Zoology by Ghosh Manna		
	Lipid	1	3)Laboratory Manual by Poddar		
Group-B	<u>COLORIMETRIC ESTIMATION</u> 1. Protein estimation by Lowry Method 2. Amylase activity	04 02 02	ABSORPTIOMETRY AND "COLORIMETRIC ANALYSIS":H.N.Wison	Hands on experiment and study materials	Dr. Debjani Das Ghosh

--	--	--	--	--	--

LESSON PLAN, SEMESTER-II (CCF)
DEPARTMENT: ZOOLOGY
NAME OF FACULTY: DR. SUCHARITA SAHA

Subject: Zoology Hons. (Major)

Paper: Skill Enhancement Course (Aquaculture)-SEC-2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit-1	<u>Basic idea of Fish Biology</u> Qualities of cultivable fish, Indegenous and exotic	3	1.Sarkar, S., Kundu , G. and Chaki, K.C. (2014) . Introduction to Economic Zoology, NCBA, Kolkata	Chalk and talk	Dr. Sucharita Saha
Unit-2	<u>Sustainable aquaculture system</u> Intensive, semi-intensive and extensive culture systems, Water quality in culture ponds and factors controlling water quality. Preparation and management of fish culture ponds in Composite Fish Culture, Cage Culture, Pen culture, raceways flowthrough system, Biofloc. Cold water fishery, jeol fishery, Sewage-fed Fishery, mariculture with special emphasis on sea-weed culture (Basic concept). Induced breeding of Carps, synthetic hormones in hypophysation. Management of fin-fish Hatcheries, glass-jar hatchery.	17	2.Pandey, K. and Shukla,J.P. (2013). Fish and Fisheries, Rastogi Publications 3.Das, M.K. and Das, R.K. (1997). Fish and Prawn Diseases in India--diagnosis and Contro. Inland Fisheries Society in India, Barrackpore, West Bengal	Reference notes Link share	

	Chinese hatchery				
Unit-3	<p><u>Recent Advancement of Aquaculture</u></p> <p>Aquarium Fisheries, Preparation and management of Fish Aquarium. Biology of common ornamental fish: Guppy, swordtail, Angel, Blue morph fish, Anemone fish, Butterfly fish, Molly.</p> <p>Fish Nutritional Requirement: Feed formulation and preparation of compound diets.</p> <p>Capture fishery: Fishing crafts and gears, post-harvesting Technology, fish Transport and marketing. Fish preservation and by-products.</p> <p>Fish biotechnology: transgenic Fish, Sex-reversal in Fish, Aquaponics, Application of GIS and remote -sensing in Fisheries, fishery laws and regulations.</p>	20			
Unit-4	<p><u>Fin-fish Pathology</u></p> <p>Name of infective disease. Causative Agents, Symptoms, Control. Bacterial-- Dropsy, Fin and tail rot, Protozoan--White spot disease, Fungal-- Saprolegniasis, Ectoparasitic-- Gyrodactylosis, dactylogyrosis, Viral—Rhabdovirus.</p>	5			
Unit-5	<u>Applied Aquaculture</u>	5			

	Breeding Techniques in Shrimp and Prawns: Eye-stalk Ablation in Shrimp and Salinity-shock in Prawns. Techniques of artificial Pearl Culture.				
Practical	<u>Identification of different fish species using meristic Characters (Systematic Position, Speimen Characters).</u> Rohu, Catla, Cirhinus, Puntius, Amblypharyngodon, Channa punctatus, Lates, Mystus, Notopterus, Cyprinus, Hypophthalmichthyes, Ctenopharyngodon, Oreochromis niloticus, Oreochromis mossambicus, anabas, Clarius, Heteropneustes, Mugil, Macrobrachium, Penaeus		Ghosh, K.C., Manna, B.-- Practical Zoology, NCBA	Jar specimen display, Photograph display	Dr. Sucharita Saha
	<u>Visit to any aquaculture farm and submission of report on the visit</u>				

LESSON PLAN: SEMESTER-II(CCF)

DEPARTMENT: ZOOLOGY

NAME OF FACULTY: DR. DEBJANI DAS GHOSH, SUCHONA CHAKRABORTY & DR. SUMALLYA KARMAKAR

Subject: Zoology Gen. (Minor & MDC)

Paper: Core Course (Biochemistry) - CC2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	<u>Carbohydrate</u> Structure Classification Properties of Monosaccharide, Disaccharide & Polysaccharide	4	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
	Isomerism of monosaccharide	4			
	Importance	1			
Unit 2	<u>Protein</u> Structure of amino acid Classification of amino acid Properties (General & electrochemical) Essential & nonessential amino acid	4			
	Structure of protein (primary, secondary, tertiary & quaternary)	3			

Unit 3	<u>Lipid</u> Classification Saturated & unsaturated fattyacid Essential & non-essential fatty acid	2			
	Structure & Formation of triglyceride	1			
Unit 4	<u>ENZYMES</u> Nomenclature, classification; cofactors; specificity of enzyme action; isozymes; Mechanism of enzyme action; Enzyme kinetics; Derivation of Michaelis-Menten equation; Lineweaver-Burk plot; Factors affecting rate of enzyme catalysed reactions; Enzyme inhibition	9	D. Das: Fundamentals of Biochemistry, Harper's illustrated biochemistry	1. Chalk and Talk 2. Reference Materials	Dr. Debjani Das Ghosh
Unit 5	<u>Carbohydrate metabolism</u> Glycolysis Citric acid cycle	3	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
	Pentose phosphate pathway	1			
	Gluconeogenesis	1			
	Glycogenesis & Glycogenolysis	2			
Unit 6	<u>Protein metabolism</u> Transaminaton, Deamination, Glycogenic & Ketogenic amino acid	4			
Unit 7	<u>Lipid metabolism</u> Beta –oxidation of – Palmitic acid & Linoleic acid	3			

