

Annual Teaching Plan
Prof.(Dr.) Suvarna B. More)


Academic Year - 2023- 24
Subject – Zoology

Class – B. Sc. I
Paper No. II, IV

| Month | Topic / Unit | Sub-unit Planned |
|---|---|--|
| 03. 07.2023 To 11.11.2023 July | CELL BIOLOGY & EVOLUTIONARY BIOLOGY- Paper III 1.Cell structure 2. Structure of nucleus 3. Structure of Chromosome Practicals- 2. Study of the following 1. Preparation of 2. Identification of 6. Cytological Preparations.: B. Polytene Chromosome | - Introduction to syllabus - Cell theory and diversity in cell size and shape - Nucleus with reference to Nuclear membrane, Nucleoplasm, Chromatin and nucleolus. - With reference to Morphology and organization (Nucleosome), Polytene Chromosomes i. T.S. and L.S. of Sycon, ii. Life history Taeni and Ascaris and their parasitic adaptations - hemin and hemochromogen crystals - ABO and Rh blood groups - Mitochondria – Stained preparation of mitochondria from Oral mucosal cells by using Janus Green B stain - Stained preparation of Polytene chromosome in chironomous larva/ Drosophila larva |
| August | 1.Plasma Membrane 2.Mitochondria Practical Practical | - Ultra structure (Fluid Mosaic Model) - Chemical composition - and functions - Ultra structure - Chemical composition - and functions i. Study of Amoeba, Euglena, Plasmodium, Paramecium, w.r.t. classification and locomotion |
| September | Endoplasmic Reticulum Golgi complex Practicals- | - Ultra structure - Chemical composition - and functions - Ultra structure - Chemical composition - and functions - Study of Sycon, Hyalonema, and Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium |

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| <p>October</p> | <p>Lysosome</p> <p>Practicals</p> | <ul style="list-style-type: none"> - Ultra structure - Chemical composition - and functions <p>A)Hemin crystals</p> <ul style="list-style-type: none"> - B) and hemochromogen crystals Ultra structure - Chemical composition - and functions |
| <p>11 oct. 2023 term end</p> | <p>Practicals</p> | <ul style="list-style-type: none"> - Study of Taenia solium, Ascaris lumbricoides - Arthropoda- Aprodite, Neris, cockroach, hirudinaria, palacmon, Cancer, limulus,prawn, Scolopendra, Julus, <p>Send to exam</p> |
| <p>Sem II 24.11.2023 To 14.05.2023</p> | <p>Holiday</p> | |
| <p>November</p> | <p>Unit I a) Introduction to Genetics b) Mendelian and post Mendelian Genetics</p> <p>Practicals Cytological Preparations</p> | <ul style="list-style-type: none"> - work on transmission of traits, Genetic Variation. Molecular basis of Genetic Information - Principles of Inheritance, Incomplete dominance and co-dominance <p>a) hemin and hemochromogen crystals b) ABO and Rh blood groups c) Mitochondria – Stained preparation of d) mitochondria from Oral mucosa by using Janus Green</p> <p>Stained preparation of Polytene chromosome in chironomous larva/ Drosophila larva</p> |
| <p>December</p> | <p>Genetics</p> <p>3. Linkage, Crossing Over</p> <p>Practical- Mollusca- Echinodermata --</p> <p>Theory - Genetics</p> <p>Examples on Genetics</p> | <p>Gene interaction, Multiple alleles w.r.t. ABO, Rh blood groups and coat colour in rabbit, sex linked inheritance Linkage and process of crossing over, Coupling and repulsion theory, Cytological evidence of crossing over repulsion theory, Cytological evidence of crossing over</p> <p>Classification and Morphological peculiarities Chiton,Dentalium, Pila, Unio,Loigo, Sepia, Octopes</p> <p>Classification and Morphological peculiarities of, Pentaceros, Ophiura, Echinus, cucumria, Antedon</p> <p>Sex Chromosomal theory of sex determination, Genic balance theory, Haploidy Diploidy mechanism, Environmental sex determination, dosage compensation</p> <p>ii. Examples on Mono, Dihybrid ratio,</p> |

