BARRACKPORE RASTRAGURU SURENDRANATH COLLEGE

Department of Zoology

ACADEMIC CALENDER_CBCS

Session 2018-2019

Zoology (Core)

Semester I : ZOOACOR01T (Theory, 4 credits= 60 classes): Non-Chordates

Faculty: Dr. Debratna Mukhopadhyay

Paper Units	**Course Content**	**Credit-4 credits**	**Lectures/ Teaching Hours:60**	**July (3 weeks) Lectures/ Hours: 12**	**August (4 weeks) Lectures/Hours: 16**	**September (4 weeks) Lectures/ Hours: 16**	**October (2 weeks) Lectures/ Hours: 8**	**November (2 weeks) Lectures/ Hours: 8**	**December (2 weeks) Lectures/ Hours: 8**
Unit 1:	**Protista, Parazoa and Metazoa** General characteristics and Classification up to classes Study of *Euglena*, *Amoeba* and *Paramoecium* Life cycle and pathogenicity of *Giardia intestinalis*, *Leishmania donovani*, *Entamoeba histolytica* and *Plasmodium vivax* Locomotion and Reproduction in Protista Evolution of symmetry and segmentation of Metazoa		**19 classes**	**12**	**7**				
Unit 2:	**Porifera** General characteristics and Classification up to classes Canal system and spicules in sponges		**7 classes**		**7**				

Unit 3:	**Cnidaria** General characteristics and Classification up to classes Metagenesis in *Obelia* Polymorphism in Cnidaria Corals and coral reefs: types, formation, distribution, conservation significance		**12 classes**		**2**	**10**			
Unit 4:	**Ctenophora** General characteristics		**4 Classes**			**4**			
MID SEM EXAM (September) 1 week (2 hours)						**2**			
Unit 5:	**Platyhelminthes** General characteristics and Classification up to classes Life cycle and pathogenicity of *Fasciola hepatica* and *Taenia solium*		**10 Classes**				**4**	**6**	
SEM- 1 FIELD EXCURSION (October): 1 week (4 lecture hours)							**4**		
Unit 6:	**Nemathelminthes** General characteristics and Classification up to classes Life cycle, and pathogenicity of *Ascaris lumbricoides, Ancylostoma duodenale and Wuchereria bancrofti* Parasitic adaptations in helminths Origin and evolution of parasitic helminths		**8 Classes**					**2**	**6**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester I : ZOOACOR01P (Lab, 2 credits= 60 classes): Non-Chordates I Lab (Practical)
Faculty: Dr. Debratna Mukhopadhyay

Paper Units	Course Content	Credit: 2credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
1.	Study of whole mount of *Euglena, Amoeba and Paramoecium*, Binary fission and Conjugation in *Paramoecium*		**8 classes**	**8**					
2.	Examination of freshwater pond water collected from different places for diversity of protists in it.		**8 classes**	**4**	**4**				
3.	Study of Sycon (T.S. and L.S.), *Hyalonema, Euplectella, Spongilla*		**4 classes**		**4**				
4	Study of *Obelia, Physalia, Millepora, Aurelia, Tubipora, Corallium, Alcyonium, Gorgonia, Metridium, Pennatula, Fungia, Meandrina, Madrepora*		**14 classes**		**8**	**6**			
5	One specimen/slide of any Ctenophore		**2 Classes**			**2**			
MID SEM EXAM (September) 1 week (4 hours)						**4**			
SEM- 1 FIELD EXCURSION (September/October): 1 week (8 lecture hours) Project Report on any related topic on pond water protozoan or invertebrate diversity/ life cycles of mosquitoes, butterfly/moth etc /coral and coral reefs**.**						**4**	**8**		
6	Study of adult *Fasciola hepatica, Taenia solium* and their life cycles (Slides/microphotographs)		**8 Classes**					**8**	
7	Study of adult *Ascaris lumbricoides* and its life stages (Slides/micro-photographs)		**8 Classes**						**8**

END SEM EXAM (December/January): Central Grand Viva	

Semester I ZOOACOR02T (Theory, 4 credits= 60 classes): Ecology
Faculty: Dr. Sandip Pal