	Fatty acid biosynthesis	1			
Unit 8	<u>Nucleic acid Metabolism</u> Degradation of purine; Purine Salvage pathway and significance.	3	1)Biochemistry by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Dr.Sumallya Karmakar
Unit 9	Free radicals & antioxidants	1	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
<u>Practical</u> Group -A	<u>Qualitative test</u> Carbohydrate	6	1)Practical Zoology by Chatterjee & Chakraborty 2)Practical Zoology by Ghosh Manna 3)Laboratory Manual by Poddar	Chemicals & lab apparatus	Suchona Chakraborty
	Protein	3			
	Lipid	1			
Group-B	<u>COLORIMETRIC ESTIMATION</u> 1.Protein estimation by Lowry Method	04 02 02	ABSORPTIOMETRY AND "COLORIMETRIC ANALYSIS":H.N.Wison	Hands on experiment and study materials	Dr. Debjani Das Ghosh

	2.Amylase activity				

LESSON PLAN: SEMESTER-II
DEPARTMENT: ZOOLOGY
NAME OF FACULTY: DR. SUCHARITA SAHA, DR. DEBJANI DAS GHOSH,
DR. SUMALLYA KARMAKAR, SUCHONA CHAKRABORTY

Subject: Zoology Gen. (MDC)

Paper: Skill Enhancement Course (Applied Zoology)-SEC- G

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit I	Agricultural Entomology	6	1.Economic Zoology: Shukla & Upadhyay 2. Introduction to Economic Zoology: Sarkar, Kundu, Chaki 3. Elementary Applied Zoology: Debajyoti Chattopadhyay	1.Chalk & Talk method 2.Power Point presentation 3.Use of Charts	
	Concept of insect pest, EIL, ETL	1			
	Life cycle, Nature of damage and control measures of pests of major crops	3			
	Insect Pest Control	2			
Unit II	Sericulture	8	1.A.Sukla: A handbook of Economic Zoology, 2.Chaki, Kundu and Sarkar: Introduction to economic Zoology, 3.Chaudhuri: Economic Zoology etc.	1.Photographs 2. Chalk and talk 3. Study materials	Dr. Debjani Das Ghosh
	Types of silk moths, geographical distribution, host plants	2			
	Life cycle of <i>B.mori</i> , silk gland, composition of silk, uses of silk	2			
	Rearing, extraction, reeling of mulberry silk	2			
	Silkworm diseases, pests and their control	2			

Unit III	Apiculture	7	1.A.Sukla: A handbook of Economic Zoology, 2.Chaki, Kundu and Sarkar: Introduction to economic Zoology, 3.Chaudhuri: Economic Zoology	1.Photographs 2. Chalk and talk 3. Study materials	Dr. Debjani DasGhosh
	Various domesticated species of Honey bee	2			
	Social organization and life cycle	1			
	Modern method of bee keeping	1			
	Parasites and diseases and control	2			
	Bee economy	1			
Unit IV	Vermiculture	7	Lekshmy , M.S. and Santhi, R. Vermitechnology. Saras Publication. ISBN:9789382459323	1.Chalk and talk 2. Link share	Dr. Sucharita Saha
	Scope of vermiculture, habit categories of earthworm, methodology of vermicomposting, containers for culturing, raw materials required, preparation of bed, environmental pre-requisites, feeding, harvesting and storage of vermicompost, advantages of vermicomposting, diseases and pests of earthworm				
Unit V	Aquaculture	8	Pandey, K. and Shukla,J.P. (2013). Fish and Fisheries, Rastogi Publications		
	Aquaculture Principles, definition and scope, prawn culture: penaeid and palaemonid features with examples, semi-intensive method of prawn culture, application of prawn culture, difference between				

	major and minor carps with examples. Composite fish farming: general concepts, advantages and disadvantages, Induced breeding; method and advantages, integrated fish farming				
Unit VI	Livestock Management	8	1. A.Sukla: A handbook of economic Zoology		Dr.Sumallya Karmakar
Unit VII	Lac Culture Life cycle, host plants and strains of Lac insect; Lac cultivation: Local practice, improved practice, propagation of Lac insect, inoculation period, harvesting of Lac; Lac composition, processing, products and uses; Natural enemies of lac insect and their management	6	2.Chaki, Kundu and Sarkar: Introduction to economic Zoology 3. Chaudhuri: Economic Zoology etc		Dr.Sumallya Karmakar
Practical	Applied zoology	20			
	1. Identification of various castes of honey bee, life cycle stages of <i>Bombyx mori</i>	4	1. A.Sukla: A handbook of economic Zoology 2.Chaki, Kundu and Sarkar: Introduction to economic Zoology 3. Chaudhuri: Economic Zoology etc.	Photographs, chalk and talk and study materials	Dr. Debjani Das Ghosh
	Identification of life stages of	2	Chaki, Kundu and Sarkar:	Photographs, chalk and talk	Dr.Sumallya

	Kerri lacca		Introduction to economic Zoology	and study materials	Karmakar
	Identification of earthworms used in vermiculture	2	Lekshmy , M.S. and Santhi, R. Vermitechnology. Saras Publication. ISBN:9789382459323		Dr. Sucharita Saha
	Identification of ectoparasites of Poultry birds			Photographs, chalk and talk and study materials	Dr.Sumallya Karmakar
	2. Identification of the following fish and prawn specimens (specimen characters only): <i>Labeorohita, Catlacatla, Cirrhinusmrigala, Cyprinus carpio, L. bata, Penaeus monodon, Macrobrachiumrosenbergi</i>	4	Ghosh, K.C., Manna, B.-- Practical Zoology, NCBA	1.Chalk and talk 2. Jar specimen display	Dr. Sucharita Saha
	3. Collection of any two pests and submission of specimens along with a report	10	1. Economic Zoology: Shukla & Upadhyay 2. Review papers & journals available at Internet and Research Institutes	1. Chalk & Talk method 2. Power Point presentation 3.Use of Charts, microscopes	Suchona Chakraborty

LESSON PLAN: SEMESTER-II(CCF)
DEPARTMENT: ZOOLOGY
NAME OF FACULTY: DR. SUCHARITA SAHA,
DR. DEBJANI DAS GHOSH, DR. SUMALLYA KARMAKAR