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| January | Genetics Practical-. Practicals- Study of fossil evidences | e). Principles of Inheritance, Incomplete dominance and codominance, gene interaction. Multiple alleles w.r.t. ABO, Rh blood groups and coat colour in rabbit, sex linked inheritance g) from plaster cast models and pictures -Excursion Tour -Journal Checking |
| February | 3. Sex Determination Practicals | Sex Chromosomal theory of sex determination, Genic balance theory, Haploidy Diploidy mechanism, Environmental sex determination, dosage compensation Incomplete dominance, Co-dominance, Multiple alleles, Sex linked inheritance, Linkage and Crossing over and Gene interaction |
| March | Rat Practical Rat -Demonstration | a) Systemic position, Habit and habitat b) Morphological characters c) Respiratory system d) Circulatory system e) Excretory system f) Reproductive system g) Brain a. Digestive system b. Lung, Heart, Kidney, Testis, Ovary and Brain |
| April | Mutations Practical – Study of Insect Vector | Chromosomal Mutations, Deletions, Duplications, Inversions, Translocation, Aneuploidy and Polyploidy Induced Gene Mutation. A) Mosquito born diseases a) Malaria b) Dengue c) Chikungunya A) House fly Born Disease- Myiasis B) Flea born disease- Plague, Typhus fever Repetitions and Journal Checking |
| 14.05.2023 term end May | Send to Exam | |


Head
Department of Zoology
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Annual Teaching Plan
Prof.(Dr.) Suvarna B. More)

Academic Year - 2023- 24
Subject – Zoology


Class – B. Sc. II
Paper No. V, VII

| Month | Topic / Unit | Sub-unit Planned |
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| 03.07.2023 To 11.11.2023 July | Unit I 1.Proto Chordates a. Hemichordata b. Protochordata 2.Agnatha | -Introduction General characters and Classifications of Proto Chordates - General characters and Classification - General characters and Classification of Protochordata General characters of Agnatha and Classification of cyclostomes up to classes |
| August | 3.Pisces: General characters and Classification up to orders 4.Amphibia: Practicals- Practicals Practical I- Unit: 1 Animal diversity-II: | General characters and Classification up to orders 1.General features and Classification up to orders Systematic Position, Habit and Habitat <input type="checkbox"/> Morphological Characters <input type="checkbox"/> Digestive System <input type="checkbox"/> Respiratory System <input type="checkbox"/> Heart and Composition of Blood <input type="checkbox"/> Excretory System <input type="checkbox"/> Reproductive System (Male and Female) <input type="checkbox"/> Brain - Study of Protochordates and Agnatha Study of the following specimens with reference to morphological peculiarities and classification upto orders: a) Herdmania, Branchiostoma, b) Petromyzon, Sphyrna, Pristiis, Torpedo, Labeo, Exocoetus, Anguilla, c) Ichthyophis/Ureotyphlus, Salamandra, Bufo, d) Hyla, Chelone, Hemidactylus, Chamaeleon, Draco, Crocodylus, Gavialis |
| September | Unit 2: Paper V 5.Reptiles: Practicals - Characters Identifying venomous and non-venomous snakes Demonstration of Frog: Practicals | 1. General characters and Classification up to orders: 2.Venomous and non-venomous snakes, Biting mechanism in snakes Russell's viper, Saw scaled viper, Common krait, Indian Cobra, Sea snake, Rat snake and Checkered keelback. a) Digestive System b) Respiratory System c) Excretory system |