Paper Units	Course Content	Credit- 4 credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
Unit 1:	**Introduction to Ecology** History of ecology, Autecology and synecology, Levels of organization, Laws of limiting factors, Study of Physical factors, The Biosphere.		**4 classes**	**4**					
Unit 2:	**Population** Unitary and Modular populations Unique and group attributes of population: Demographic factors, life tables, fecundity tables, survivorship curves, dispersal and dispersion. Geometric, exponential and logistic growth, equation and patterns, r and K strategies Population regulation - density-dependent and independent factors Population Interactions, Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition.		**20 classes**	**8**	**12**				

Unit 3:	**Community** Community characteristics: species diversity, abundance, dominance, richness, Vertical stratification, Ecotone and edge effect. Ecological succession and one example of it.		**12 classes**		**4**	**8**			
MID SEM EXAM (September) 1 week (2 hours)						**2**			
Unit 4:	**Ecosystem** Types of ecosystem Food chain: Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow Ecological pyramids Ecological efficiencies Nutrient and biogeochemical cycle		**14 classes**			**6**	**4**	**4**	
SEM- 1 FIELD EXCURSION (October): 1 week (4 lecture hours)							**4**		
Unit 5:	**Applied Ecology** Wildlife Conservation (in-situ and ex-situ conservation). Management strategies for tiger conservation; Wild life protection act (1972)		**10 classes**					**4**	**6**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester I : ZOOACOR02P (Lab, 2 credits= 60 classes): Ecology Lab (Practical)
Faculty: Dr. Sandip Pal

Paper Units	Course Content	Credit: 2credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
1.	1. Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data provided		**12 classes**	**12**					
2.	Determination of population density of a natural/hypothetical population. Study of species diversity of a community by quadrat or any other suitable sampling method and calculation of Shannon-Weiner diversity index for the same community.		**16 classes**	**4**	**16**				
3.	3. Study of an aquatic ecosystem: Sampling of Phytoplankton and zooplankton, Measurements of temperature, turbidity/penetration of light, determination of pH, and Dissolved Oxygen content (Winkler's method), Chemical Oxygen Demand and free CO2.		**16 classes**			**8**		**8**	
MID SEM EXAM (September) (8 hours)						**8**			
4	Excursion: Visit to a National Park/Wild life sanctuary/ any other Protected Forests within West Bengal. Report (including the actual field diary) on the study of the landscape and habitat features, Types of Forests, Major Flora and Fauna, Man-animal conflicts and other problems, Management and conservation measures		**16 classes**				**8**		**8**

END SEM EXAM (December/January): Central Grand Viva	

GE COURSES
Semester I: ZOOHGEC01T: Animal Diversity Theory (Credits 4)
Faculty: Dr. Papri Saha & Supratick Seal

Paper Units	Course Content	Credit-4 credits	Lectures/ Teaching Hours:50	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
Unit 1:	Kingdom Protista		3classes	3					
Unit 2:	Phylum Porifera		3 classes	3					
Unit 3:	Phylum Cnidaria		3 classes		3				
Unit 4:	Phylum Platyhelminthes		3 Classes		3				
Unit 5:	Phylum Nematoda		3 Classes		3				
Unit 6:	Phylum Annelida		3 Classes			3			
Unit 7	Phylum Arthropoda		5 Classes			5			
MID SEM I exam (September)						4			
Unit-8	Phylum Mollusca		3 Classes				3		
Unit-9	Phylum Echinodermata		4 Classes				2	2	

Unit-10	**Protochordates**		**2 Classes**	**2**					
Unit-11	**Agnatha**		**2 Classes**	**2**					
Unit-12	**Pisces**		**3 Classes**	**2**	**1**				
Unit-13	**Amphibia**		**3 Classes**		**3**				
Unit-14	**Reptiles**		**4 Classes**					**4**	
Unit-15	**Aves**		**3 Classes**				**3**		
Unit-16 als	**Mammals**		**3 Classes**					**2**	**1**
	Preparation (Remedial/Tutorial)								**9**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester I ZOOHGEC01P :Animal Diversity Lab(Credits 2) (Practical):
Faculty: Dr. Papri Saha & Supratick Seal

