Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Aeshna Nigam	Animal Behaviour (Theory)	B.Sc.(H) Zoology Semester IV	January	Unit 1	Done
			February	Unit 1 contd,, Unit 2	
			March	Unit 2 contd,, Unit 3	

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

			April May	Unit 4,Unit 6 Revision	

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr Aeshna Nigam	Animal Behaviour (Practical)	B.Sc.(H) Zoology Semester IV	January February	• To study nests and nesting behaviour of the birds and social insects. • To study the behavioural responses of wood lice to dry and humid conditions. • To study the behavioural responses of wood lice to dry and humid conditions. • To study the phototaxis behaviour in insect larvae.	Done

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

				• To study different types of animal behaviour such as habituation, social life, courtship behaviour in insects and birds, and parental care from short videos/movies..	
			March April	• To study geotaxis behaviour in earthworm • Tools, techniques and methods used in studying animal behavior. • Visit to Wild life Sanctuary/ to study and record the behavioural activities of animals and prepare a short report. • Construction of ethogram using suitable data to	

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

				study animal behaviour.	
	Immunology (Practical)	B.Sc.(P) Life Science Semester VI	January	• ABO blood group determination • Demonstration of lymphoid organs	Done

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

			February March April	• Preparation of stained blood film to study various types of blood cells • Study of ELISA technique • Study of Immunoelectrophoresis technique • Ouchterlony double immunodiffuson	

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr Aeshna Nigam	Evolutionary Biology (Practical)	B.Sc.(H) Zoology Semester VI	January February	• Study of fossils from models/pictures. • Study of homology and analogy from suitable specimens. • Construction of cladograms based on morphological characters. • Construction of phylogenetic tree with the help of bioinformatics tools (Clustal X,	Done

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

				• Phylip, MLK) and its interpretation. • 5. Study of variations in a sample human population. Continuous variation: Height/Weight in relation to age and sex.	
			March April	• Discontinuous variation: Ability/Inability to taste Phenylthiocarbamide. • Study and verification of Hardy-Weinberg Law by chi square analysis. • Demonstration of role of natural selection and	

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

				genetic drift in changing allele frequencies using simulation studies.	
	Evolutionary Biology (Theory)	B.Sc.(H) Zoology Semester VI	January	• Unit 3	Done

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

			February March April	Unit 3 contd, Unit 4 Unit 4 contd, Unit 6 Unit 6 contd., Unit 7	

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Aeshna Nigam	Fundamentals of Human Physiology (Theory)	B.Sc.(P) Life Science Semester IV	January	Unit 1	Done

Teaching Plan for the Academic Year : (Even Semester) January 2024
Department : ZOOLOGY

			February	Unit 1 contd,, Unit 2	
			March	Unit 2 contd,, Unit 3	
			April May	Unit 4, Unit 6 Revision	

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

DR. ANKITA DUA
THEORY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Ankita Dua	**Developmental Biology**	**B. Sc. (H) Zoology Sem VI**	January	Unit 3: Late Embryonic Development Fate of Germ Layers; Formation of neural tube, Extra-embryonic membranes in birds; Implantation of embryo in humans, Placenta (Structure, types and functions of placenta)	Done
			February	Unit 4: Post Embryonic Development Metamorphosis: Changes, hormonal regulations in amphibians and insects; Regeneration: Modes of regeneration, epimorphosis	Done
			March	Unit 4: Post Embryonic Development Morphallaxis and compensatory regeneration (with one example each); Ageing: Concepts and Theories	Done
			April	Unit 5: Implications of Developmental Biology Teratogenesis: Teratogenic agents and their effects on embryonic development; *in vitro* fertilization	Done
			May	Unit 5: Implications of Developmental Biology Stem cell (ESC), Amniocentesis	
Dr. Ankita Dua	**Developmental Biology**	**B. Sc. (H) Zoology Sem IV**	January	UNIT- 1: Introduction	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

				Historical perspectives and basic concepts: Phases of development, Pattern formation, Differentiation and growth, Cytoplasmic determinants. UNIT- 2: Early Embryonic Development Gastrulation in frog	
			February	UNIT- 2: Early Embryonic Development Embryonic induction and organizers. UNIT- 4: Post Embryonic Development Metamorphosis and its hormonal regulation in amphibians and insects	Done
			March	UNIT- 4: Post Embryonic Development Regeneration: Modes of regeneration, epimorphosis, morphallaxis and compensatory regeneration (with one example each); Ageing: concepts and theories.	Done
			April	UNIT- 5: Implications of Developmental Biology Teratogenesis: Teratogenic agents and their effects on embryonic development; in- vitro fertilization.	Done
			May	UNIT- 5: Implications of Developmental Biology Embryonic stem cell (ESC), Amniocentesis	Done
Dr. Ankita Dua	**Comparative Anatomy of Vertebrates**	**B. Sc. (H) Zoology Sem IV**	January	UNIT 1: Integumentary System Structure and derivatives of integument.	Done
			February	UNIT 3: Circulatory System General plan of circulation; Evolution of heart and aortic arches.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

			March	UNIT 5: Skeletal System Outline of axial and appendicular skeleton; Concept of neurocranium, dermatocranium and splanchnocranium; Structure of a typical vertebra and its classification based on centrum; Jaw suspensorium; General plan of girdles and limbs.	Done
			April	UNIT 8: Urinogenital System Succession of kidney; Evolution of urinogenital ducts; Types of uteri in mammals.	Done
			May	UNIT 8: Urinogenital System Types of uteri in mammals.	Done
Dr. Ankita Dua	**Fundamentals of Human Physiology**	**B.Sc. (P) Life Sciences Sem IV**	January	UNIT- 4: Excretion Structure of nephron, Mechanism of urine formation, Counter-current Mechanism.	Done
			February	UNIT- 5: Cardiovascular system Structure of Heart, Origin and conduction of the cardiac impulse, Cardiac cycle.	Done
			March	UNIT- 6: Reproduction and Endocrine Glands Physiology of male reproduction: hormonal control of spermatogenesis	Done
			April	UNIT- 6: Reproduction and Endocrine Glands Physiology of female reproduction: hormonal control of menstrual cycle. Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal gland.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

			May	UNIT- 6: Reproduction and Endocrine Glands Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal gland.	Done
Dr. Ankita Dua	**Non-Chordata - Coelomates**	**B. Sc. (H) Zoology Sem II**	February	UNIT – I Annelida General characteristics and classification; Excretion in Annelida; Evolution of coelom and metamerism.	Done
			March	UNIT – III Mollusca General characteristics and classification; Respiration in Mollusca; Torsion and Detorsion in Gastropoda; Pearl formation in bivalves.	Done
			April	UNIT – IV Echinodermata General characteristics and classification	Done
			May	UNIT – IV Echinodermata Water-vascular System in Asteroidea.	Done
Dr. Ankita Dua	**GE-9 Microbiota: Importance in Health and Disease**	**B. Sc. (H) Sem IV**	March	UNIT- 2: Introduction to the Human Microbiome	Done
			April	UNIT- 2: Introduction to the Human Microbiome	Done
			May	UNIT- 2: Introduction to the Human Microbiome	Done

PRACTICALS

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Ankita Dua	**Developmental Biology**	**B. Sc. (H) Zoology Sem VI**	January	Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula, tail-bud stage, tadpole (external and internal gill stages)	Done
			February	Study of whole mounts of developmental stages of chick through permanent slides (Hamburger and	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