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| | Practicals | <p>d) Male and Female Reproductive System</p> <p>e) heart and brain</p> <ul style="list-style-type: none"> - Biochemical tests for Glucose, Fructose, Sucrose, Lactose and Lipid. - Estimation of total protein in given solutions by Lowry's method. - Study of activity of salivary amylase under optimum conditions |
| October | 6. Aves 7. Mammals- | <ul style="list-style-type: none"> - General features and Classification up to orders: 1 General characters and Classification up to orders: <p>Study of the following specimens with reference to morphological peculiarities and classification up to orders of,</p> <p>-Shrew, Bat, Squirrel and Loris.</p> <ol style="list-style-type: none"> a) Effect of Temperature and pH on activity of salivary amylase b) Urea, urease enzyme activity |
| 11 oct. 2023 term end | Practical Practical | |
| Sem II 24.11.2023 To 14.05.2023 November | <p>Paper VII Unit 1: Unit II Functional anatomy of female reproduction</p> <p>Practicals- Dissection of, fowl</p> <p>Practical II Unit: 1 Reproductive Biology:</p> | <p>1. Structure and hormones of pituitary gland Functional anatomy of female reproductive system</p> <p>Anatomy of female reproductive system</p> <ol style="list-style-type: none"> a. Histology of Ovary b. Histology of Oviduct/Fallopian Tube c. Histology of Uterus d. Histology of Cervix and vagina e. Reproductive cycle in Human f. Female sex hormones <ul style="list-style-type: none"> - brain of fowl. - hyoid apparatus, sclerotic plates, Pecten and Collumella of fowl. - Cycloid, Ctenoid and Placoid scales in fishes <p>1. Study of Animal house: Set up and maintenance of animal house Breeding techniques Care of normal and experimental animals with the help of model/photographs</p> |
| December | Physiology- Functional anatomy of female reproduction: | <p>Folliculogenesis, process of Oogenesis and structure of ovum</p> <ol style="list-style-type: none"> h. Menstrual cycle and hormonal regulation i. Transport of ovum and sperm in female genital tract j. Process of fertilization k. Hormonal control in Implantation |

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| | Practicals- Unit I | <p>1. Diagnostic features of pregnancy and hormonal regulation m. Mechanism and hormonal regulation of Parturition and Lactation</p> <p>2. Stages/phases of menstrual cycle.</p> <p>3. Surgical techniques: Principles of surgery in endocrinology, Ovariectomy, Tubectomy, hysterectomy, orchiectomy and vasectomy in rats through Demonstration or Video</p> <p>4. Examination of histological sections from photomicrographs/permanent slides of rat Testis, Epididymis, Ovary, Fallopian tube, Uterus (proliferative and secretory stages), Cervix and Vagina</p> |
| January | <p>Unit III: Functional anatomy of male reproductive System: B. Anatomy of male reproductive System</p> <p>Practicals</p> | <p>Histology of testis b. Histology of Epididymis c. Histology of Seminal vesicle d. Histology of prostate gland e. Histology of Cowper's gland</p> <p>5. Structure of human sperm and ovum 6. Detection of pregnancy by using kit. 7. Study of contraceptive devices by photographs or models</p> |
| February | <p>Theory</p> <p>Practical- Unit II: Applied Zoology:</p> <p>Practical</p> | <p>f. Histology of penis g. Male sex hormones h. Process of spermatogenesis and structure of sperm i. Epididymal functions and sperm maturation j. Sperm transportation in male genital tract k. Hormonal control of Testicular activities</p> <p>1. Study of arthropod vectors associated with human diseases: Pediculus, Culex, Anopheles, Aedes and Xenopsylla 2. Study of insect pests through damaged products/photographs. i) Crop pests a. Gram pod borer (<i>Helicoverpa armigera</i>) b. Sugarcane leaf hopper (<i>Pyrilla perpusilla</i>) c. Lemon Butterfly (<i>Papilio demoleus</i>) ii) Stored grains pests a. Pulse Beetle (<i>Callosobruchus chinensis</i>) b. Rice Weevil (<i>Sitophilus oryzae</i>) c. Red Flour beetle (<i>Tribolium castaneum</i>) -Field trip to poultry farm or animal breeding centre or any suitable place to study animal diversity or any place related to theory syllabus. Submission of field trip report</p> |