Subject: Zoology /IDC

Paper: Interdisciplinary Course (Animal Biology)-IDC-2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	Animal Diversity	10	Chaki, K.C., Kundu, G. and Sarkar, S. (2005). Introduction to General Zoology, New Central Book Agency (P) Ltd. Vol-1, Chapter-1.	1.Chalk and talk 2. Link share	Dr. Sucharita Saha
	Phylum Characters and examples of Cnidaria, Ctenophora, Mollusca and Echinodermata	5			
	Phylum Characters and examples of Platyhelminthes, Nematelminthes, Annelida, Arthropoda, Chordata	5			
Unit 2	Genetics	12	Concepts of Genetics Klugg & Cummings	1.Chalk and talk	Dr.Sumallya Karmakar

	Mendelian Principles and Laws of inheritance Linkage and Recombination basic Concepts Sex Determination with reference to Drosophila [only genic balance theory] Chromosomal Aberration [Structural and Numerical]				
Unit 3	Biodiversity and Wildlife	15			
	1.Biodiversity: Definition, Types and Value 2.Indices (Shannon and Simpson)	8	1.Sharma,P.D. (2001). Ecology and Environment. Rastogi Publications 2. https://www.worldwildlife.org/page	1.Chalk and talk 2. Link share	Dr. Sucharita Saha
	3.Conservation :in-situ and ex-situ	3	1.G.K Saha and S Majumdar:Threatened mammals of India, 2. G.K Saha and S Majumdar:Wildlife Biology, 3.Wilson:Biodiversity, 4.Sidhi and Ehlich: Conservation Biology for all etc	1.Photographs 2. Chalk and talk 3. Study materials	Dr. Debjani Das Ghosh
	4.Conservation priority: Hotspot, Megadiversity, sensitive ecosystem	3			
	5.Indigenous knowledge and PBR:Basic concept	1		Chalk and talk	Dr. Sucharita Saha
Unit 4	Insect vectors	8			
	1. Concept of vector:Biological and mechanical vectors with examples	2	1.Noble and Noble: Parasitology: The biology of animal parasites 2.Chapman: The	1.Photographs 2. Chalk and talk 3. Study materials 1. Chalk & Talk method 2. Use of Charts,	Dr. Debjani Das Ghosh

			insects: structure and function etc.	preserved specimens	
	2.Disease cycle & Reservoir Concept	1	1. Medical Entomology: Hati,A.K.		
	3.Life cycle, control, role as vector of <i>Anopheles</i> and <i>Aedes</i>	5	2. Introduction to General Zoology: Vol II: Sarkar, Kundu, Chaki		
Unit 5	Laboratory techniques and Instrumentation	5			
	1.Basics of Light Microscopy	2	Raghava, N. and Rabindra ,P.R. Biophysical methods tools and techniques in Biology, Part-1 Microscopy. Notion Pres	1.Chalk and talk 2. Link share	Dr. Sucharita Saha
	2.Principles and Application of Colorimetry	2	Ghosh and Manna: Practical Zoology	1.Photographs 2. Chalk and talk 3. Study materials	Dr. Debjani Das Ghosh
	3.Principles and Application of Ultracentrifugation	1	Biotechnology by Thieman & Palladino	1.Chalk and talk 1.	Dr.Sumallya Karmakar
Practical	Animal Biology	20			
	1.Karyotype analysis of Klinefelter, Down,Turner, Edward & Patau Syndrome	2	Concepts of Genetics Klugg& Cummings	1.Chalk and talk	Dr.Sumallya Karmakar
	2.Identification of specimens: <i>Amoeba</i> , <i>Paramecium</i> , <i>Taenia</i> , <i>Ascaris</i> , <i>Nereis</i> , <i>Pheretima</i> , <i>Penaeus</i> , <i>Macrobrachium</i> , <i>Musca</i> , <i>Anopheles</i> , <i>Culex</i>	6	1. Practical Zoology: Ghosh K.C., Manna B. 2.An advanced Laboratory Manual of Zoology: Poddar T., Mukhopadhyay S., Das S.K. 3. Practical Zoology: Chatterjee A.K., Chakraborty C.	1. Chalk & Talk method 2. Use of Charts, preserved specimens, permanent slides, microscopes	

	Identification of specimens: <i>Sycon</i> , Neptune's cup, <i>Pila</i> , <i>Lamellidens</i> , <i>Asterias</i>	6	1. Practical Zoology: Ghosh K.C., Manna B. 2. An advanced Laboratory Manual of Zoology: Poddar T., Mukhopadhyay S., Das S.K.	1. Chalk and talk 2. Jar specimen display	Dr. Sucharita Saha
	3. Study of different types of ecosystems	6	1. Books on Biodiversity And materials from internet	1. Chalk & Talk method 3. Use of Computers and internet	Dr. Debjani Das Ghosh

LESSON PLAN, SEMESTER-IV (CCF)

NAME OF FACULTY: SUCHONA CHAKRABORTY & DR. SUCHARITA SAHA

Subject: Zoology (Major)

Paper: CC-5 (Non-chordate structure and function)

Unit/ Group/ Article/ Module	Topic	No. Of Lectures	Reference books	AFTER IMPLEMENTATION	
				Content delivery technique	Remarks/ Comments
Theory Unit – 1	Kingdom Protista Protozoa – Characters & classification	1	1. Invertebrat zoology by Rupert	1. Class lecture	Suchona Chakraborty
	Locomotion of Euglena, Paramecium, , Amoeba	2	Barnes 2.	2. PDF	
	Conjugation	1	Invertebrates by kotpal 3. Invertebrates by Brusca & Brusca	3. Reference Notes	
Unit-2	Kingdom Animalia	4			
Unit-3	Phylum-Porifera	4			
Unit-4	Phylum-Cnidaria				
Unit – 5	Phylum Helminths Characters & classification	1		“	Suchona Chakraborty
	Fasciola – digestive, excretory, reproductive	2			
	Ascaris - “ “ “	1			
Unit - 6	Phylum Annelida Characters & classification	1	“	“	Suchona Chakraborty