				Hamilton Stages): Stage 3 (Intermediate Streak)-13 hours, Stage 4 (Definitive Streak)-18 hours, Stage 5 (Head Process)-21 hours, Stage 7-24 hours, Stage 8-28 hours, Stage10-33 hours, Stage 11-40 hours, Stage 13-48 hours, Stage 19- 72 hours and Stage 24-96 hours of incubation Demonstration of culture of chick embryo from fertilized eggs to study various developmental stages.	
			March	Study of the developmental stages and life cycle of Drosophila from stock culture.	Done
			April	Study of different sections of placenta (photomicrographs/ slides). A visit to Poultry Farm	Done
			May	Revision	Done
Dr. Ankita Dua	**GE-4 Lifestyle Disorders**	**Sem II**	January	Estimation of blood glucose (GOD/POD) by kit. Calculation of BMI, waist to hip ratio, skin fold test.	Done
			February	Imaging techniques for cancer diagnosis. CT Scan, MRI, PET-CT scan. Confirmatory Biopsy.	Done
			March	Blood pressure measurement using a sphygmomanometer.	Done
			April	Study of cardiac rehabilitation- thrombolytic agents and balloon angioplasty.	Done
			May	Revision	Done
Dr. Ankita Dua	**(DSE-8): Parasitology Zoo-DSE-8**	**Sem IV**	January	Study of life stages of *Entamoeba histolytica*, *Trypanosoma gambiense*, and *Plasmodium vivax* through permanent slides/micro photographs.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

			February	Study of adult and life stages of *Fasciolopsis buski*, *Schistosoma haematobium* and *Taenia solium* through permanent slides/microphotographs.	Done
			March	Study of *Pediculus humanus* and *Xenopsylla cheopis* and *Cimex lectularius* through permanent slides/ photographs. Study of adult and life stages of *Ascaris lumbricoides*, *Ancylostoma duodenale* and *Wuchereria bancrofti* through permanent slides/microphotographs.	Done
			April	Study of monogenea from the gills of fresh/marine fish Visit to NIMR	Done
			May	Revision	Done

ICT Tools Used during Classes & Practicals

- To aid in better understanding of various phenomena and concepts Laptops have been used along with projector screens that are best for visualizing videos and presentations.
- Microsoft powerpoint presentations are made to help students in the learning process and later shared with them as well
- For various experiments that are dry lab, you tube videos are shown to demonstrate their procedures

Teaching plan for academic year: Even Semester (Jan-May 2024)

Department- Zoology

Theory & Practical

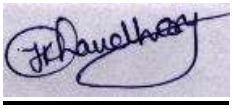
Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. JITENDRA KUMAR CHAUDHARY	IMMUNOLOGY (Theory) (4 credits=60 hrs)	B.Sc. (P) LS (Section B)	January	Unit1: Overview of the Immune System	As planned
			February	Unit2: Cells and Organs of the Immune System Unit 3: Antigens	As planned
			March	Unit4: Immunoglobulins Unit 5: Major Histocompatibility Complex (MHC I and II) Unit6: Complement System	As planned
			April	Unit7: Cytokines Unit8: Immune System in Health and Diseases Unit9: Vaccines	As planned
	Immunology (Practical)	B.Sc. (P) LS (Batch 1)	January	Demonstration of lymphoid organs.	As planned
			February	Histological study of spleen, thymus and lymph nodes through slides/photographs.	As planned
			March	Preparation of stained blood film to study various types of blood cells. Oüchterlony's double immuno-diffusion method.	As planned
			April	ABO blood group determination. Demonstration of ELISA and Immunoelectrophoresis.	As planned
	Immunology (Practical)	B.Sc. (P) LS (Batch 3)	January	Demonstration of lymphoid organs.	As planned
			February	Histological study of spleen, thymus and lymph nodes through slides/photographs.	As planned

			March	Preparation of stained blood film to study various types of blood cells. Oüchterlony's double immuno-diffusion method.	As planned
			April	ABO blood group determination. Demonstration of ELISA and Immunoelectrophoresis.	As planned
Dr. JITENDRA KUMAR CHAUDHARY	Developmental Biology (Theory) (4 credits) (Theory)	B.Sc. (H) Zoology VI Semester	January	Unit 1: Introduction Historical perspective and basic concepts: Phases of development, Cell-Cell interaction, Pattern formation, Differentiation and growth,	As planned
			February	Unit 1: Differentiation and growth, Differential gene expression, Cytoplasmic determinants and asymmetric cell division	As planned
			March	Unit 2: Early Embryonic Development Gametogenesis, Spermatogenesis, Oogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal): Changes in gametes, Blocks to polyspermy	As planned
			April	Unit2: Planes and patterns of cleavage; Types of Blastula; Fate maps (including Techniques); Early development of frog and chick up to gastrulation; Embryonic induction and organizers	As planned
Dr. JITENDRA KUMAR CHAUDHARY	Function of human physiology (Practical) (4 credits)	B.Sc. (P) LS IV A Batch 2	January	Unit 1 and Unit 2	As planned
			February	Unit 3 and 4	As planned
			March	Unit 5	As planned

			April	Unit6	As planned

Dr. Jitendra Kumar Chaudhary

Department of Zoology



Teaching Plan For The Academic Year : 2023-2024

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Rema
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	January	Unit1: Biology of Bees History, Classification and Biology of Honey Bees Different species of honey bees - Apis dorsata, Apis cerana indica, Apis florea, Apis mellifera, Melipona sp. Social Organization of Bee Colony, Behavioural patterns (Bee dance, swarming)	20	20	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	February	Unit 2: Rearing of Bees Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth; Bee Pasturage; Selection of Bee Species for Apiculture –Apis cerana indica, Apis mellifera.Bee Keeping Equipment Methods of Extraction of Honey (Indigenous and Modern) & processing; Apiary management – Honey flow period and Lean period.	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	March	Unit 3: Diseases and Enemies Bee Diseases, control and preventive measures. Enemies of bees and their control. Unit 4: Bee Economy	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Rema
					Products of Apiculture Industry (Honey, Bees Wax, Propolis, Royal jelly, Pollen etc.) & their uses;				
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	April	Unit 4: Bee Economy - Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens. Unit 5: Entrepreneurship in Apiculture Bee Keeping Industries – Recent Efforts, Employment opportunities, Economics in small scale and large-scale beekeeping, Scope for women entrepreneurs in beekeeping sector	20	20	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

THEORY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
DR NIDHI GARG	**EVOLUTIONARY BIOLOGY (LOCF)**	**BSc. (Hons.) Zoology Semester VI**	**JANUARY**	**Unit 1: Life's Beginning 7 hr** Chemogeny, RNA World, Biogeny, Origin of photosynthesis, Endosymbiotic theory	DONE
			FEBRUARY	**Unit 2: Historical Review of Evolutionary Concepts 4 hrs** Lamarckism, Darwinism, Neo-Darwinism **Unit 8: Loss of Biodiversity 3 hrs** Mass extinctions (events, causes and effects); Detailed explanation of K-T extinction	DONE
			MARCH	**Unit 7: Product of Evolution 8 hrs** Speciation: Micro-evolutionary changes (inter-population variations, clines, Ring species, races), Species concept, Isolating mechanisms, Modes of speciation, Adaptive radiation/macroevolution, Phyletic gradualism and punctuated equilibrium.	DONE
			APRIL	**Unit 9: Origin and Evolution of Man 6 hrs** Unique hominin characteristics contrasted with primate characteristics, primate phylogeny from *Dryopithecus* leading to *Homo sapiens*, molecular evidences in human evolution.	DONE