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| March | Unit IV: Reproductive Health Practical- | <p>a. Infertility in Male: causes, diagnosis and management</p> <p>b. Infertility in Female: causes, diagnosis and management</p> <p>c. Assisted Reproductive Technology: Sperm bank. Frozen embryos. Intrauterine Transfer (IUT). Zygote Intrafallopian Tube Transfer (ZIFT) Gamete Intrafallopian Transfer (GIFT). Intracytoplasmic Sperm Injection (ICSI).</p> <p>4. Identifying feature and economic importance of <i>Helicoverpa armigera</i> (Cotton bollworm), <i>Papilio demoleus</i> (Lime butterfly), <i>Pyrrilla perpusilla</i> (Sugarcane plant hopper), <i>Callosobruchus chinensis</i> (Pulse beetle), <i>Sitophilus ryzae</i> (Rice weevil) and <i>Tribolium castaneum</i> (Red flour beetle).</p> |
| April | Unit V: Contraceptive Methods: Practical- Unit III | <p>d. In vitro fertilization (IVF): Ovarian stimulation, Egg retrieval, Sperm retrieval, Fertilization and Embryo transfer</p> <p>a. Temporary methods b. Permanent Methods</p> <p>3. Poultry: To study the breeds of poultry birds with the help of photographs (2 Indigenous and 2 Exotic poultry birds)</p> <p>4. Sericulture: To study the Life cycle of mulberry silk moth (<i>Bombyx mori</i>), - Types of silk moths – Muga, Tasar and Eri by photographs or specimen Journal checking, Tour report preparator</p> |
| May 14 May 2023 term end | Send to Exam | |


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Annual Teaching Plan
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Academic Year - 2023- 24 Class – B. Sc. III
Subject – Zoology Paper No.IX. XII, XIII, XV

| Month | Topic / Unit | Sub-unit Planned |
|---|---|---|
| 03. 07.2023 To 11.11.2023 July | Unit 1: Integumentary System Unit 2: Skeletal System Unit 4: Respiratory System Unit 6: Evolution of Kidney Practical – I Comparative anatomy and developmental biology of vertebrates | 1. Generalized structure of integument 2. Functions of Integument 3. Soft and Hard epidermal derivatives 4. Hard epidermal derivatives 1. Vertebral column 2. Appendicular skeleton 3: Digestive System 4 Brief account of alimentary canal and digestive glands Brief account of Gills, lungs, air sacs of Pisces . Amphibians . Reptiles, Aves and Mammals Succession of kidney Pro,meso and metanephric kidney Comparative Study of following 1. V.S. of skin of vertebrates 2. Digestive system of vertebrates 3. Respiratory system of vertebrates 4. Heart of vertebrates 5. Brain of vertebrates |
| August | Unit 3: Digestive System Unit 5: Circulatory System Unit 7: Nervous System Unit 8: Sense Organs Paper XII Practical Practicals Goat farming a. Breeds (any four = 2 Indigenous and 2 Exotic) 6. Osteology | - Brief account of alimentary canal and digestive glands - of Pisces , Amphibians , Reptiles. Aves and Mammals Evolution of heart and aortic arches of Pisces , Amphibians , Reptiles, Aves and Mammals - Comparative account of brain a. Comparative account of ear and eye of vertebrates - Endocrinology - Projects work - Goat Farming - b. Housing c. Feeding 6. Visit to goat farm or animal breeding centre – submission of visit report a) The skeleton of fowl (Disarticulated) b) The skeleton of rabbit (Disarticulated) c) Mammalian skull's – (any one herbivorous and one carnivorous animal) |
| September | Paper XII | - Fresh Water Ecosystem |