	Excretion	2			
	Metamerism	1			
Unit – 7	Phylum Onychophora	2		“	Suchona Chakraborty
Unit-8	Phylum-Arthropoda	6			
Unit-9	Phylum-Mollusca	5			
Unit-10	Phylum-Echinodermata	5			
Unit-11	Phylum-Hemichordata	3			
Practical	<p>1. Identification with reasons and systematic position of Entamoeba, trypanosoma, sycon, Obelia, Aurelia, Metridium, Madrepora, Fasciola, Taenia, ascaris, nereis, Chaetpoterus, Hirudinaria, peripatus, Limulus, Buthus, Macrobrachium, Balanus, Eupagurus, Julus, Scolopendra, Patella, Chiton, Pila, Sepia, Octopus, Asterius, Ophura, Echinus, Cucumaria, Antedon and Balanoglossus</p> <p>2. Anatomical study: Earthworm: Mounting of nerve ring, Periplanetasp: Nervous system, Male and Female Reproductive systems</p> <p>3. Whole mount of Paramoecium/ Euglena/Amoeba</p>	2	<p>1)Practical Zoology by Chatterjee & Chakraborty</p> <p>2)Practical Zoology by Ghosh Manna</p> <p>3)Laboratory Manual by Poddar</p>	Specimen, Microscope, Stains, Apparatus	Dr. Sucharita Saha and Suchona Chakraborty

LESSON PLAN, SEMESTER -IV(CCF)

DEPARTMENT NAME: ZOOLOGY

NAME OF FACULTY: DR. DEBJANI DAS GHOSH

Subject: Zoology (Major)

Paper: Parasitology : CC-6

Unit/ Group/ Article/ Module	Topic	No. Of Lectures	Reference books	AFTER IMPLEMENTATION	
				Content delivery technique	Remarks/ Comments

Theory					
Unit – 1	Introduction to Parasitology	4	Cheng TC, Dailey MD, Gunn A, Chatterjee KD, Janovy J, Smyth JD	Chalk & Talk method 2. PowerPoint presentation 3. Use of Charts, microscopes	Debjani DasGhosh
Unit-2	Parasitic Protists	7			
Unit-3	Parasitic Platyhelminthes	8			
Unit-4	Parasitic Nematodes	8			
Unit – 5	Parasitic Arthropods	8			
Unit - 6	Parasitic Vertebrates	3			
Unit – 7	Parasitic adaptation and host relation	4			
Practical	1. Identification of <i>E. histolytica</i> , <i>L. donovani</i> , <i>Plasmodium vivax</i> 2. Identification of <i>Schistosoma</i> <i>haematobium</i> , <i>Echinococcus</i> <i>granulosus</i> . 3. Identification of <i>Ascaris</i> <i>lumbricoides</i> , <i>Ancylostoma</i> <i>duodenale</i> , <i>Wuchereria bancrofti</i> . 4. Isolation, Fixation, Staining and Mounting of protozoa and helminth from the gut of Cockroach 5. LNB	20	1) Practical Zoology by Chatterjee & Chakraborty 2) Practical Zoology by Ghosh Manna 3) Laboratory Manual by Poddar	1. Use of Charts, microscopes, photographs etc., 2. Hands on training, 3. Specimens	Debjani DasGhosh

LESSON PLAN, SEMESTER -IV(CCF)

DEPARTMENT NAME: ZOOLOGY

NAME OF FACULTY: DR. SUMALLYA KARMAKAR

Subject: Zoology (Major)

Paper: Molecular Biology : CC-7

Planned	After Implementation
----------------	-----------------------------

Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	<u>Nucleic Acid</u> Structure and composition of DNA: Chargaff's Rule; Hypo and Hyperchromic shift; Watson and Crick Model of the Three-Dimensional Structure of DNA. Different forms of DNA-A, B and Z DNA (comparative overview) RNA as the Genetic Material, Types and Function.	3	1. Genetics-Strickberger 3 rd edition 2. iGenetics-Russell 3 rd edition 3. Genetics-Benjamin A Pierce 4 th Edition 4. Concepts of Genetics-Klug and Cummings 12th Edition 5. Molecular Biology of the Gene-Watson 7 th Edition	1. ICT 2. Chalk & Talk	Dr.Sumallya Karmakar
Unit 2	<u>DNA Replication</u> Meselson–Stahl Experiment, DNA Replication in Prokaryotes [Bidirectional and discontinuous]; Enzymes/Proteins associated with Replication -Polymerase [I, II & III], Primase, Helicase, SSB, DNA ligase; RNA priming; End replication Problem and Replication of telomeres in eukaryotes.	8	6. Cell Bruce-Alberts 6th Edition 7. Molecular Biology-Weaver 5 th Edition 8. Principles and techniques of Biochemistry and Molecular Biology-Walker and Wilson 8 th Edition	1. ICT 2. Chalk & Talk	
Unit 3	<u>Transcription</u> Mechanism of Transcription in prokaryotes and eukaryotes, Transcription factors, Difference between prokaryotic and eukaryotic transcription.	6		1. ICT 2. Chalk & Talk	
Unit 4	<u>Post Transcriptional Modifications and Processing of Eukaryotic RNA</u> Capping and Poly A tail	6		1. ICT 2. Chalk & Talk	

	formation in mRNA; Concept of introns and exons and Split genes; Splicing mechanism [Intron Removal by Spliceosome]; RNA editing (gRNA mediated and cytidine deaminase mediated)				
Unit 5	<u>Translation</u> Genetic code; Characteristics of the Genetic Code; Aminoacylation of a tRNA molecule; Mechanism of protein synthesis in prokaryotes.	6			1. ICT 2. Chalk & Talk
Unit 6	<u>Gene Regulation</u> Regulation of Transcription in prokaryotes: lac operon and trp operon (Attenuation control); Regulation of Transcription in eukaryotes: Activators, enhancers, silencer, repressors, miRNA mediated gene silencing. Epigenetic Regulation: DNA Methylation (by DNMT), Histone Methylation (by HMT) & Acetylation (by HAT and HDAC).	8			1. ICT 2. Chalk & Talk
Unit 7	<u>DNA Repair Mechanisms</u> Types of DNA repair mechanisms, RecBCD model in prokaryotes, nucleotide and base excision repair, SOS repair	4			1. ICT 2. Chalk & Talk
Unit 8	<u>Molecular Techniques</u> Principle and use of Agarose Gel Electrophoresis	4			1. ICT 2. Chalk & Talk