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

Dr Nidhi Garg	**FUNDAMENTALS OF HUMAN PHYSIOLOGY Zoo-LS-DSC-12 (NEP-2022)**	**BSc. Life Sciences Semester IV Section A**	**JANUARY**	**UNIT- 4: Excretion 4 hrs** Structure of nephron, Mechanism of urine formation	DONE
			FEBRUARY	**UNIT- 4: Excretion 4 hrs** Counter-current Mechanism. **UNIT- 5: Cardiovascular system 5 hrs** Structure of Heart, Origin and conduction of the cardiac impulse,	DONE
			MARCH	**UNIT- 5: Cardiovascular system 5 hrs** Cardiac cycle. **UNIT- 6: Reproduction and Endocrine Glands 6 hrs** Physiology of male reproduction: hormonal control of spermatogenesis;	DONE
			APRIL	**UNIT- 6: Reproduction and Endocrine Glands 6 hrs** Physiology of female reproduction: hormonal control of menstrual cycle. Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal gland.	DONE

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

Dr Nidhi Garg	**APICULTURE SEC (LOCF)**	**BSc. Life Sciences Semester VI**	**JANUARY**	**Unit1: Biology of Bees** History, Classification and Biology of Honey Bees Different species of honey bees -*Apis dorsata, Apis cerana indica, Apis florea, Apis mellifera, Melipona* sp. Social Organization of Bee Colony, Behavioural patterns (Bee dance, swarming) **Unit 2: Rearing of Bees** Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth; Bee Pasturage; Selection of Bee Species for Apiculture –*Apis cerana indica, Apis mellifera.*	DONE
			FEBRUARY	**Unit 2: Rearing of Bees** Bee Keeping Equipment Methods of Extraction of Honey (Indigenous and Modern) & processing; Apiary management – Honey flow period and Lean period. **Unit 3: Diseases and Enemies** Bee Diseases, control and preventive measures	DONE
			MARCH	**Unit 3: Diseases and Enemies** Enemies of bees and their control. **Unit 4: Bee Economy** Products of Apiculture Industry (Honey, Bees Wax, Propolis, Royal jelly, Pollen etc.) & their uses; Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens	DONE

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

			APRIL	**Unit 5: Entrepreneurship in Apiculture** Bee Keeping Industries – Recent Efforts, Employment opportunities, Economics in small scale and large-scale beekeeping, Scope for women entrepreneurs in beekeeping sector	DONE

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

PRACTICALS

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
DR NIDHI GARG	**APICULTURE (LOCF)**	**BSc. Life Sciences Semester VI**	**JANUARY**	1. Study of the life history of honey bee, *Apis cerana indica* and *Apis mellifera* from specimen/photographs - Egg, larva, pupa, adult (queen, drone, worker) 2. Study of natural bee hive and identification of queen cells, drone cells and brood. 3. Submission of a few products obtained from apiculture industry.	DONE
			FEBRUARY	4.Study of morphological structures of honey bee through permanent slides/ photographs – mouth part, antenna, wings, legs (antenna cleaner, mid leg, pollen basket), sting apparatus. 5. Permanent/temporary mount of antenna cleaner, mid leg and pollen basket OR mount of pollen grains from flowers.	DONE
			MARCH	6. Study of artificial hive (Langstroth/Newton), its various parts and beekeeping equipment. 7. Study of bee pasturage – a) Visit to fields/gardens/orchards for studying the bee activity (role in pollination and nectar collection) **VISIT TO SUNDER NAGAR NURSERY DONE.** b) Making of herbarium of nectar and pollen yielding flowering plants.	DONE

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

			APRIL	8. Analysis of honey – purity, biochemical analysis (Any two constituents). 9. Visit to an apiary/honey processing unit/institute and submission of a report.	DONE
Name of the Teacher	**Name of the Paper**	**Class/Semester**	**Month**	**Topics/Units Planned**	**Covered**
DR NIDHI GARG & PROF. SUNITA GUPTA	**NON CHORDATES: COELOMATES (NEP-2022)**	**BSc. HONS ZOOLOGY SEMESTER II**	**JANUARY**	1. Study of *Aphrodite, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria*, Trochophore larva.	DONE
			FEBRUARY	1. Study of T.S. through pharynx, gizzard, and typhlosolar intestine of earthworm. 2. Study of *Limulus, Palamnaeus, Palaemon, Daphnia, Balanus, Sacculina, Cancer, Eupagurus, Scolopendra, Julus, Bombyx, Periplaneta, termite, Apis, Musca*.	DONE
			MARCH	1. Study of *Peripatus*. 2. Study of *Chiton, Dentalium, Pila, Doris, Helix, Unio, Patella, Ostrea, Pinctada, Sepia, Octopus, Nautilus*. 3. Study of *Pentaceros/Asterias, Ophiura, Clypeaster, Echinus, Cucumaria, Antedon*	DONE
			APRIL	1. Any two larval forms (OF ECHINODERMATA) 2. Study of mouth parts, digestive system and nervous system of Periplaneta. 3. Study of the digestive system of Pheretima.	DONE

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

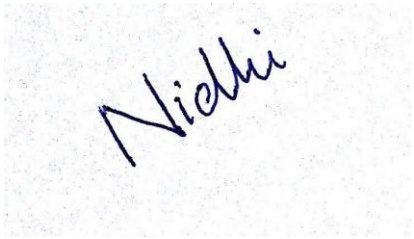
				4. Submit a Project Report on the larval forms in different phyla OR field study of the insect diversity.	
Name of the Teacher	**Name of the Paper**	**Class/Semester**	**Month**	**Topics/Units Planned**	**Covered**
DR NIDHI GARG & PROF. SUNITA GUPTA	**COMPARATIVE ANATOMY OF VERTEBRATES (NEP-2022)**	**BSc. (Hons.) ZOOLOGY SEMESTER IV**	**JANUARY**	1. Study of different types of feathers of birds.	DONE
			FEBRUARY	1. Study of the vertebrate Skull (i) one herbivorous and one carnivorous animal skull (ii) one monocondylic and one dicondylic skull. 2. Study of carapace and plastron of turtle/tortoise. 3. Study of the digestive, circulatory and urinogenital system of frog/rat through videos ondissection or through virtual dissections.	DONE
			MARCH	1. Study of the disarticulated skeleton of Frog, Varanus (Vertebral Column, Sternum, Girdles, Ribs, Limb bones). 2. Project related to topics covered in theory.	DONE

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

			APRIL	1. Study of the disarticulated skeleton of Fowl, Rabbit (Vertebral Column, Sternum, Girdles, Ribs, Limb bones). 2. Field trips/Documentary film show on vertebrates/Visit to Zoological Park, Biodiversity Park or Sanctuary.	DONE

ICT Tools Used during Classes & Practicals

• To aid in better understanding of various phenomena and concepts Laptops have been used along with projector screens that are best for visualizing videos and presentations.
• Microsoft powerpoint presentations are made to help students in the learning process and later shared with them as well.
• For various experiments that are dry lab, you tube videos are shown to demonstrate their procedures.