Paper Units	Course Content	Credit: 2credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
1.	**Spot identification**		**24 classes**	**12**	**12**				
2.	Study of male and female *Ascaris*		**12 classes**		**4**	**8**			
MID SEM EXAM (September) (4 hours)						**4**			
3.	Identification of poisonous and non-poisonous snakes		**12 classes**			**4**	**8**		
4	An "animal album"		**12 classes**					**8**	**4**
END SEM EXAM (December/January): 4 hours									**4**

Semester II ZOOACOR03T (Theory, 4 credits= 60 classes): Non-Chordates II
Faculty: Dr. Debratna Mukhopadhyay

Paper Units	Course Content	Credit- 4 credits	Lectures/ Teaching Hours:60	January (2 weeks) Lectures/ Hours: 8	February (3 weeks) Lectures/Hours: 12	March (3 weeks) Lectures/ Hours: 12	April (3 weeks) Lectures/ Hours: 12	May (3 weeks) Lectures/ Hours: 12	June (2 weeks) Lectures/ Hours: 8
Unit 1:	**Introduction to Coelomates** Evolution of coelom and metamerism		**2 classes**	**2**					
Unit 2:	**Annelida** General characteristics and Classification up to classes Excretion in Annelida		**4 classes**	**4**					
Unit 3:	**Arthropoda** General characteristics and Classification up to classes Vision and Respiration in Arthropoda Metamorphosis in Insects Social life in bees and termites		**16 classes**	**2**	**12**	**2**			
Unit 4:	**Onychophora** General characteristics and Evolutionary significance		**4 Classes**			**4**			
MID SEM EXAM (September) 1 week (2 hours)						**2**			
Unit 5:	**Mollusca** General characteristics and Classification up to classes Respiration in Mollusca Torsion and detorsion in Gastropoda Pearl formation		**12 Classes**			**4**	**8**		

	in bivalves Evolutionary significance of trochophore larva								
Unit 6:	**Echinodermata** General characteristics and Classification up to classes Water-vascular system in Asteroidea Larval forms in Echinodermata Affinities with Chordates		**12 Classes**				**4**	**8**	
	Hemichordata General characteristics of phylum Hemichordata. Phylogenetic relationship with non-chordates and chordates (only recent concept)*		**10 classes**					**4**	**6**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester II ZOOACOR03P (Practicals, 2 credits = 60 classes): Non-Chordates II Lab
Faculty: Dr. Debratna Mukhopadhyay

Paper Units	**Course Content**	**Credit: 2credits**	**Lectures/ Teaching Hours:60**	**January (2 weeks) Lectures/ Hours: 12**	**February (4 weeks) Lectures/Hours: 16**	**March (4 weeks) Lectures/ Hours: 16**	**April (2 weeks) Lectures/ Hours: 8**	**May (2 weeks) Lectures/ Hours: 8**	**June (2 weeks) Lectures/ Hours: 8**
1.	**Study of following specimens**: Annelids - *Aphrodita, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria* Arthropods - *Limulus, Palamnaeus, Palaemon, Daphnia, Balanus, Sacculina, Cancer, Eupagurus, Scolopendra,*		**20 classes**	**12**	**8**				

	Julus, Bombyx, Periplaneta, termites and honey bees Onychophora - *Peripatus* Molluscs - *Chiton, Dentalium, Pila, Doris, Helix, Unio, Ostrea, Pinctada, Sepia, Octopus, Nautilus* Echinodermates - *Pentaceros/Asterias, Ophiura, Clypeaster, Echinus, Cucumaria and Antedon* Hemichordates- *Saccoglossus*								
2.	Digestive system, septal nephridia and pharyngeal nephridia of earthworm 3. T.S. through pharynx, gizzard, and typhlosolar intestine of earthworm		**12 classes**		**8**	**4**			
MID SEM EXAM (September) 1 week (4 hours)						**4**			
3.	Mount of mouth parts and dissection of digestive system and nervous system of Periplaneta 5.		**12 classes**			**8**	**4**		
4	To submit a Project Report (mostly literature review) on any related topic to larval forms (crustacean, mollusc and echinoderm)		**16 classes**				**4**	**8**	**4**
5	**Revision and Checking Project Report**								**4**
END SEM EXAM (December/January): Central Grand Viva									

