Egra S.S.B. College
Department of Zoology
B.Sc Hns (MI & GE)
Session - 2023-2024

Sem – I

Paper	Teacher	Detailed Syllabus
MI 1 T: Diversity of Life-Protists to Chordates	**Mr. Santosh Kumar Bera**	**Unit 1. Products of evolutionary process** Origin of life on Earth Symmetry; Cellularity; Types & evolution of Germinal layer & Body cavity; Concept with special reference to types of coeloms, protostome & deuterostome. **Unit 2. Basics of systematics & classification** Definition, relationship & utility of Systematics, Taxonomy & Classification; Taxonomic hierarchy; Zoological Nomenclature – utility, principles & codes; Six kingdom classification; Concept of major & minor phyla
	Mr. Chandan Nandi (CN)	**Unit 3. Diversity in Protists** General characteristics and classification of subkingdom Protozoa upto phyla (Levine et.al, 1981),
	Mrs. Debasish Maity (D.M)	**Unit 4. Diversity in acoelomate Metazoa** General characteristics and classification upto classes: Porifera, Cnidaria, Ctenophora, & Platyhelminthes (Rupert & Barnes, 1994) Coelenterata – comparison between cnidarian and Ctenophora

	Mr. Debkumar Sahoo (D.S)	**Unit 5. Diversity in pseudocoelomate and coelomate Non chordates** Basic organizations with reference to adaptive radiation in roundworm General characteristics and classification of Annelida, Arthropoda, Mollusca & Echinodermata upto class (Rupert & Barnes, 1994) Basic organization & diversity in arthropods with special reference concept of appendage evolution; Adaptive radiations in Crustacea, Chelicerata & Insecta Basic organization and diversity in Mollusca with reference to torsion in mollusca with respect to disruption of bilateral symmetry & its significance General characteristics & evolutionary significance of Onychophora **Unit 6. Diversity in Hemichordata & lower Chordates** Characteristics features of Phylum Hemichordata & Chordata; Concept of protochordates & vertebrates; Evolutionary status & affinities of Hemichordata
	Mr. Prabad Pratim Pal (P.P.P)	**Unit 7. Diversity in vertebrates**: Anamniotes Basic organization and diversity of fishes with reference to aquatic adaptation Classification of Chondrichthyes & Osteichthyes upto subclasses (Romer 1959) Emergence of land vertebrates Classification of Amphibia upto order (Duellman & Trueb, 1986) **Unit 8. Diversity in vertebrates**: Amniotes Classification of Reptilia upto living order, Aves upto subclasses & Mammalia upto living order (Young, 1981) Concept of volant, arboreal, cursorial, fossorial & secondary aquatics adaptations Features of venomous & non venomous snake, distribution & type of snake venom withg antidote in India Features of flying birds & running birds

MI 1 P: Diversity of Life-Protists to Chordates	**Mr. Santosh Kumar Bera & Mr. Prabad Pratim Pal**	Practical 1. Basic requirements for laboratory work: Knowledge about the parts of microscope with their function & setting of microscopes. 2. Study of animals through identification of models, photographs, slides and museum specimens in the laboratory with details on their classification upto phylum/class/subclass/order as indicated in theory, with importance and diagnostic features: ⌋ Amoeba, Euglena, Paramoecium, Plasmodium vivax ⌋ Sycon, Neptune's cup ⌋ Obelia, Hydra, Aurelia, Coral, Sea anemone, Sea pen, Beroe ⌋ Fasciola, Teania, Ascaris ⌋ Nereis, Aphrodite, Leech, Tubifex ⌋ Carcinoscorpius, Scorpion, Balanus, Crab, Macrobrachium, Penaeus, Squilla, Eupagurus, Scolopendra, Julus, Termite queen, Silk moth, Honey bee (three casts), Locust, Grasshopper, Stick insect, Lepisma, Daphnia, Cyclops, Peripatus ⌋ Chiton, Achatina, Aplysia, Oyster, Mussel, Sepia, Loligo, Octopus ⌋ Sea star, Brittle star, Antedon, Sea cucumber, Echinus ⌋ Balanoglossus, Ascidia, Branchiostoma, Myxine, Petromyzon ⌋ Scoliodon, Sphyrna, Trigon, Torpedo, Labeo rohita, Catla catla, Heteropneustes, Clarias, Tenualosa, Exocoetus, Anabas, Sucker fish, Flat fish, Hippocampus ⌋ Uraeotyphlus, Ichthyophis, Tylototriton, Hyla, Rhachophorus ⌋ Chelone, Trionyx, Hemidactylus, Varanus, Calotes, Gekko, Chameleo, Draco, Bungurus, Naja, Daboia, Ahatulla, Chrysopelea, Hydrophis, Crocodylus, Gavialis ⌋ Pistaculla, Spilopelia (spotted dove), Milvus(kite) ⌋ Bandicota, Pteropus, Cavia

		3. Observation & records of different animals from college campus or nearby any terrestrial field (forest, grassland, hill or mountain area etc.) or water body (pond, river, lake, sea etc.) or zoological park or museum 4. Comparison & weighting of characters of any two species of animal belonging to same genera or different genera but same family 5. Preparation of key for identification of venomous and non-venomous snake