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| | <p>Unit I- Aquatic Biomes</p> <p>2. Streams</p> <p>Practical - B] Immunology</p> <p>Practical Examination of Gametes – Frog or Rat sperm & ovum through slides or microphotographs</p> | <ul style="list-style-type: none"> - Estuaries - Intertidal zone - Oceanic pelagic zone - Coral reef <p>a. Different stages of stream development b. Physico-chemical Environment c. Adaptation of hill stream fishes</p> <p>- Study of lymphoid organ's (Photograph, Models, Videos) 2. Histological study of (slides or photographs) a. Spleen b. Thymus c. Lymph nodes</p> <p>3. Preparation of stained blood smears to study various types of blood cells 4. Determination of ABO blood groups</p> |
| October | <p>Unit 3: Endocrinology</p> <p>Practical II. Study of developmental stages of frog.</p> <p>Practical Study of Histological structures of placenta (permanent slide or microphotographs)</p> <p>Send to exam</p> | <p>a. Study of endocrine glands – Anatomy and histology b. Hormones- Nature, role, regulation and disorders with reference to the following thyroid gland, parathyroid gland, adrenal gland and islets of Langerhans</p> <p>1. Cleavage 2. Blastulation 3. Gastrulation 4. Neurulation 5. Stages of metamorphosis in frog a. External gill stage b. Internal gill stage c. Forelimb stage d. Hind limb stage e. Tail bud stage f. Juvenile stage</p> <p>1) Epitheliochorial 2) Endotheliochorial 3) Hemochorial 4) Syndesmochorial 5) Hemoendothelial</p> |
| 11 oct. 2023 term end | | |
| Sem II 24.11.2023 To 14.05.2023 November | <p>Paper XIII</p> <p>Unit 1 : Gametogenesis</p> <p>Unit 2: Early Development of Frog</p> | <p>Types of Eggs 2. Fertilization – Types and Process of Fertilization 3. Types of Cleavages</p> <p>1. Structure of mature egg and its membranes 2. Cleavage 3. Blastula and its fate map 4. Process of gastrulation</p> |

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| | Practicals | <ol style="list-style-type: none"> 5. Types of Morphogenic Movements 6. Fate of three germinal layers 7. Neurulation 8. Metamorphosis in frog and its hormonal regulation <ol style="list-style-type: none"> 1. Whole mount of chick embryo 2. Examinations of gametes-Frog and Rat sperm and ovum through slides or microphotographs. 3. Microtomy |
| December | Unit 3: Chick Embryology | <ol style="list-style-type: none"> 1. Structure of sperm 2. Structure of egg and vitellogenesis 3. Fertilization and cleavage 4. Blastula and its fate map 5. Process of gastrulation 6. Organogenesis <ol style="list-style-type: none"> a. Development of neural tube and brain up to 72 hours of incubation b. Development of gut up to 72 hours of incubation c. Development of blood and heart up to 72 hours of incubation d. Foetal membranes and significance |
| January | Unit 4: Late Embryonic Development III. Study of Chick Embryo Paper XV Unit 1: Apiculture Unit 2 : Animal Husbandary Practicals Freshwater prawn culture Practicals 6. Visit to goat farm or animal breeding centre – | <ol style="list-style-type: none"> 1. Implantation of embryo in human being 2. Placenta – Formation, types and significance Preparation of whole mount chick embryo 12. Whole mount of chick embryo – 18, 24, 33, 48 and 72 hours. 13. T.S. of chick embryo – 18, 24, 33, 48 and 72 hours. <ol style="list-style-type: none"> 1. Types and casts of honey bee 2. Honey Comb 3. Bee Keeping <ol style="list-style-type: none"> a. Artificial models of bee hive – Newton and Langstroth models b. Bee keeping Equipments c. Extraction of Honey 4. Medicinal Value of Honey <ol style="list-style-type: none"> a. Species of Prawn b. Site selection c. Farm Construction d. Production system e. Harvesting Breeds (any four -2 Indigenous and 2 Exotic) b. Housing c. Feeding submission of visit report |
| February | Unit 4: Freshwater prawn culture | <ol style="list-style-type: none"> 1. Species of Prawn 2. Site selection 3. Farm Construction 4. Production system: fertilization, Larval Development, Food and feeding |