Semester II ZOOACOR04T (Theory, 4 credits= 60 classes): Cell Biology
Faculty: Dr. Sujata De Chaudhuri

Paper Units	Course Content	Credit-4 credits	Lectures/ Teaching Hours:60	January (2 weeks) Lectures/ Hours: 8	February (3 weeks) Lectures/Hours: 12	March (3 weeks) Lectures/ Hours: 12	April (3 weeks) Lectures/ Hours: 12	May (3 weeks) Lectures/ Hours: 12	June (2 weeks) Lectures/ Hours: 8
Unit 1:	**Overview of Cells** Prokaryotic and Eukaryotic cells, Virus, Viroids, Mycoplasma, Prions		**8 classes**	**8**					
Unit 2:	**Plasma Membrane** Various models of plasma membrane structure Transport across membranes: Active and Passive transport, Facilitated transport Cell junctions: Tight junctions, Desmosomes, Gap junctions Extracellular Matrix-Cell Interactions		**10 classes**		**10**				
Unit 3:	**Endomembrane System** Structure and Functions: Endoplasmic Reticulum, Golgi Apparatus, Lysosomes		**4 classes**		**2**	**2**			
MID SEM EXAM (September) 1 week (2 hours)						**2**			
Unit 4:	**Mitochondria and Peroxisomes** Mitochondria: Structure, Semi-autonomous nature, Endosymbiotic hypothesis Mitochondrial Respiratory Chain, Chemi-osmotic hypothesis Peroxisomes		**4 Classes**			**4**			
Unit 5:	**Cytoskeleton** Structure and Functions: Microtubules,		**4 Classes**			**4**			

	Microfilaments and Intermediate filaments								
Unit 6:	**Nucleus** Structure of Nucleus: Nuclear envelope, Nuclear pore complex, Nucleolus Chromatin: Euchromatin and Heterochromatin and packaging (nucleosome)		**10 Classes**				**10**		
	Cell Division Mitosis and Meiosis Cell cycle and its regulation Cancer (Concept of oncogenes and tumor suppressor genes) Mechanisms of cell death: brief overview		**10 classes**				**2**	**8**	
Unit 7:	**Cell Signaling** Cell signalling transduction pathways; Types of signaling molecules and receptors GPCR and Role of second messenger (cAMP)		**10**					**4**	**6**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester II ZOOACOR04P (Practicals, 2 credits = 60 classes): Cell Biology Lab
Faculty: Dr. Sujata De Chaudhuri

Paper Units	Course Content	Credit: 2credits	Lectures/ Teaching Hours:60	January (2 weeks) Lectures/ Hours: 8	February (3 weeks) Lectures/Hours: 12	March (3 weeks) Lectures/ Hours: 12	April (3 weeks) Lectures/ Hours: 12	May (3 weeks) Lectures/ Hours: 12	June (2 weeks) Lectures/ Hours: 8
1.	Preparation of temporary stained squash of onion root tip to study various stages of mitosis		**12 classes**	**8**	**4**				
2.	Study of various stages of meiosis (in pre-prepared slides and/or in photographs obtained from websites).		**12 classes**		**8**	**4**			
MID SEM EXAM (September) 1 week (4 hours)						**4**			
3.	Preparation of permanent slide to show the presence of Barr body in human female blood cells/cheek cells.		**12 classes**			**4**	**8**		
4	Preparation of permanent slide to demonstrate: a. DNA by Feulgen reaction b. Mucopolysaccharides by PAS reaction c. Proteins by Mercurobromophenol blue/Fast Green		**16 classes**				**4**	**12**	
5	Cell viability study by Trypan Blue staining		**8**						**8**
END SEM EXAM (December/January): Central Grand Viva									

GE COURSES

Semester II: ZOOHGEC02T, Physiology and Biochemistry Theory (Credits 4)
Faculty: Dr. Papri Saha & Supratick Seal