Dr. Nidhi Garg
Assistant Professor
Department of Zoology

Teaching Plan For The Academic Year : 2023-2024

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Remarks
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	January	Unit 1: Life's Beginning 7 hr Chemogeny, RNA World, Biogeny, Origin of photosynthesis, Endosymbiotic theory	10	10	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	February	Unit 2: Historical Review of Evolutionary Concepts 4 hrs Lamarckism, Darwinism, Neo-Darwinism Unit 8: Loss of Biodiversity 3 hrs Mass extinctions (events, causes and effects); Detailed explanation of K-T extinction	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	March	Unit 7: Product of Evolution 8 hrs Speciation: Micro-evolutionary changes (inter-population variations, clines, Ring species, races), Species concept, Isolating mechanisms, Modes of speciation, Adaptive radiation/ macroevolution, Phyletic gradualism and punctuated equilibrium.	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	April	Unit 9: Origin and Evolution of Man 6 hrs Unique hominin characteristics contrasted with primate characteristics,	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Remarks
					primate phylogeny from Dryopithecus leading to Homo sapiens, molecular evidences in human evolution.				

Teaching Plan For The Academic Year : 2023-2024

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	R
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	January	UNIT- 4: Excretion 4 hrs Structure of nephron, Mechanism of urine formation	10	10	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	February	UNIT- 4: Excretion 4 hrs Counter-current Mechanism. UNIT- 5: Cardiovascular system 5 hrs Structure of Heart, Origin and conduction of the cardiac impulse,	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	March	UNIT- 5: Cardiovascular system 5 hrs Cardiac cycle. UNIT- 6: Reproduction and Endocrine Glands 6 hrs Physiology of male reproduction: hormonal control of spermatogenesis;	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	April	UNIT- 6: Reproduction and Endocrine Glands 6 hrs Physiology of female reproduction: hormonal control of menstrual cycle. Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal gland.	30	30	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--

Teaching Plan For The Academic Year : 2023-2024

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Remarks
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	January	Unit 1: Life's Beginning 7 hr Chemogeny, RNA World, Biogeny, Origin of photosynthesis, Endosymbiotic theory	10	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	February	Unit 2: Historical Review of Evolutionary Concepts 4 hrs Lamarckism, Darwinism, Neo-Darwinism Unit 8: Loss of Biodiversity 3 hrs Mass extinctions (events, causes and effects); Detailed explanation of K-T extinction	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	March	Unit 7: Product of Evolution 8 hrs Speciation: Micro-evolutionary changes (inter-population variations, clines, Ring species, races), Species concept, Isolating mechanisms, Modes of speciation, Adaptive radiation/ macroevolution, Phyletic gradualism and punctuated equilibrium.	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. (Hons.) Zoology VI	Evolutionary Biology	Even Semester	None	April	Unit 9: Origin and Evolution of Man 6 hrs Unique hominin characteristics contrasted with primate characteristics,	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Remarks
					primate phylogeny from Dryopithecus leading to Homo sapiens, molecular evidences in human evolution.				

Teaching Plan For The Academic Year : 2023-2024

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	R
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	January	UNIT- 4: Excretion 4 hrs Structure of nephron, Mechanism of urine formation	10	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	February	UNIT- 4: Excretion 4 hrs Counter-current Mechanism. UNIT- 5: Cardiovascular system 5 hrs Structure of Heart, Origin and conduction of the cardiac impulse,	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	March	UNIT- 5: Cardiovascular system 5 hrs Cardiac cycle. UNIT- 6: Reproduction and Endocrine Glands 6 hrs Physiology of male reproduction: hormonal control of spermatogenesis;	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--
B. Sc. Life Sciences IV	FUNDAMENTALS OF HUMAN PHYSIOLOGY	Even Semester	Section A	April	UNIT- 6: Reproduction and Endocrine Glands 6 hrs Physiology of female reproduction: hormonal control of menstrual cycle. Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal gland.	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	--

Teaching Plan For The Academic Year : 2023-2024

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Rema
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	January	Unit1: Biology of Bees History, Classification and Biology of Honey Bees Different species of honey bees - Apis dorsata, Apis cerana indica, Apis florea, Apis mellifera, Melipona sp. Social Organization of Bee Colony, Behavioural patterns (Bee dance, swarming)	20	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	February	Unit 2: Rearing of Bees Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth; Bee Pasturage; Selection of Bee Species for Apiculture –Apis cerana indica, Apis mellifera.Bee Keeping Equipment Methods of Extraction of Honey (Indigenous and Modern) & processing; Apiary management – Honey flow period and Lean period.	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	March	Unit 3: Diseases and Enemies Bee Diseases, control and preventive measures. Enemies of bees and their control. Unit 4: Bee Economy	30	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----

Course Name	Paper Name	Semester	Section	Month(s)	Topics/Units	Total Course (%)	Course Completed (%)	ICT Tools Used	Any Rema
					Products of Apiculture Industry (Honey, Bees Wax, Propolis, Royal jelly, Pollen etc.) & their uses;				
B. Sc. Life Sciences VI	SEC - APICULTURE	Even Semester	None	April	Unit 4: Bee Economy - Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens. Unit 5: Entrepreneurship in Apiculture Bee Keeping Industries – Recent Efforts, Employment opportunities, Economics in small scale and large-scale beekeeping, Scope for women entrepreneurs in beekeeping sector	20	0	LAPTOP USED FOR TAKING CLASS, POWERPOINT, MS-WORD, YOU TUBE VIDEOS	----

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

THEORY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
DR NIDHI GARG	**EVOLUTIONARY BIOLOGY (LOCF)**	**BSc. (Hons.) Zoology Semester VI**	**JANUARY**	**Unit 1: Life's Beginning 7 hr** Chemogeny, RNA World, Biogeny, Origin of photosynthesis, Endosymbiotic theory	
			FEBRUARY	**Unit 2: Historical Review of Evolutionary Concepts 4 hrs** Lamarckism, Darwinism, Neo-Darwinism **Unit 8: Loss of Biodiversity 3 hrs** Mass extinctions (events, causes and effects); Detailed explanation of K-T extinction	
			MARCH	**Unit 7: Product of Evolution 8 hrs** Speciation: Micro-evolutionary changes (inter-population variations, clines, Ring species, races), Species concept, Isolating mechanisms, Modes of speciation, Adaptive radiation/macroevolution, Phyletic gradualism and punctuated equilibrium.	
			APRIL	**Unit 9: Origin and Evolution of Man 6 hrs** Unique hominin characteristics contrasted with primate characteristics, primate phylogeny from *Dryopithecus* leading to *Homo sapiens*, molecular evidences in human evolution.	

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

Dr Nidhi Garg	**FUNDAMENTALS OF HUMAN PHYSIOLOGY Zoo-LS-DSC-12 (NEP-2022)**	**BSc. Life Sciences Semester IV Section A**	**JANUARY**	**UNIT- 4: Excretion 4 hrs** Structure of nephron, Mechanism of urine formation	
			FEBRUARY	**UNIT- 4: Excretion 4 hrs** Counter-current Mechanism. **UNIT- 5: Cardiovascular system 5 hrs** Structure of Heart, Origin and conduction of the cardiac impulse,	
			MARCH	**UNIT- 5: Cardiovascular system 5 hrs** Cardiac cycle. **UNIT- 6: Reproduction and Endocrine Glands 6 hrs** Physiology of male reproduction: hormonal control of spermatogenesis;	
			APRIL	**UNIT- 6: Reproduction and Endocrine Glands 6 hrs** Physiology of female reproduction: hormonal control of menstrual cycle. Structure and function of pituitary, thyroid, Parathyroid, pancreas and adrenal gland.	