	Principle and use of SDS PAGE Blot Technique: Southern, Northern and Western Blot PCR: Basic Principle, Reverse Transcriptase-PCR				
Practical	<ol style="list-style-type: none"> 1. Isolation of genomic DNA from Goat Liver by phenol-chloroform method. 2. Quantification of DNA by diphenylamine (DPA) method. 3. Agarose Gel Electrophoresis. 4. Concept of buffer preparation and related calculation and dilution. 5. Instruments and accessories used to be shown by photographs for the following techniques: PCR, SDS PAGE, Western Blot, Southern Blot. 	20	<ol style="list-style-type: none"> 1) Practical Zoology by Chatterjee & Chakraborty 2) Practical Zoology by Ghosh Manna 3) Laboratory Manual by Poddar 	Hands on Training	

LESSON PLAN, SEMESTER -IV(CCF)

DEPARTMENT NAME: ZOOLOGY

NAME OF FACULTY: DR. SUCHARITA SAHA

Subject: Zoology (Major)

Paper: CC-8 (Ecology)

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	Introduction to Ecology; Autecology/Synecology, laws of limiting factor. Temperature as limiting factor (Effect on plant and animal metabolism, Bergman's rule, Jordon's rule, Allen's rule, Rensch's rule). Light as limiting factor (photoperiodism in plants and animals)	5	1. Roy, M. (2018). Perspectives in Ecology, Kalyani Printings, ISBN: 978-93-272-9087-5 2. Sharma, P.D. (2001). Ecology and Environment, Rastogi Publications 3. Kormondy, E.J. (2002). concepts of Ecology. 4 th Indian reprint, Pearson Education	Chalk and talk Link share Reference notes	Dr. Sucharita Saha
Unit-2	Energy flow in Ecosystem: Functional components of ecosystem: Energy flow (Universal model and Y-shaped model, ten percent law of energy flow); Productivity (Primary and secondary) and ecological efficiencies. Types of	8	4. Ricklefs R.E., Miller, G.L. (2000). 4 th ed, W.H. Freeman and Company		

	ecological pyramids with examples; Food chains (Detritus food chain and grazing food chain); Food web and types; Biogeochemical cycles (Nitrogen cycle).				
Unit-3	Population Ecology: Definition and properties (Natality, Mortality, Density, Biotic potential, Age structure, Survivorship curves, Growth curves with equations); Population regulation (density-dependant and independent); r and K strategies	7			
Unit-4	Niche and Competition: Definition of habitat and niche, Types of niche, N-dimensional niche concept, Niche overlap and resource partitioning. Competition and exclusion principle, Gause's and Connel's field experiment, niche segregation and character displacement, Lotka-volterra equation for competition, habitat ecology-Metabolism and ecosystem services of tropical rain forest and wetlands	8			
Unit-5	Community Ecology; Community-Definition and types, stratification, species richness and evenness; dominance-Diversity analysis, interspecific interaction within	4			

	equilibrial communities (definition and examples)				
Unit-6	Ecological succession; definition and types of succession, seral stages with special reference to hydrosere and lithosere, Models of ecological succession, resource-ratio hypothesis	4			
Unit-7	Pollution Biology: definition, types of pollutants (primary and secondary with examples), causes and effects of acid-rain, photochemical smog, ozone layer depletion and eutrophication, cause and effects of heavy-metal pollution in water (Pb, As, Hg ⁰ ; groundwater pollution, concept of bioconcentration and biomagnification	8			
Practical: Ecology Lab CC-8-P	1. Quantitative estimation of dissolved oxygen, free carbondi oxide, alkalinity from the provided water sample and comment on the observation.	8	1. Roy, M. (2018). Perspectives in Ecology (with practical),Kalyani Printings, ISBN: 978-93-272-9087-5	1. Hydrological analysis with chemicals	Dr. Sucharita Saha
	2. Estimation of pH value of provided water sample	2	2. Sharma, P.D. (2001).Ecology and Environment, Rastogi publications	2. Handling of instrument (pH meter)	
	3. Identification with reasons of the following zooplanktons; <i>Daphnia</i> , <i>Cyclops</i> , <i>Cypris</i>	2		3. Display of specimen in slides and vials	
	4. Identification with reasons of the followingsoil arthropods: Collembola, termite	2		4. Practice of problem solving	

	worker, ant				
	5. Study of life tables and survivorship curve from a hypothetical data set and comment on the results.	6			

LESSON PLAN, SEMESTER-IV(CCF)

DEPARTMENT NAME: ZOOLOGY

NAME OF FACULTY: SUCHONA CHAKRABORTY

Subject: Zoology General (MDC)

Paper : CC-4 (Non-chordate structure and function)

Unit/ Group/ Article/ Module	Topic	No. Of Lectures	Reference books	AFTER IMPLEMENTATION	
				Content delivery technique	Remarks/ Comments
Theory Unit – 1	Kingdom Protista Protozoa – Characters & classification	1	1.Invertebrat zoology by Rupert	1.Class lecture	Suchona Chakraborty
	Locomotion of Euglena, Paramoecium, , Amoeba	2	Barnes 2.	2.PDF	
	Conjugation	1	Invertebrates by kotpal	3.Reference	

			3. Invertebrates by Brusca & Brusca	Notes	
Unit-2	Kingdom Animalia	4			
Unit-3	Phylum-Porifera	4			
Unit-4	Phylum-Cnidaria				
Unit – 5	Phylum Helminths Characters & classification	1		“	Suchona Chakraborty
	Fasciola – digestive, excretory, reproductive	2			
	Ascaris - “ “ “	1			
Unit - 6	Phylum Annelida Characters & classification	1	“	“	Suchona Chakraborty
	Excretion	2			
	Metamerism	1			
Unit – 7	Phylum Onychophora	2		“	Suchona Chakraborty
Unit-8	Phylum-Arthropoda	6			
Unit-9	Phylum-Mollusca	5			
Unit-10	Phylum-Echinodermata	5			
Unit-11	Phylum-Hemichordata	3			
Practical	4. Identification with reasons and systematic position of Entamoeba, trypanosoma, sycon, Obelia, Aurelia, Metridium, Madrepora, Fasciola, Taenia, ascaris, nereis, Chaetpoterus, Hirudinaria, peripatus, Limulus,	2	1)Practical Zoology by Chatterjee & Chakraborty 2)Practical Zoology by Ghosh Manna	Specimen, Microscope, Stains, Apparatus	