Paper Units	Course Content	Credit-4 credits	Lectures/ Teaching Hours:50	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
Unit 1:	Nerve and muscle		8classes	3					
Unit 2:	Digestion		5 classes	3					
Unit 3:	Respiration		5 classes		3				
Unit 4:	Excretion		5 Classes		3				
Unit 5:	Cardio vascular System		6 Classes		3				
Unit 6:	Reproduction and Endocrine glands		7 Classes			3			
Unit 7	Carbohydrate: Structure and Metabolism		8 Classes			5			
MID SEM I exam (September)						4			
Unit-8	Lipid: Structure and Metabolism		5 Classes				3		
Unit-9	Protein: Structure and Metabolism		5 Classes				2	2	
Unit-10	Enzymes		4 Classes	2					
END SEM EXAM (December): 1 week (2 Lecture hours)									2

Semester II ZOOHGEC02P: Physiology and Biochemistry Lab (Credits 2)

Faculty:Dr. Papri Saha & Supratick Seal

Paper Units	Course Content	Credit: 2credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
1.	Preparation of Haemin Crystals		8 classes	8					
2.	Identification of Histological tissues		12 classes	4	8				
3.	Qualitative tests for carbohydrates		16 classes		8	8			
MID SEM EXAM (September) (4 hours)						4			
4	Quantitative estimation of Proteins		16 classes			4	8	4	
5	Study of salivary amylase		8 Classes					4	4
END SEM EXAM (December/January): 4 hours									4

Semester III

ZOOACOR05T (Theory, 4 credits= 60 classes): Chordates

Faculty: Dr. Sujata De Chaudhuri

Paper Units	Course Content	Credit-4 credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
Unit 1:	**Introduction to Chordates** General characteristics and outline classification of Phylum Chordata		**2 classes**	**2**					
Unit 2:	**Protochordata** General characteristics and classification of sub-phylum Urochordata and Cephalochordata up to Classes. Metamorphosis in Ascidia Chordate Features and Feeding in Branchiostoma		**8 classes**	**8**					
Unit 3:	**Origin of Chordata** Dipleurula concept and the Echinoderm theory of origin of chordates Advanced features of vertebrates over Protochordata		**4 classes**	**2**	**2**				
Unit 4:	**Agnatha** General characteristics and classification of cyclostomes up to order		**2 Classes**		**2**				

Unit 5:	**Pisces** General characteristics and classification of Chondrichthyes and Osteichthyes up to Subclasses Accessory respiratory organ, migration and parental care in fishes Swim bladder in fishes. Classification up to Sub-Classes		**10 Classes**		**10**				
Unit 6:	**Amphibia** General characteristics and classification up to living Orders Metamorphosis and parental care in Amphibia		**6 Classes**		**2**	**4**			
Unit 7:	**Reptilia** General characteristics and classification up to living Orders Poison apparatus and Biting mechanism in Snake		**6 Classes**			**6**			
Unit 8:	**Aves** General characteristics and		**6 Classes**			**4**	**2**		

	classification up to Sub-Classes Exoskeleton and migration in Birds Principles and aerodynamics of flight								
MID SEM EXAM (September) 1 week (2 hours)						**2**			
Unit 9:	**Mammals** General characters and classification up to living orders Phylogenetic significance of Prototheria Exoskeleton derivatives of mammals Adaptive radiation in mammals with reference to locomotory appendages Echolocation in Microchiropterans and Cetaceans		**10 Classes**				**6**	**4**	
Unit 10:	**Zoogeography** Zoogeographical realms, Plate tectonic and Continental drift theory, Distribution of birds and mammals in different		**6 Classes**					**4**	**2**

	realms								
Revision									**4**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester III
ZOOACOR05P (Practicals, 2 credits= 60 classes): Chordates Lab
Faculty: Dr. Sujata De Chaudhuri

Paper Units	**Course Content**	**Credit: 2credits**	**Lectures/ Teaching Hours:60**	**July (3 weeks) Lectures/ Hours: 12**	**August (4 weeks) Lectures/Hours: 16**	**September (4 weeks) Lectures/ Hours: 16**	**October (2 weeks) Lectures/ Hours: 8**	**November (2 weeks) Lectures/ Hours: 8**	**December (2 weeks) Lectures/ Hours: 8**
1.	**Protochordata** *Herdmania, Branchiostoma*, Colonial Urochordates; Sections of Balanoglossus through proboscis and branchiogenital regions, Sections of Amphioxus through pharyngeal, intestinal and caudal regions, *Herdmania* spicules		**8 classes**	**8**					
2.	**Agnatha** *Petromyzon, Myxine*		**2 classes**	**2**					
3.	**Fishes** Scoliodon, Sphyrna, Pristis, Torpedo, Chimaera, Mystus, Heteropneustes, Labeo, Exocoetus, Echeneis, Anguilla, Hippocampus, Tetraodon, Anabas, Flat fish		**10 classes**	**2**	**8**				