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

Dr Nidhi Garg	**APICULTURE SEC (LOCF)**	**BSc. Life Sciences Semester VI**	**JANUARY**	**Unit1: Biology of Bees** History, Classification and Biology of Honey Bees Different species of honey bees -*Apis dorsata, Apis cerana indica, Apis florea, Apis mellifera, Melipona* sp. Social Organization of Bee Colony, Behavioural patterns (Bee dance, swarming) **Unit 2: Rearing of Bees** Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth; Bee Pasturage; Selection of Bee Species for Apiculture –*Apis cerana indica, Apis mellifera.*	
			FEBRUARY	**Unit 2: Rearing of Bees** Bee Keeping Equipment Methods of Extraction of Honey (Indigenous and Modern) & processing; Apiary management – Honey flow period and Lean period. **Unit 3: Diseases and Enemies** Bee Diseases, control and preventive measures	
			MARCH	**Unit 3: Diseases and Enemies** Enemies of bees and their control. **Unit 4: Bee Economy** Products of Apiculture Industry (Honey, Bees Wax, Propolis, Royal jelly, Pollen etc.) & their uses; Modern Methods in employing artificial Beehives for cross pollination in horticultural gardens	

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

			APRIL	**Unit 5: Entrepreneurship in Apiculture** Bee Keeping Industries – Recent Efforts, Employment opportunities, Economics in small scale and large-scale beekeeping, Scope for women entrepreneurs in beekeeping sector	

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

PRACTICALS

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
DR NIDHI GARG	**APICULTURE (LOCF)**	**BSc. Life Sciences Semester VI**	**JANUARY**	1. Study of the life history of honey bee, *Apis cerana indica* and *Apis mellifera* from specimen/photographs - Egg, larva, pupa, adult (queen, drone, worker) 2. Study of natural bee hive and identification of queen cells, drone cells and brood. 3. Submission of a few products obtained from apiculture industry.	
			FEBRUARY	4.Study of morphological structures of honey bee through permanent slides/ photographs – mouth part, antenna, wings, legs (antenna cleaner, mid leg, pollen basket), sting apparatus. 5. Permanent/temporary mount of antenna cleaner, mid leg and pollen basket OR mount of pollen grains from flowers.	
			MARCH	6. Study of artificial hive (Langstroth/Newton), its various parts and beekeeping equipment. 7.Study of bee pasturage – a) Visit to fields/gardens/orchards for studying the bee activity (role in pollination and nectar collection).-VISIT TO SUNDER NAGAR NURSERY DONE. b) Making of herbarium of nectar and pollen yielding flowering plants.	

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

			APRIL	8. Analysis of honey – purity, biochemical analysis (Any two constituents). 9. Visit to an apiary/honey processing unit/institute and submission of a report.	
Name of the Teacher	**Name of the Paper**	**Class/Semester**	**Month**	**Topics/Units Planned**	**Covered**
DR NIDHI GARG & PROF. SUNITA GUPTA	**NON CHORDATES: COELOMATES (NEP-2022)**	**BSc. HONS ZOOLOGY SEMESTER II**	**JANUARY**	1. Study of *Aphrodite, Nereis, Heteronereis, Sabella, Serpula, Chaetopterus, Pheretima, Hirudinaria,* Trochophore larva.	
			FEBRUARY	1. Study of T.S. through pharynx, gizzard, and typhlosolar intestine of earthworm. 2. Study of *Limulus, Palamnaeus, Palaemon, Daphnia, Balanus, Sacculina, Cancer, Eupagurus, Scolopendra, Julus, Bombyx, Periplaneta, termite, Apis, Musca*.	
			MARCH	1. Study of *Peripatus*. 2. Study of *Chiton, Dentalium, Pila, Doris, Helix, Unio, Patella, Ostrea, Pinctada, Sepia, Octopus, Nautilus*. 3. Study of *Pentaceros/Asterias, Ophiura, Clypeaster, Echinus, Cucumaria, Antedon*	
			APRIL	1. Any two larval forms (OF ECHINODERMATA) 2. Study of mouth parts, digestive system and nervous system of Periplaneta. 3. Study of the digestive system of Pheretima.	

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

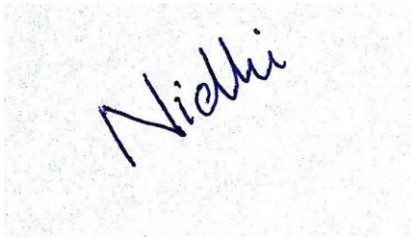
				4. Submit a Project Report on the larval forms in different phyla OR field study of the insect diversity.	
Name of the Teacher	**Name of the Paper**	**Class/Semester**	**Month**	**Topics/Units Planned**	**Covered**
DR NIDHI GARG & PROF. SUNITA GUPTA	**COMPARATIVE ANATOMY OF VERTEBRATES (NEP-2022)**	**BSc. (Hons.) ZOOLOGY SEMESTER IV**	**JANUARY**	1. Study of different types of feathers of birds.	
			FEBRUARY	1. Study of the vertebrate Skull (i) one herbivorous and one carnivorous animal skull (ii) one monocondylic and one dicondylic skull. 2. Study of carapace and plastron of turtle/tortoise. 3. Study of the digestive, circulatory and urinogenital system of frog/rat through videos ondissection or through virtual dissections.	
			MARCH	1. Study of the disarticulated skeleton of Frog, Varanus (Vertebral Column, Sternum,Girdles, Ribs, Limb bones). 2. Project related to topics covered in theory.	

Teaching Plan for the Academic Year : (EVEN SEMESTER) JANUARY 2024
Department : ZOOLOGY

			APRIL	1. Study of the disarticulated skeleton of Fowl, Rabbit (Vertebral Column, Sternum,Girdles, Ribs, Limb bones). 2. Field trips/Documentary film show on vertebrates/Visit to Zoological Park, Biodiversity Park or Sanctuary.	

ICT Tools Used during Classes & Practicals

• To aid in better understanding of various phenomena and concepts Laptops have been used along with projector screens that are best for visualizing videos and presentations.
• Microsoft powerpoint presentations are made to help students in the learning process and later shared with them as well.
• For various experiments that are dry lab, you tube videos are shown to demonstrate their procedures.



Dr. Nidhi Garg
Assistant Professor
Department of Zoology

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

Dr. Rakesh Roshan
Theory

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Rakesh Roshan	**Wild Life Conservation and Management**	**B. Sc. (H) Zoology Sem VI**	January	Habitat analysis: a) Physical parameters: Topography, Geology, Soil and water; b) Biological Parameters:	Done
			February	food, cover, forage; Standard evaluation procedures: Biotelemetry, Remotesensing and GIS.	Done
			March	Setting back succession: Grazing, prescribed fire, mechanical treatment and selective herbicide application;	Done
			April	Advancing the successional process and cover construction; Preservation of genetic diversity; Restoration of degraded habitats.	Done
			May	revision	
Dr. Rakesh Roshan	**Animal Behaviour**	**B. Sc. (H) Zoology Sem IV**	January	**UNIT- 3: Patterns of Behaviour**	Done
			February	**UNIT- 4: Communication**	Done
			March	**UNIT- 5: Social Behaviour**	Done
			April	**UNIT 7: Sexual Behaviour**	Done
			May	revision	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