Sem – II		
Paper	**Teacher**	**Detailed Syllabus**
MI 2 T: Insect Vectors and Diseases	**Mr. Santosh Kumar Bear**	**<u>Unit 1: Introduction to Insects</u>** General Features of Insects, Morphological features, Head – Eyes, Types of antennae, Mouth Parts **<u>Unit 2: Vector and vector bionomics</u>** Brief introduction, Types of vectors, Morphological peculiarities of different vectors Host-vector relationship, Adaptations as vectors, Host specificity, Vectorial capacity

	Mr. Prabad Pratim Pal	**<u>Unit 3: Insects as Vectors</u>** Detailed features of orders with insects as vectors – Diptera, Siphonaptera, Siphunculata, Hemiptera **<u>Unit 4: Dipteran as Disease</u>** Vectors Dipterans as important insect vectors – Mosquitoes, Sand fly, Houseflies Study of mosquito-borne diseases – Malaria, Dengue, Chikungunya, Viral encephalitis, Filariasis Control of mosquitoes Study of sand fly-borne diseases – Leishmaniasis; Control of Sand fly Study of house fly as important mechanical vector, Myiasis, Control of house fly
	Mr. Debkumar Sahoo	**<u>Unit 5: Siphonaptera as Disease</u>** Vectors Fleas as important insect vectors; Host-specificity, Study of Flea-borne diseases – Plague, Typhus fever; Control of fleas **<u>Unit 6: Siphunculata as Disease</u>** Vectors Human louse (Head, Body and Pubic louse) as important insect vectors; Control of human louse
	Mrs. Sanchita Nayak	**<u>Unit 7: Hempitera as Disease</u>** Vectors Bugs as insect vectors; Blood-sucking bugs; Chagas disease, Bed bugs as mechanical vectors, Control and prevention measures **<u>Unit 8: Vector management</u>**: Control of vector by screening, traps, electrocution, poison baits, outdoor residual sprays; Biological control, Chemical control, Sterile insect technique, Pheromones/ allelochemicals.

MI 2 P: Insect Vectors and Diseases	**Mr. Santosh Kumar Bera & Mr. Prabad Pratim Pal**	Practical 1. Study of mouth parts of different insects 2. Study of following insect vectors through permanent slides/ photographs: Aedes, Culex, Anopheles, Pediculus humanus capitis, Phithirus pubis, Xenopsylla cheopis, Cimex lectularius, Phlebotomus argentipes, Musca domestica through permanent slides/ photographs 3. Study of different diseases transmitted by above insect vectors 4. Submission of a project report on any one of the insect vectors and disease transmitted

Sem – III		
Paper	**Teacher**	**Detailed Syllabus**
GE3T: Aquatic Biology	**Mr.Chandan Nandi (C.N)** **Mr. Santosh Kumar Bera**	**Unit 1: Aquatic Biomes** Brief introduction to the aquatic biomes: Freshwater ecosystem (lakes, wetlands, streams and rivers), estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone and coral reefs. **Unit 2: Freshwater Biology** Lakes: Origin and classification, Lake as an Ecosystem, Lake morphometry, Physico–chemical Characteristics: Light, Temperature, Thermal stratification, Dissolved Solids, Carbonate, Bicarbonates, Phosphates and Nitrates, Turbidity, dissolved gases (Oxygen, Carbon dioxide). Nutrient Cycles in Lakes (Nitrogen, Sulphur and Phosphorous). Streams: Different stages of stream development, Physico-chemical environment, Adaptationof hill- stream fishes. **Unit 3: Marine Biology** Salinity and density of Sea water, Continental shelf, Adaptations of deep sea organisms, Coral reefs, Sea weeds. **Unit 4: Management of Aquatic Resources** Causes of pollution: Agricultural, Industrial, Sewage, Thermal and Oil spills, Eutrophication, Management and conservation (legislations), Sewage treatment Water quality assessment- BOD and COD

GE3 P: Aquatic Biology Lab	**Mr.Chandan Nandi (C.N)**	**List of Practical** 1. Determine the area of a lake using graphimetric and gravimetric method. 2. Identify the important macrophytes, phytoplanktons and zooplanktons present in a lake ecosystem. 3. Determine the amount of Turbidity/transparency, Dissolved Oxygen, and Free Carbon dioxide, Alkalinity (carbonates & bicarbonates) in water collected from a nearby lake / water body.

Sem – IV		
Paper	**Teacher**	**Detailed Syllabus**

GE4T: Environment and Public Health	**Mr. Chandan Nandi & Mr. Santosh Kumar Bera**	**Unit 1: Introduction** Sources of Environmental hazards, Hazard identification and accounting, Fate of toxic andpersistent substances in the environment, Dose response evaluation, Exposure assessment. **Unit 2: Climate Change** Greenhouse gases and global warming, Acid rain, Ozone layer destruction, Effect of climatechange on public health **Unit 3: Pollution** Air, water, noise pollution sources and effects, Pollution control. **Unit 4: Waste Management Technologies** Sources of waste, types and characteristics, Sewage disposal and its management, Solid waste disposal, Biomedical waste handling and disposal, Nuclear waste handling and disposal, Waste from thermal power plants. **Unit 5: Diseases** Causes, symptoms and control of tuberculosis, Asthma, Cholera, Minamata disease, typhoid, filariasis
GE4P: Environment and Public Health Lab	**Mr. Chandan Nandi & Mr. Santosh Kumar Bera**	To determine pH, Cl, SO_4, NO_3 in soil and water samples from different locations.