4	**Amphibia** Ichthyophis/Ureotyphlus, Necturus, Bufo, Hyla, Alytes, Salamandra		**4 classes**		**4**				
5	**Reptilia** Chelone, Trionyx, Hemidactylus, Varanus, Uromastix, Chamaeleon, Ophiosaurus, Draco, Bungarus, Vipera, Naja, Hydrophis, Zamenis, Crocodylus Key for Identification of poisonous and non-poisonous snakes		**16 Classes**		**4**	**12**			
MID SEM EXAM (September) 1 week (4 hours)						**4**			
6	**Aves** Study of six common birds from different orders (Stork, Owl/Falcon, Sun Bird, Jacanna, Duck)- types of beaks and claws		**4 Classes**				**4**		
7	**Mammalia** Sorex, Bat (Insectivorous and Frugivorous), Funambulus, Loris, Herpestes, Erinaceous		**4 Classes**				**4**		
8	Mount of weberian ossicles of Mystus or Grass Carp, Pecten from Fowl head, Dissection of Fowl head/ Power point presentation on study of any two animals from two different classes by students (may be included if dissections		**12 Classes**					**8**	**4**

	not given permission)								
Project Report Checking									**4**
END SEM EXAM (December/January): Central Grand Viva									

Semester III

ZOOACOR06T (Theory, 4 credits= 60 classes): Physiology: Controlling and Coordinating Systems

Faculty: Dr. Sandip Pal

Paper Units	**Course Content**	**Credit-4 credits**	**Lectures/ Teaching Hours:60**	**July (3 weeks) Lectures/ Hours: 12**	**August (4 weeks) Lectures/Hours: 16**	**September (4 weeks) Lectures/ Hours: 16**	**October (2 weeks) Lectures/ Hours: 8**	**November (2 weeks) Lectures/ Hours: 8**	**December (2 weeks) Lectures/ Hours: 8**
Unit 1:	**Tissues** Structure, locations, classification and functions of epithelial tissues, connective tissues, muscular tissues and nerve tissues		**6 classes**	**6**					
Unit 2:	**Bone and Cartilage** Structure and types of bones and cartilages, Ossification		**4 classes**	**4**					
Unit 3:	**Nervous System** Structure of neuron, resting membrane potential, Origin of action potential and its propagation across the myelinated and unmyelinated nerve fibers; Types of synapse, Synaptic transmission and		**10 classes**	**2**	**8**				

	Neuromuscular junction; Reflex action and its types								
Unit 4:	**Muscular system** Histology of different types of muscle; Ultra structure of skeletal muscle; Molecular and chemical basis of muscle contraction; Characteristics of muscle fiber		**10 Classes**		**8**	**2**			
Unit 5:	**Reproductive System** Histology of testis and ovary; Physiology of Reproduction		**6 Classes**			**6**			
MID SEM EXAM (September) 1 week (2 hours)						**2**			
Unit 6:	**Endocrine System** Histology and function of pituitary, thyroid, pancreas and adrenal; Classification of hormones; Mechanism of Hormone action; Signal transduction pathways for Steroidal and Non steroidal hormones; Hypothalamus (neuroendocrine gland) - principal nuclei involved in neuroendocrine control of anterior pituitary and endocrine system; Placental hormones		**24 Classes**			**6**	**8**	**8**	**2**
Revision									**4**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester III
ZOOACOR06P (Practicals, 2 credits= 60 classes): Physiology: Controlling and Coordinating Systems) Lab
Faculty: Dr. Sandip Pal