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| | Practicals B] Immunology | 5. Harvesting 1. Study of lymphoid organ's (Photograph. Models. Videos) 2. Histological study of (slides or photographs) a. Spleen b. Thymus c. Lymph nodes |
| March | Unit 5: Fish Technology 5 Practicals- Practicals Unit 1: Applied Zoology 1. Apiculture | Genetic improvements in aquaculture industry: 1. Induced breeding 2. Transportation of fish seed 3. Feeding and development 4. Harvesting and Marketing C] Cell counting and viability test from splenocytes of farm breed animals / cell lines 3. Preparation of stained blood smears to study various types of blood cells 4. Determination of ABO blood groups 5. Demonstration of a. Elisa b. Immuno-electrophoresis a. Casts of Honey Bees b. Bee Hive(Photographs or models) c. Pollen Basket d. Sting Apparatus e. Honey f. Newton's model of Bee Hive (Photographs or models) g. Bee keeping Equipments (Photographs or models) Project work |
| April | Unit 4 : Goat Farming 10. Goat farming Practicals | 1. Breeds 2. Feeding 3. Housing 4. Economic Importance 2. Preservation & Artificial insemination in cattles 1. Indigenous and exotic breeds of cattle 2. Preservation and artificial insemination in cattle 3. Induction of early puberty 4. Synchronization of estrus in cattle 5. Commercial importance of dairy farming |
| May14 May 2023 term end | Send to exam | |


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SHIKSHAN PRASARAK SANSTHA'S
PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA, KAVATHE
MAHANKAL
DEPARTMENT OF ZOOLOGY

Teaching Plan for academic year 2023-24

B.Sc. Part-I

Name of Faculty: Dr. R. A. Sanadi

| Month | Topic/Unit | Subunit planned |
|---|-------------|---|
| B.Sc. Part-I Semester-I, Paper-I DSC-15A (Animal Diversity-I) Term I (03 July, 2023 to 11 November, 2023) | | |
| July | Unit I | <p>Kingdom Protist: General characters and classification up to classes; Locomotory organelles and locomotion in Protozoa</p> <p>Phylum: Porifera: General characters and classification up to classes; Canal System in Sycon</p> <p>Phylum: Cnidaria: General characters and classification up to classes; Polymorphism in Hydrozoa</p> |
| | Practical I | <p>A. Kingdom: Protista Amoeba , Euglena , Plasmodium , Paramecium</p> <p>B. Phylum: Porifera: Sycon , Hyalonema, Euplectella</p> <p>C. Phylum: Cnidaria Obelia, Physalia, Aurelia, Tubipora, Metridium</p> <p>D. Phylum: Platyhelminthes : <i>Taenia Solium</i></p> <p>E. Phylum: Aschelminthes <i>Ascaris Lumbricoides</i> (Male And Female)</p> |
| August | Unit I | <p>Phylum: Platyhelminthes: General characters and classification up to classes; Life history of <i>Taenia solium</i> and its parasitic adaptations</p> <p>Phylum: Nemathelminthes : General characters and classification up to classes; Life history of <i>Ascaris lumbricoides</i> and its parasitic adaptations</p> |
| | Practical I | <p>F. Phylum Annelida: Aphrodite, Nereis, Pheretima, Hirudinaria</p> <p>G. Phylum: Arthropoda: Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus , Periplaneta, Apis</p> <p>H. Phylum- Mollusca : Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus</p> |

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| | | I. Phylum Echinodermata Pentaceros, Ophiura, Echinus, Cucumaria, Antedon |
| September | Unit II | Phylum: Annelida: General characters and classification up to classes; Metamerism in Annelida Phylum: Arthropoda: General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects |
| | Practical I | Study of the following : i. a. T.S. of Sycon b. L.S. of sycon ii. Life history and their parasitic adaptations of following specimen a. <i>Taenia solium</i> b. <i>Ascaris lumbricoides</i> Physiological Experiments Preparation of haemin crystals. Preparation of blood smear |
| October | Unit II | Phylum: Mollusca : General characters and classification up to classes; Torsion in gastropods Phylum: Echinodermata: General characters and classification up to classes; Water-vascular system in Asteroidea |
| | Practical I | Physiological Experiments Identification of ABO blood group and Rh factor |
| November | | Send to exam |
| B.Sc. Part-I Semester -II, Paper-III DSC – 15 B (Animal Diversity and Insect Vector) Term II (24 November, 2023 to 09 May, 2024) | | |
| November | Unit: I | Type Study: Rat (<i>Rattus rattus</i>) (Physiology is not expected) Systematic position, Habit and Habitat, Morphological Characters |
| | Practical I | Cytological Preparations of : i. Stained preparation of mitochondria from onion peeling/Oral mucosa by using Janus Green B. ii. Stained preparation of Polytene chromosome in chironomous larva/ <i>Drosophila</i> larva. |
| December | Unit: I Animal Diversity | Type Study: Rat (<i>Rattus rattus</i>) : Digestive System, Respiratory System, Circulatory System (Composition of Blood and Heart) |