Dr. Rakesh Roshan	**Lifestyle Disorder (GE)**	**B. Sc. (H) Zoology Sem II**	January	Traditional Indian lifestyle vs modern Indian lifestyle, lifestyle diseases – definition, risk factors-erratic sleep patterns, wrong food choices, smoking, alcohol abuse, stress, lack of optimum physical activity, illicit drug use, Obesity, respiratory diseases, diet and exercise.	Done
			February	Types of Diabetes mellitus; Blood glucose regulation; Complications of diabetes- paediatric and adolescent obesity-weight control and BMI (Body Mass Index), Prediabetes, PCOS/PCOD. Coronary atherosclerosis-Coronary artery disease, Causes-Fat and lipid, Alcohol Abuse- Diagnosis, Electrocardiograph, Echocardiograph, Treatment, Exercise and Cardiac rehabilitation.	Done
			March	Introduction to Cancer and general diagnostic methods to detect cancer; Lung Cancer, Mouth Cancer: associated lifestyle choices, symptoms and treatment. Risk factors, complications (brain, heart, eye and kidney) and management of hypertension.	Done
			April	WHO Global action plan and Monitoring framework for prevention and control of non- communicable diseases,	Done
			May	NPHCE (National Programme for the Health Care of Elderly), Fit India movement (Yoga and meditation).	Done
Dr. Rakesh Roshan	**Immunology**	**B.Sc. (P) Life Sciences Sem VI**	January	Unit 3:Antigens Antigens and immunogens, antigenicity and immunogenicity, Factors affecting immunogenicity, Antigenic determinants (B and T cell epitopes), Concept of antigen recognition by B and T-cells, Adjuvants and haptens	Done
			February	. Unit4: Immunoglobulins Structure, different classes and function of antibodies, Antigenic determinants on	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

				immunoglobulins, Antigen-antibody interactions as tools for research and diagnosis (precipitation reaction, agglutination, immunofluorescence and ELISA), Polyclonal sera, Hybridoma technology for monoclonal antibodies in therapeutics and diagnosis.	
			March	Major Histocompatibility Complex (MHC I and II) Structure and functions of MHC. Vaccines: General introduction and types of vaccines	Done
			April	Complement System Components, alternate and classical pathway, biological consequences of complement activation.	Done
			May	Revision.	Done

PRACTICALS

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Rakesh Roshan	**Wildlife Conservation and Management**	**B. Sc. (H) Zoology Sem VI**	January	Identification of mammalian fauna, avian fauna, herpeto-fauna through direct and indirect evidences seen on a field trip to a wildlife conservation site.	Done
			February	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).	Done
			March	Familiarization and study of animal evidences in the field: Identification of animals through pug marks, hoof marks, scats, nests and antlers.	Done
			April	Demonstration of different field techniques for flora and fauna: PCQM.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

				Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences). Identification of big cats: Lion, tiger, panther, cheetah, leopard and jaguar. A visit to National Zoological park, New Delhi	
			May	Revision	Done
Dr. Rakesh Roshan	**GE-4 Lifestyle Disorders**	**Sem II**	January	Estimation of blood glucose (GOD/POD) by kit. Calculation of BMI, waist to hip ratio, skin fold test.	Done
			February	Imaging techniques for cancer diagnosis. CT Scan, MRI, PET-CT scan. Confirmatory Biopsy.	Done
			March	Blood pressure measurement using a sphygmomanometer.	Done
			April	Study of cardiac rehabilitation- thrombolytic agents and balloon angioplasty.	Done
			May	Revision	Done
Dr. Rakesh Roshan	**Immunology**	**B.Sc. (P) Life Sciences Sem VI**	January	1. Demonstration of lymphoid organs. 2. Histological study of spleen, thymus and lymph nodes through slides/photographs.	Done
			February	Preparation of stained blood film to study various types of blood cells. 4. Oüchterlony's double immuno-diffusion method.	Done
			March	ABO blood group determination.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

			April	Demonstration of ELISA and Immunoelectrophoresis	Done
			MAY	revision	Done

ICT Tools Used during Classes & Practicals

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Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

Dr. Samya Das
THEORY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Samya Das	**Comparative anatomy of Vertibrate**	**B. Sc. (H) Zoology Sem VI NEP_UGCF**	January	UNIT 2: Digestive System Alimentary canal and associated glands;	Done
			February	**UNIT 2: Digestive System** Dentition. **UNIT 4: Respiratory System** Skin, gills,	Done
			March	Unit 4: **Respiratory System:** accessory respiratory organs in fishes, air sacs	Done
			April	**UNIT 6: Nervous System** Comparative account of brain; Cranial nerves in mammals. **UNIT 7: Sense Organs** Classification of receptors; Structure and function of mammalian eye and ear.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

			May	Unit 3: Post Embryonic Development: Structure, and Functions: - tight Junction , adherens Junction, Gap junctions.	
Dr. Samya Das	**GE-9 Microbiota: Importance in Health and Disease**	**B.Sc. (H) Sem IV NEP_UGCF**	March	. **UNIT- 1: Microbes** Introduction to microbes, general approaches and techniques used for studying microbiota, the nature of microbiological problems, Prokaryotic and eukaryotic organisms. **UNIT- 3: Microbiota and the Immune System Development** Normal flora, transient flora opportunistic microbes, Pathogenicity, virulence, and factors that increase virulence (enzymes, toxins),	Done
			April	. **UNIT- 3: Microbiota and the Immune System Development 5 hrs** Factors that affect the spread of disease, Nonspecific immune responses, Specific immune responses: humoral and cell mediated immunity **UNIT- 4: Human Microbiota in Health and Disease** Basic concept of Gut microbiota in the mother-child environment, Gut microbiota and cancer; Microbiota and viral diseases- An opportunity for COVID-19. Relationship between diet and the intestinal microbiota, Probiotics, prebiotics and other "biotics".	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

PRACTICALS

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Dr. Samya Das	**Wildlife conservation and management**	**B. Sc.(H) Zoology Sem IV NEP_UGCF**	January	Identification of mammalian fauna, avian fauna, herpeto-fauna through direct and indirect evidences seen on a field trip to a wildlife conservation site.	Done
			February	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).	Done
			March	Familiarization and study of animal evidences in the field: Identification of animals through pug marks, hoof marks, scats, nests and antlers.	Done
			April	Demonstration of different field techniques for flora and fauna: PCQM. Trail / transect monitoring for abundance and diversity estimation of mammals and bird (direct and indirect evidences). Identification of big cats: Lion, tiger, panther, cheetah, leopard and jaguar. A visit to National Zoological park, New Delhi	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

Dr. Samya Das	**SEC: Apiculture**	**B. Sc.(H) Zoology Sem I NEP_UGCF**	February	Unit 1: Biology of Bees Historical background of apiculture, classification and biology of honey bees, Social organization of bee colony, behavioral patterns (bee dance, swarming). Practical Exercises: 1. Study of the life history of honey bees: *Apis cerana indica, Apis mellifera, Apis dorsata*, *Apis florea*, *Melipona sp*. from specimen and/ photographs - Egg, larva, pupa, adult (queen, drone, worker). 2. Study of morphological structures of honey bees through permanent slides/photographs– mouthparts, antenna, wings, sting apparatus and temporary mount of legs (antenna cleaner, mid leg, pollen basket). 3. Study of natural beehive and identification of queen cells, drone cells and brood.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

			March	Unit 2: Rearing of Bees Artificial Bee rearing (Apiary), Beehives – Newton and Langstroth; Bee Pasturage; Selection of bee species for apiculture – *Apiscerana indica*, *Apis mellifera*; Bee keeping equipment methods of extraction of honey (Indigenous and Modern) & processing; Apiary management - Honey flow period and lean period, effects of pollutants on honeybees. Practical Exercises: 1. Distinguishing characters of workers of three bee species. 2. Importance of site selection for bee keeping. 3. Study of an artificial hive (Langstroth/Newton), its various parts and beekeeping equipment: draw diagrams of bee boxes proportionate to the body size and measure the body length and wing size. 4. Preparation of mount of pollen grains from flowers.	Done