<p>Buthus, Macrobrachium, Balanus, Eupagurus, Julus, Scolopendra, Patella, Chiton, Pila, Sepia, Octopus, Asterius, Ophura, Echinus, Cucumaria, Antedon and Balanoglossus</p> <p>5. Anatomical study: Earthworm: Mounting of nerve ring, Periplanetasp: Nervous system, Male and Female Reproductive systems</p> <p>6. Whole mount of Paramoecium/ Euglena/Amoeba</p>		<p>3)Laboratory Manual by Poddar</p>		<p>Suchona Chakraborty</p>
---	--	--------------------------------------	--	----------------------------

LESSON PLAN, SEMESTER-IV (CCF)

DEPARTMENT NAME: ZOOLOGY

NAME OF FACULTY: Suchona Chakraborty, Sumallya Karmakar, Debjani Das Ghosh

Subject: Zoology General (Minor)

Paper: CC-2(Biochemistry)

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments

Unit 1	<u>Carbohydrate</u> Structure Classification Properties of Monosaccharide, Disaccharide & Polysaccharide	4	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
	Isomerism of monosaccharide	4			
	Importance	1			
Unit 2	<u>Protein</u> Structure of amino acid Classification of amino acid Properties (General & electrochemical) Essential & nonessential amino acid	4			
	Structure of protein (primary, secondary, tertiary &quatenery)	3			
Unit 3	<u>Lipid</u> Classification Saturated & unsaturated fattyacid Essential & non-essential fatty acid	2			
	Structure & Formation of triglyceride	1			
Unit 4	<u>Enzymes</u> Nomenclature, classification; cofactors; specificity of enzyme action; isozymes; Mechanism of enzyme action; Enzyme kinetics; Derivation of Michaelis-Menten equation; Lineweaver-Burk plot;	9	Cox and Nelson: Lehninger's principles of biochemistry, Hames and Hooper:Harper's illustrated biochemistry, D. Das: Fundamentals of	1. chalk and talk 2. Peer teaching 3. class test 4. Study materials 5. reference notes	Dr. Debjani Das Ghosh

	Factors affecting rate of enzyme catalysed reactions; Enzyme inhibition		Biochemistry etc.		
Unit 5	<u>Carbohydrate metabolism</u> Glycolysis	3	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
	Citric acid cycle	1			
	Pentose phosphate pathway	1			
	Gluconeogenesis	2			
Unit 6	<u>Protein metabolism</u> Transaminaton, Deamination, Glycogenic & Ketogenic amino acid	4			
Unit 7	<u>Lipid metabolism</u> Beta –oxidation of – Palmitic acid & Linoleic acid	3			
	Fatty acid biosynthesis	1			
Unit 8	<u>Nucleic acid Metabolism</u> Degradation of purine; Purine Salvage pathway and significance.	3	1)Biochemistry by D. Das 2) Principles of Biochemistry .. by Lehninger 3) Illustrated Biochemistry ..by Harper	1.Class lecture 2.PDF 3.Reference Notes	Dr.Sumallya Karmakar
Unit 9	Free radicals & antioxidants	1	1)Biochemistry .. by D. Das 2) Principles of Biochemistry .. by Lehninger	1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty

			3) Illustrated Biochemistry ..by Harper		
<u>Practical</u> Group -A	<u>Qualitative test</u> Carbohydrate	6	1)Practical Zoology by Chatterjee & Chakraborty 2)Practical Zoology by Ghosh Manna 3)Laboratory Manual by Poddar	Chemicals & lab apparatus	Suchona Chakraborty
	Protein	3			
	Lipid	1			
Group-B	<u>COLORIMETRIC ESTIMATION</u> 1.Protein estimation by Lowry Method 2.Amylase activity	04 02 02	ABSORPTIOMETRY AND "COLORIMETRIC ANALYSIS":H.N.Wison	Hands on experiment and study materials	Dr. Debjani Das Ghosh

LESSON PLAN, SEMESTER-VI (CBCS)

DEPARTMENT: ZOOLOGY

NAME OF FACULTY:

Subject: Zoology Hons. /ZOOA**Paper: Developmental Biology: CC-6-13**

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	Early development	20	1.Developmental Biology: Gilbert S.F. 2. Introduction to General Zoology: Vol I: Sarkar, Kundu, Chaki	1.Chalk & Talk method 2. Use of charts, LCD projector 3.Power Point Presentation	
	1.Gametogenesis in sea urchin and mammal	4			
	2. Types of eggs and egg membranes	2			
	3. Fertilization in sea urchin and mammal	2			
	4. Planes and patterns of cleavage	2			
	5. Blastula of frog and chick	2			
	6. Fate map in chick embryo	2			
	7. Gastrulation in frog and chick	4			
	8. Embryonic induction and organizers with Spemann & Mangold's experiment	2			
Unit 2	Late Embryonic development	16	1.Developmental Biology: Gilbert S.F. 2. Introduction to General Zoology: Vol I : Sarkar, Kundu, Chaki		
	1.Extra-embryonic membranes in chick	6			
	2. Implantation of embryo in human	4			
	3. Structure, types and functions of placenta	6			
Unit 3	Post embryonic Development	8			

	1. Development of brain and eye in chick	4	1. Developmental Biology: Gilbert S.F.	
	2. Molecular induction in brain and eye development	4	2. Introduction to General Zoology: Vol I : Sarkar, Kundu, Chaki	
Unit 4	Implication of Developmental Biology	6		
	1.IVF 2.Stem cell concept	2 4	1. Developmental Biology: Gilbert S.F.	
Practical	Developmental Biology Lab	30	1. Practical Zoology: Ghosh K.C., Manna B.	1. Chalk & Talk method 2. Use of microscopes 3. Use of permanent microscopic slides, charts
	1. Study of 24, 48, 72 and 96 hrs of chick embryo	4	2. An advanced Laboratory Manual of Zoology: Poddar T., Mukhopadhyay S., Das S.K.	
	2. Study of developmental stages and life cycle of Drosophila	4	3. Practical Zoology: Chatterjee A.K., Chakraborty C.	
	3. Study of histological sections of placenta	4		
	4. Identification of Invertebrate larva of Phylum Annelida, Arthropoda, Mollusca and Echinodermata	6		