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| | Practical I | Demonstration of Rat to study- Digestive system of Rat, Respiratory system of Rat (Lungs) Circulatory system of Rat (Heart) , Excretory system of Rat(Kidney) Male reproductive system of Rat(Testis), Female reproductive system of Rat(Ovary), Nervous system of Rat(Brain) Study of Mendelian Inheritance and gene interactions (Non Mendelian Inheritance) using suitable genetic examples |
| January | Unit: I | Type Study: Rat (<i>Rattus rattus</i>) (Physiology is not expected) Excretory System, Reproductive System , Brain for Rat |
| | Practical I | Study of following insect vector Mosquito borne diseases (Causal organism, symptoms and control measure) Malaria, Dengue , Chikungunya |
| February | B.Sc. Part-I Semester -II, Paper-IV DSC – 16 B (Genetics) | |
| | Unit II: | Sex Determination: Chromosomal theory, Genic balance theory |
| | Practical I | Study of following insect vector Housefly borne diseases (Causal organism, symptoms and control measure) Myiasis Flea borne diseases (Causal organism, symptoms and control measure) Plague, Typhus fever |
| March | Unit II: | Sex Determination: Haploidy-Diploidy mechanism, Environmental Theory |
| | Practical I | Revision |
| April | Practical Exam | |
| May | Theory Exam | |



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Signature of Teacher

SIKSHAN PRASARAK SANSTHA'S
PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA, KAVATHE
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DEPARTMENT OF ZOOLOGY

Annual Teaching Plan for academic year 2023-24

B.Sc. Part-II

Name of Faculty: Dr. R. A. Sanadi

| Month | Topic/Unit | Subunit planned |
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| B.Sc. Part-II Semester -III, Paper-VI DSC- C (BIOCHEMISTRY-NEP 2020) Term I (03 July, 2023 to 11 November, 2023) | | |
| July | Unit I | Carbohydrate Metabolism 1) Classification and biological significance of carbohydrates 2) Glycolysis 3) Krebs Cycle 4) Electron Transport Chain |
| | Practical I | Unit – I Animal Diversity - I |
| | | A. Classification and general characters of Protochordates 1. Hardmania 2. Branchiostoma |
| | | B. Classification and general characters of Class Cyclostomata 1. Petromyzon |
| C. Classification and general characters of class Pisces 1. Sphyrna 2. Pristis 3. Torpedo 4. Labeo 5. Exocoetus 6. Anguilla | | |
| D. Classification and general characters of class Amphibia 1. Ichthyophis 2. Salamandra 3. Bufo 4. Hyla | | |
| E. Classification and general characters of Class Reptilia 1. Chelone 2. Hemidactylus 3. Chameleon 4. Draco 5. Crocodylus 6. Gaviali | | |
| Practical II | Unit: 1 Reproductive Biology: 1. Study of animal house: a) Set Up And Maintenance Of Animal House. b) Breeding Techniques. c) Care of Normal And Experimental Animals. 2. Study of stages of Menstrual cycle. 3. Surgical techniques: a) Principles of surgery in endocrinology. b) Ovaryectomy c) Tubectomy in rat | |
| August | Unit I | Carbohydrate Metabolism 5) Pentose Phosphate Pathway 6) Gluconeogenesis 7) Glycogenesis |