Teaching Plan for the Academic Year: (EVEN SEMESTER 2024)
Department: ZOOLOGY

			April	Unit 3: Diseases and Enemies Bee diseases control and preventive measures: enemies of bees and their control. Practical Exercises: 1. Diagnosis of honeybee diseases: Protozoan diseases, Bacterial diseases, Viral diseases (one each)- symptoms, nature of damage and control. 2. Identification of honeybee enemies: Predators-Insects and non-insects. Unit 4: Bee Economy Products of apiculture industry (Honey, Bees Wax, Propolis, Royal jelly, Pollen etc.) and their uses; Modern methods in employing artificial Beehives for cross pollination in horticultural gardens- stationary and migratory bee keeping. Practical Exercises: 1. Video demonstration of wax extraction and preparation of comb foundation sheets. 2. Analysis of honey – purity, physical and biochemical parameters (any two constituents). 3. Study of bee pasturage – visit to	Done

				fields/gardens/orchards for studying the bee activity (role in pollination, nectar collection, videography of honeybee activity) and preparation of herbarium of nectar and pollen yielding flowering plants (floral mapping). Unit 5: Entrepreneurship in Apiculture Bee keeping industries – Recent advancements, employment opportunities, economics in small and large scale beekeeping, scope for women entrepreneurs in beekeeping sector, study of development programs and organizations involved in beekeeping in India.	

ICT Tools Used during Classes & Practicals

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Teaching Plan for the Academic Year: (EVEN SEMESTER) JANUARY/ MARCH 2023
Department: ZOOLOGY

THEORY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Manish Kumar Sachdeva	Animal Biotechnology	B. Sc. (Hons.) Zoology VI semester	January February March April May	Unit 2: Basic Tools for Gene Manipulation Unit 3: Advance Tools and Techniques Revision	All the topics and whole syllabus completed as per the plan!
	DSE paper: Parasitology	B. Sc. (Hons.) Zoology + Prog. IV semester	January February March April May	Unit 1: Introduction to Parasitology UNIT – 2 Parasitic Protists UNIT – 2 Parasitic Platyhelminthes Revision	
	Fundamentals of Biomolecules	B. Sc. (Hons.) Zoology II semester NEP	January February March April May	UNIT – I Carbohydrates UNIT – III Amino acids and Proteins Unit V Enzymes Revision	

Teaching Plan for the Academic Year: (EVEN SEMESTER) JANUARY/ MARCH 2023
Department: ZOOLOGY

PRACTICALS

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
Manish Kumar Sachdeva	**Animal Biotechnology**	**B. Sc. (Hons.) Zoology VI semester**	**January February March April May**	**Restriction mapping Genomic DNA isolation Plasmid DNA isolation Repetition of the above two exercises**	**The whole practical syllabus was completed as per the plan!**
	DSE paper: Parasitology	**B. Sc. (Hons.) Zoology + Prog. IV semester**	**January February March April May**	**Life cycle of *Entamoeba histolytica,* *Trypanosoma gambiense* *Fascilopsis buski,* *Taenia solium, Schistosoma haematobium, Pediculus humanus,* *Xenopsylla cheopis* *Fied visit to NIMR* *Cimex lectularis* *Revision***	
	Fundamentals of Biomolecules	**B. Sc. (Hons.) Zoology II semester NEP**	**January February March April May**	**Basics Buffers and solutions Paper Chromatography of Amino acids Salivary amylase assay: optimum, with inhibitor and at different pH and temp conditions Revision Repetition of the above pH and temp. exercises**	

Teaching Plan for the Academic Year: (EVEN SEMESTER) JANUARY/ MARCH 2023
Department: ZOOLOGY

PRACTICALS

DEPARTMENT OF ZOOLOGY, SHIVAJI COLLEGE
ACADEMIC PROGRESS REPORT (PRACTICAL)
(Paper Wise For January 2024- May 2024)

Name of the teacher(s): Ms. Nimita Kant
Paper Name: DEVELOPMENTAL BIOLOGY Paper Code: Zoo-DSC-11

Total No. of Periods: 1/WEEK

Name of Teacher	No. of periods allotted	Unit Number	Periods Allotted Per Unit	Periods to be Taken (Month Wise Tentative Plan)	Actual Periods Taken (Month Wise)
Nimita Kant	18	UNIT- 2: Early Embryonic Development Gametogenesis: oogenesis, spermatogenesis; Types of eggs, Egg membranes; Fertilization (External and Internal), Blocks to polyspermy; Planes and patterns of cleavage; Types of Blastula; Fate maps; Gastrulation in frog and chick, Embryonic induction and organizers. UNIT- 3: Late Embryonic Development Fate of Germ Layers; Extra-embryonic membranes in birds; Implantation of embryo in humans, structure, types, and functions of placenta.	12 hours 6 hours	**January (3) -17%** Early Embryonic Development Gametogenesis: oogenesis, spermatogenesis; **February (4)-22%** Types of eggs, Egg membranes; Fertilization (External and Internal), Blocks to polyspermy; **March (4) - 22%** Planes and patterns of cleavage; Types of Blastula; Fate maps; Gastrulation in frog **April (4)- 22%** Gastrulation in chick, Embryonic induction and organizers. Fate of Germ Layers; Extra-embryonic membranes in birds; **May (3)- 17%** Implantation of embryo in humans, structure, types, and functions of placenta.	

Name & Signature of Teacher

DEPARTMENT OF ZOOLOGY, SHIVAJI COLLEGE
ACADEMIC PROGRESS REPORT (PRACTICAL)
(Paper Wise For January 2024- May 2024)

Name of the teacher(s): 1. Ms. Nimita Kant 2. Dr. Deepika Yadav
Paper Name: DEVELOPMENTAL BIOLOGY Paper Code: Zoo-DSC-11

Total No. of Periods: 4/WEEK

Name of Teacher(s)	Title of Experiment/Practical	Period to be Taken (Month Wise Tentative Plan)	Actual periods Taken (Month Wise)
Ms. Nimita Kant **Dr. Deepika Yadav**	1. Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula (Neural plate, Neural fold and Neural tube stages), tail-bud stage, tadpole (external and internal gill stages) 2. Study of whole mounts of developmental stages of chick through permanent slides (Hamburger and Hamilton Stages): Stage 3 (Intermediate Streak)-13 hours, Stage 4 (Definitive Streak)-18 hours, Stage 5 (Head Process)-21 hours, Stage 7- 24 hours, Stage 8-28 hours, Stage10-33 hours, Stage 11-40 hours, Stage 13-48 hours, Stage 19- 72 hours and Stage 24-96 hours of incubation 3. In vivo study of chick embryo development by windowing and candling methods. (Demonstration only) 4. Study of indirect development and metamorphosis by rearing any one insect. 5. Study of different sections of placenta (photomicrographs/ slides). 6. Project report on Drosophila or any insect culture/Visit to Poultry Farm/IVF Centre	**January (**1 x4 =4**)** ● Student Presentation: Power point presentation on any topic related to developmental biology. ● **Project** report on Drosophila or any insect culture/Visit to Poultry Farm/IVF Centre **February(4x4=16)** ● Study of indirect development and metamorphosis by rearing any one insect. ● Study of whole mounts and sections of developmental stages of frog through permanent slides: Cleavage stages, blastula, gastrula, neurula (Neural plate, Neural fold and Neural tube stages), tail-bud stage, tadpole (external and internal gill stages) **March (4x4=16)** ● Study of whole mounts of developmental stages of chick through permanent slides	Covered as planned Covered as planned

	7. Student Presentation: Power point presentation on any topic related to developmental biology.	(Hamburger and Hamilton Stages): Stage 3 (Intermediate Streak)-13 hours, Stage 4 (Definitive Streak)-18 hours, Stage 5 (Head Process)-21 hours, Stage 7- 24 hours, Stage 8-28 hours, Stage10-33 hours, Stage 11-40 hours, Stage 13-48 hours, Stage 19- 72 hours and Stage 24-96 hours of incubation. **April (4x4=16)** ● In vivo study of chick embryo development by windowing and candling methods. (Demonstration only) **May (2 x 4=8)** ● Study of different sections of placenta (photomicrographs/ slides).	