LESSON PLAN, SEMESTER-VI (CBCS)

DEPARTMENT: ZOOLOGY

NAME OF FACULTY: SUCHONA CHAKRABORTY & DR. SUMALLYA KARMAKAR

Subject: Zoology Hons. /ZOOA

Paper: Evolutionary Biology: CC-6-14

Planned			After Implementation		
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	Origin of life	3	1.Organic Evolution by Dr. Veer Bala Rastogi	1. Class lecture	Suchona Chakraborty
	RNA world hypothesis	2			
Unit 2	Lamarckism	2	2. Organic Evolution by Tomar & Singh	2.PDF	
	Darwinism , Neo –Darwinism	3			
Unit 3	Geological time scale	2	3. Evolution by Strickberger	3.Reference Notes	
	Fossil	2			
	Evolution of horse	2			
Unit 4	Natural selection	6			
Unit 5	Species concept	2			
	Isolation	3			
	Speciation	2			
	Adaptive radiation	3			
Unit 6	Evolution of man	2			
Unit 7	Population genetics: HardyWeinberg 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.	10	Organic Evolution by Dr. Veer Bala Rastogi		Dr.Sumallya Karmakar
Unit 8	Extinction	1	1.Organic Evolution by Dr. Veer Bala Rastogi	1. Class lecture	Suchona Chakraborty
Unit 9	Phylogenetic tree	2			

			2. Organic Evolution by Tomar & Singh	2.PDF	
			3. Evolution by Strickberger	3.Reference Notes	
Practical	Study of Fossil	14	Reference notes	1.Class lecture 2. Picture Slides 3.Reference Notes 4. Videos	Suchona Chakraborty
	Study of homoogy& analogy	6			
	Parsimony & Dendrogram	10			

LESSON PLAN, SEMESTER-VI (CBCS)
DEPARTMENT: ZOOLOGY
NAME OF FACULTY: DR. SUMALLYA KARMAKAR

Subject: Zoology Hons. /ZOOA

Paper: Animal Biotechnology: DSE (A)-6-2

Planned				After Implementation	
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
	Organization of <i>E.coli</i> and <i>Drosophila</i> genome.	5	Thieman W.J. and M.A. Palladino – Introduction to Biotechnology; Pearson	1. ICT 2. Chalk & Talk	
	Molecular Techniques in Gene manipulation Recombinant DNA technology, Restriction endonucleases. Cloning Vectors & their features: Plasmids, Phage vectors, Cosmids, Phagemids, BAC, YAC, and HAC. Shuttle and Expression Vectors. Construction of Genomic libraries and cDNA libraries Transformation techniques: Cloning in bacteria and detection technique of clone Agarose and Polyacrylamide Gel Electrophoresis, Southern, Northern and Western blotting, Polymerase chain reaction: Allele specific, RAPD & RT PCR, DNA Fingerprinting	23		1. ICT 2. Chalk & Talk	

	<p>Genetically Modified Organisms Production of cloned and transgenic animals: Nuclear Transplantation, Retroviral Method, DNA microinjection. Applications of transgenic animals: Production of pharmaceuticals, production of donor organs, knock-out mice</p>	12		<p>1. ICT 2. Chalk & Talk</p>	
	<p>Culture Techniques and Applications Animal cell culture, Expressing cloned genes in mammalian cells, Molecular diagnosis of 27 genetic diseases (Cystic fibrosis, Sickle cell anaemia, Thalassaemia). Dolly & Polly cloning Genetically modified economically important animal Gene Therapy</p>	10		<p>1. ICT 2. Chalk & Talk</p>	
Practical	<p>1. Genomic DNA isolation from E. coli and Plasmid DNA isolation (pUC 18/19) from E. coli 2. To study following techniques through photographs - Southern Blotting, Northern Blotting, Western Blotting, PCR, DNA fingerprinting 3. Project report on animal cloning & Application &</p>	60		Hands on Training	

	ethical Issues.				
--	-----------------	--	--	--	--

**LESSON PLAN, SEMESTER-VI (CBCS)
DEPARTMENT: ZOOLOGY
NAME OF FACULTY: DR. DEBJANI DAS GHOSH**

Subject: Zoology Hons. /ZOOA

Paper: Animal Behaviour and chronobiology: DSE (B)-6-1

	Unit / Group / Module / Article	Topics	Reference Books	No. Of lectures planned	Content delivery techniques	Remarks/ Comments
DSE(B)-6-1-TH ANIMAL BEHAVIOR	Unit1: PATTERNS OF BEHAVIOR	Stereotyped behaviours	Alcock: Animal behavior Dujatkin: Principles of animal behavior, R. Mathur: Animal behavior etc.	04	Chalk and talk, PDF study materials	Study materials and reference notes to be given
		Individual behavioral patterns		02		
		Instinct vs learned behavior, FAP, Associative learning		01		
		Classical and operant conditio		02		

		ning				
		Habituation, imprinting		01		
UNIT2: SOCIAL AND SEXUAL BEHAVIOUR		Social organization in termites ; Communication	Alcock: Animal behaviour, Dujatkin: Principles of animal behaviour, R. Mathur: Animal behaviour etc.	02	Chalk and talk, PDF study materials	
		Social behavior: altruism and cooperation and selfishness		04		
		Sexual behavior		06		
		Kinship theory: related		05		

		news and inclusive fitness				
		parental care in fishes		01		
		Conflict within families		02		
	UNIT 3: CHRONO BIOLOGY AND BIOLOGICAL RHYTHMS	Types and characteristics of biological rhythms , Circadian rhythm	V. Kumar: Biological rhythms, Dunlap et al: Chronobiology biological timekeeping etc.	04	Chalk and talk, PDF study materials	Study materials and reference notes to be given
		Tidal and lunar rhythm		02		
		Circannual		02		

		rhythms				
		Photic and non photic zeitgebers		02		
		Role of melatonin		02		
		Biological clock and its adaptive significance		04		
		Circannual rhythms in bird migration		04		
DSE(B)-6-1-P ANIMAL BEHA	1.TO STUDY NESTS AND NESTING HABITS OF BIRDS AND SOCIAL INSECTS	Sinha, Chatterjee and Chattopaadhyay: Advanced practical		05	Hands on experiment and study materials	Study materials and reference notes to be given