Paper Units	Course Content	Credit: 2credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
1.	Recording of simple muscle twitch with electrical stimulation (or Virtual)		**12 classes**	**12**					
2.	Preparation of temporary mounts: Squamous epithelium, Striated muscle fibers and nerve cells		**16 classes**		**16**				
3.	Study of permanent slides of Mammalian skin, Cartilage, Bone, Spinal cord, Nerve cell, Pituitary, Pancreas, Testis, Ovary, Adrenal, Thyroid		**16 classes**			**12**	**4**		
MID SEM EXAM (September) 1 week (4 hours)						**4**			
4	Microtomy: Preparation of permanent slide of any five (lung, salivary gland, stomach, small intestine, large intestine only) mammalian (white rat) tissues		**16 classes**				**4**	**8**	**4**

Revision									**4**
END SEM EXAM (December/January): Central Grand Viva									

Semester III GE Courses ZOOHGEC03T: Insect, Vectors and Diseases Theory (Credits4)
Faculty:Dr. Papri Saha & Supratick Seal

Paper Units	Course Content	Credit-4 credits	Lectures/ Teaching Hours:60	July (3 weeks) Lectures/ Hours: 12	August (4 weeks) Lectures/Hours: 16	September (4 weeks) Lectures/ Hours: 16	October (2 weeks) Lectures/ Hours: 8	November (2 weeks) Lectures/ Hours: 8	December (2 weeks) Lectures/ Hours: 8
Unit 1:	**Introduction to Insects** General Features of Insects, Morphological features, Head – Eyes, Types of antennae, Mouth parts with respect to feeding habit		**6 classes**	**6**					
Unit 2:	**Concept of Vectors** Brief introduction to Vectors (mechanical and biological), Reservoirs, Host-vector relationship, Adaptations as vectors, Host specificity		**6 classes**	**6**					
Unit 3:	**Insects as Vectors**		**8 classes**		**8**				

	Detailed features of insect orders as vectors– Diptera, Siphonoptera, Siphunculata, Hemiptera								
Unit 4:	**Dipteran as Disease Vectors** Study of important Dipteran vectors– Mosquitoes, Sand fly, Houseflies Study of mosquito-borne diseases – Malaria, Dengue, Chikungunya, Viral encephalitis, Filariasis Control of mosquitoes		**20Classes**		**8**	**12**			
Unit 5:	**Siphonaptera as Disease Vectors** Fleas as important insect vectors; Host-specificity of fleas; Study of Flea-borne disease– Plague, Typhus fever s; Control		**8 Classes**			**2**	**6**		
MID SEM EXAM (September) 1 week (2 hours)						**2**			
Unit 6:	**Siphunculata as Disease Vectors** Human louse (Head, Body and Pubic louse) as importa insect vectors; Control of human louse		**6 Classes**				**2**	**4**	
Unit 7			**6 Classes**					**4**	**2**

	Hempitera as Disease Vectors Bugs as insect vectors; Blood-sucking bu; Chagas disease, Bed bugs as mechanical vectors, Control and prevention measures								
Revision									**4**
END SEM EXAM (December): 1 week (2 Lecture hours)									**2**

Semester IIIZOOHGEC03P: Insec t Vectors and Diseases Lab (Credits 2)
Faculty:Dr. Papri Saha & Supratick Seal

Paper Units	**Course Content**	**Credit: 2credits**	**Lectures/ Teaching Hours:60**	**July (3 weeks) Lectures/ Hours: 12**	**August (4 weeks) Lectures/Hours: 16**	**September (4 weeks) Lectures/ Hours: 16**	**October (2 weeks) Lectures/ Hours: 8**	**November (2 weeks) Lectures/ Hours: 8**	**December (2 weeks) Lectures/ Hours: 8**
1.	Mounting and Study of different kinds of mouth parts of insects		**12 classes**	**12**					
2.	Spot identification of following insect vectors through permanent slides/photographs:*Aedes*,*Culex*, *Anopheles*, *Pediculus humanuscapitis*, *Pediculus humanuscorporis*, *Phithiruspubis*, *Xenopsylla cheopis*, *Cimex lectularius*, *Phlebotomus argentipes*, *Musca domestica*		**16 classes**		**16**				

3.	Study of different diseases transmitted by above insect vectors		**16 classes**			**12**	**4**		
MID SEM EXAM (September) 1 week (4 hours)						**4**			
4	Submission of a project report on any one of the insect vectors and disease transmitted		**16 classes**				**4**	**8**	**4**
Revision									**4**
END SEM EXAM (December/January): Central Grand Viva									