Ms. Nimita Kant

DEPARTMENT OF ZOOLOGY, SHIVAJI COLLEGE
ACADEMIC PROGRESS REPORT (PRACTICAL)
(Paper Wise For January 2024- May 2024)

Name of the teacher(s): 1. Ms. Nimita Kant 2. Dr. Sunita Gupta
Paper Name: Human Physiology-Control and Coordination Systems

Paper Code: Zoo-DSC-6

Total No. of Periods: 4/WEEK

Name of Teacher(s)	Title of Experiment/Practical	Period to be Taken (Month Wise Tentative Plan)	Actual periods Taken (Month Wise)
Ms. Nimita Kant Dr. Sunita Gupta	1. Classification, structure and functions of tissues: epithelial, connective, muscular and nervous tissue. 2. Structure, histology, types and function of bones and cartilage. 3. Classification and histological structure of muscle; ultrastructure of striated muscle. 4. Preparation of temporary mounts: Squamous epithelium, Striated muscle fibres, Nerve cells. 5. Demonstration of the unconditioned reflex action (Deep tendon reflex such as knee jerk reflex). 6. Recording of simple muscle twitch with electrical stimulation (Interpretation/ Virtual). 7. Study of permanent slides of Mammalian Skin, Spinal cord, Hypothalamus, Pineal, Pituitary, Thyroid,	**January (**1 x4 =4**)** Classification, structure and functions of tissues: epithelial, connective, muscular and nervous tissue. Preparation of temporary mounts: Squamous epithelium, Striated muscle fibres, Nerve cells. **February(4x4=16)** Preparation of temporary mounts: Striated muscle fibres, Nerve cells. Structure, histology, types and function of bones and cartilage. Classification and histological structure of	Covered as planned Covered as planned

	Parathyroid, Pancreas, Adrenal, Testis and Ovary. 8. Permanent slide preparation from various tissues: Tissue fixation, block preparation, tissue sectioning, H&E staining, microscopy (Minimum three tissues; tissue can be procured from the slaughterhouse).	muscle; ultrastructure of striated muscle. **March (4x4=16)** Demonstration of the unconditioned reflex action (Deep tendon reflex such as knee jerk reflex). Recording of simple muscle twitch with electrical stimulation (Interpretation/ Virtual). Study of permanent slides of Mammalian Skin, Spinal cord, Hypothalamus, Pineal, Pituitary, Thyroid, Parathyroid. **April (4x4=16)** Study of permanent slides of Mammalian Pancreas, Adrenal, Testis and Ovary. Permanent slide preparation from various tissues: Tissue fixation, block preparation. **May (2 x 4=8)** tissue sectioning, H&E staining, microscopy	Covered as planned Covered as planned Covered as planned

Ms. Nimita Kant

Prof. Dr. Sunita Gupta

Name & Signature of Teacher(s)

Teaching Plan for the Academic Year: (EVEN SEMESTER) JAN - MAY2024
Department: ZOOLOGY

THEORY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
NIMITA KANT	DEVELOPMENTAL BIOLOGY	B.SC. ZOOLOGY HONS. IVTH SEMESTER (NEP)	18TH JAN 2024 10%	Unit 2: Gametogenesis: oogenesis, spermatogenesis; Types of eggs,	COVERED AS PLANNED
			FEB 2024 40%	Unit 2: Egg membranes; Fertilization (External and Internal), Blocks to polyspermy	
			MARCH 2024 30%	Unit 2: Planes and patterns of Cleavage, Types of Blastula, Fate maps; UNIT- 3: Fate of Germ Layers;	
			APRIL 2024 20%	UNIT- 3: Extra-embryonic membranes in birds; Implantation of embryo in humans, structure, types, and functions of placenta.	

Teaching Plan for the Academic Year: (EVEN SEMESTER) JAN - MAY2024
Department: ZOOLOGY

Name of the Teacher	Name of the Paper	Class/Semester	Month	Topics/Units Planned	Covered
NIMITA KANT	PHYSIOLOGY: LIFE SUSTAINING SYSTEMS	B.SC. ZOOLOGY HONS. IIND SEMESTER (NEP)	18TH JANUARY 2024 5 %	UNIT – III Endocrine System - Introduction to Hormones and Endocrine glands	COVERED AS PLANNED
			FEBRUARY 2024 30%	UNIT – III Endocrine System Classification of hormones and their regulation; Mode of hormone action- Signal transduction pathways for peptide and steroid hormones. Physiological action and the disorders related to their secretion	

Teaching Plan for the Academic Year: (EVEN SEMESTER) JAN - MAY2024
Department: ZOOLOGY

			MARCH 2024 30%	UNIT – IV Reproductive System - Physiology of male reproduction: spermatogenesis Physiology of female reproduction– oogenesis, follicular development	COVERED AS PLANNED
			APRIL 2024 30%	UNIT – IV Reproductive System Implantation, pregnancy, and mammary gland development	
			MAY 2024 5%	UNIT – IV Reproductive System Steroidogenesis	

DEPARTMENT OF ZOOLOGY, SHIVAJI COLLEGE

Teaching Plan For Even Semesters Of The Academic Year 2023-2024

Course Name	Paper name	Semester	Month	Unit	Total Course (%)	Course Completed (%)	ICT Tools Used	Remarks
B.Sc. (H) Zoology	Human Physiology: Control & Co-Ordination Systems	II (NEP)	Jan.	Unit-1	10	10	ppt & Keynote	Executed as per initial plan
B.Sc. (H) Zoology	Human Physiology: Control & Co-Ordination Systems	II (NEP)	Feb.	Unit-1	40	40	keynote	Executed as per initial plan
B.Sc. (H) Zoology	Human Physiology: Control & Co-Ordination Systems	II (NEP)	March	Unit-1 & Unit-2	5 & 5	5 & 5	ppt	Executed as per initial plan
B.Sc. (H) Zoology	Human Physiology: Control & Co-Ordination Systems	II (NEP)	April	Unit-2	40	40	ppt	Executed as per initial plan
B.Sc. (H) Zoology	Wildlife Conservation & Management	VI	Jan.	Unit-1	10	10	ppt & Video	Executed as per initial plan
B.Sc. (H) Zoology	Wildlife Conservation & Management	VI	Feb.	Unit-1	33	33	Video	Executed as per initial plan
B.Sc. (H) Zoology	Wildlife Conservation & Management	VI	March	Unit-7	25	25	ppt & Keynotes	Executed as per initial plan
B.Sc. (H) Zoology	Wildlife Conservation & Management	VI	April	Unit-7	32	32	ppt & Video	Executed as per initial plan

Prof. Sunita Gupta