VIOR		Zoology etc.		
	2.TO STUDY THE BEHAVIORAL RESPONSES IF WOOD LICE TO DRY AND HUMID CONDITIONS	Sinha, Chatterjee and Chattopaadhya ay: Advanced practical Zoology etc	05	Hands on experiment and study materials
	3.TO STUDY GEOTAXIS BEHAVIOR IN EARTHWORM	Sinha, Chatterjee and Chattopaadhya ay: Advanced practical Zoology etc.	05	Hands on experiment and study materials
	4.TO STUDY PHOTOTAXIS BEHAVIOR IN INSECT LARVAE	Sinha, Chatterjee and Chattopaadhya ay: Advanced practical Zoology etc	05	Hands on experiment and study materials
	5.VISIT TO FOREST/WILDLIFE SANCTUARY/BIODIVERSITY PARK/ZOOLOGICAL PARK TO STUDY BEHAVIOURAL ACTIVITIES OF	Based on field study report is prepared by each student and framework and guidance is given for entire field trip and report	08Days (8*5=40hrs)	Study materials

	ANIMALS	preparation			
--	----------------	--------------------	--	--	--

LESSON PLAN, SEMESTER-VI (CBCS)

DEPARTMENT: ZOOLOGY
NAME OF FACULTY: DR. SUCHARITA SAHA

Subject: Zoology General/ZOOG

Paper: Ecology and Wildlife Biology: DSE (B)-6-2

Planned			After Implementation		
Unit / Group / Module / Article	Topics	No of Lecture Planned	Reference Books	Content Delivery Technique	Remarks / Comments
Unit 1	<u>Introduction to Ecology</u> Ecosystem, Autecology and synecology, levels of organization, laws of limiting factors, Study of Physical factors, the Biosphere	4	1. Roy, M. (2018). Perspectives in Ecology, Kalyani Printings, ISBN: 978-93-272-9087-5	Chalk and Talk, Link share	Dr. Sucharita Saha
Unit 2	<u>Population</u> Attributes of population : life tables, fecundity tables, Survivorship curves, dispersal and dispersion Growth patterns and equations: Exponential and logistic growth Population regulation: Density-dependent and independent factors	20			
Unit 3	<u>Community</u> Community characteristics: species diversity, abundance,	11			

	dominance, vertical stratification Ecotone and edge-effect				
Unit 4	<u>Ecosystem</u> Types of ecosystem with an example in details Food-chain : Definition and types-detritus and grazing food-chain, Linear and Y-shaped food-chains Food-web: Definition and types Energy flow: Models of energy flow Ecological pyramids: definition, Types with examples Ecological efficiencies	10			
Unit 5	<u>Wildlife</u> Necessity of wild life conservation Wild-life conservation (in-situ and ex-situ) Concept of protected areas : National parks and Sanctuaries Tiger conservation-Tiger reserves in India, management and challenges in Tiger reserves	5			
Practical	a) Identification of flora, mammalian fauna, avian fauna	10	1. Ghosh, K.C., Manna, B.-- Practical Zoology, NCBA	Chalk and talk, Specimen and instrument display, photograph display	Dr. Sucharita Saha

	b) Demonstration of basic equipments needed in wild life study, their use, care and maintenance (compass, binoculars, spotting scope, range finders, Global Positioning system, various types of cameras and lenses)	10	2. Roy, M. (2018). Perspectives in Ecology, Kalyani Printings, ISBN: 978-93-272-9087-5	
	c) Familiarisation and study of animal evidences in the field; identification of animals through pug marks, hoof marks, scats, pellet groups, nests, antlers etc.	10		
	d) Study of an aquatic ecosystem : Phytoplanktons and Zooplanktons, Measurement of area, temperature, salinity	30		
	e) determination of pH and dissolved oxygen content (Winkler's method), chemical oxygen demand and free carbon-di-oxide			

LESSON PLAN SEMESTER-VI (CBCS)

DEPARTMENT: ZOOLOGY

NAME OF FACULTY: DR. SUCHARITA SAHA, Dr. DEBJANI DASGHOSH, Suchona Chakraborty

Subject: Zoology General/ZOOG

Paper: Medical diagnostics: Sec-B-1

<u>Planned</u>				<u>After Implementation</u>	
<u>Unit / Group / Module / Article</u>	<u>Topics</u>	<u>No of Lecture Planned</u>	<u>Reference Books</u>	<u>Content Delivery Technique</u>	<u>Remarks / Comments</u>
Unit 1	<u>Diagnostics methods used for analysis of blood</u> Blood composition, preparation of blood smear and DLC using Leishman stain, platelet count using haemocytometer, ESR				Dr. Sumallya Karmakar
Unit 2	<u>Diagnostic methods used for urine analysis</u> Physical characteristics, Abnormal constituents, Urine culture	4		Chalk and Talk, Link share	Dr. Sucharita Saha
Unit 3	<u>Non-Infectious Diseases</u> <u>Diabetes: type I and II</u> <u>Hypertension</u> <u>Testing of blood glucose</u>	6	Tortora and Derrickson: Principles of anatomy and physiology, Web Materials etc.	PPT, study materials and chalk and talk	Dr. Debjani DasGhosh
Unit 4	<u>Infectious Disease</u> Tuberculosis, Hepatitis, Malaria	3		1. Class lecture 2. PDF 3. Reference Notes	Suchona Chakraborty

Unit 5	<u>Clinical Biochemistry</u> Lipid profiling, Liver function test, PSA test	1		Chalk and Talk, Link share	Dr. Sucharita Saha
Unit 6	<u>Clinical Microbiology</u> Abiotic Sensitivity Test	1		1.Class lecture 2.PDF 3.Reference Notes	Suchona Chakraborty
Unit 8	<u>Tumours</u> Types (benign/malignant), detection and metastasis, medical imaging, x-ray of bone fracture				<u>Sumallya Karmakar</u>
Unit 9	Visit to Pathological Lab	5			Suchona Chakraborty