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| | | 8) Glycogenolysis |
| | | Lipid Metabolism : Classification and biological significance of lipids |
| | Practical I | 2 Demonstration of Frog 1. Digestive system 2. Lungs 3. Heart 4. Kidney 4. Testis 5. Ovary 7. Brain 3. Identification of Venomous and non-Venomous snakes 1. Russell's' viper 2. Saw scaled viper 3. Common Krait Indian Cobra Pit viper 5. Sea snake 6. Rat snake 7. Checkered Keelback 4. Classification and general characters of Class Aves 1. Duck 2. Vulture 3. Pigeon 4. Parrot 5. Kingfisher 6. Woodpecker |
| | Practical II | 5. Surgical techniques: d) Principles of surgery in endocrinology. e) Ovaryectomy f. Tubectomy g. Hysterectomy (terus) f) Castration Vasectomy in rat 4. Examination of histological sections from photomicrographs/ permanent slides of rat Histology of testis Histology of ovary Histology of Uterus Histology of vagina Histology of Epididymis Histology of Fallopian Tube Histology of Cervix |
| September | Unit I : | Lipid Metabolism : β oxidation of fatty acids. |
| | Unit II: | Protein metabolism : 1) Structure, Classification and biological significance of proteins 2) Transamination |
| | Practical I | 5. Temporary preparations of scales in Fishes 1. Cycloid scale 2. Ctenoid scale 3. Placoid scale Unit – II Biochemistry 1 Qualitative tests to identify functional groups 1. Glucose 2. Fructose 3. Sucrose 4. Lactose 5. Lipid |
| | Practical II | 5. Structure of Human sperm and ovum 6. Detection of pregnancy by using kit |
| October | Unit II: | Protein metabolism 3) Deamination 4) Urea Cycle/ Ornithine cycle |
| | Practical I | h. Mammalia: Duck-billed platypus, Kangaroo, Bat, Squirrel, Loris |
| | Practical II | 6. Study of modern contraceptive devices by photographs or models |
| November | | Send to exam |


B.Sc. Part-II Semester -IV, Paper-VII DSC- C (APPLIED ZOOLOGY-I -NEP 2020)
Term II (24 November, 2023 to 09 May, 2024)

| | | |
|---------------------|---|--|
| November | Unit I | Introduction to Host-parasite Relationship: Host, Definitive host, Intermediate host, Parasitism, Symbiosis, Commensalism, Reservoir, Zoonosis |
| | Practical I | Study of activity of salivary amylase under optimum conditions Study of activity of salivary amylase Effect of temperature, pH and salinity on activity of salivary amylase 1. Effect of temperature 2. Effect of pH 3. Effect of Salinity |
| | Practical II | Revision |
| December | Paper-VII DSC- C (APPLIED ZOOLOGY-I -NEP 2020) | |
| | Unit II: | Epidemiology of Diseases: Transmission, Prevention and control of diseases: Tuberculosis, Typhoid. |
| | Unit III: | Rickettsia and Spirochetes: Brief account of Rickettsia prowazekii, Borrelia recurrentis and Treponema pallidum |
| | Practical I | 1. Dissection of brain of fowl |
| | Practical II | Study of arthropod vectors associated with human diseases Pediculus Culex Anopheles Aedes Xenopsylla Study of insect damage to different plant parts/stored grains through damaged products/photographs. Crop pests : Gram pod borer (<i>Helicoverpa armigera</i>), Sugarcane leaf hopper (<i>Pyrrilla perpusilla</i>), Lemon Butterfly (<i>Papilio demoleus</i>) |
| January | DSC-C (REPRODUCTIVE BIOLOGY - NEP 2020) | |
| | Paper-VII | |
| | Unit IV | Reproductive Health a. Infertility in Male: causes, diagnosis and management b. Infertility in Female: causes, diagnosis and management c. Assisted Reproductive Technology: Sperm bank. Frozen embryos. Intrauterine Transfer (IUT). Zygote Intrafallopian Tube Transfer (ZIFT) Gamete Intrafallopian Transfer (GIFT). Intracytoplasmic Sperm Injection (ICSI). |
| | Practical I | Temporary preparations of (Mountings) i. Pecten of fowl ii. Sclerotic plate of fowl iii. Columella of fowl iv. Hyoid apparatus of fowl |
| Practical II | Stored grain pests Pulse Beetle (<i>Callosobruchus chinensis</i>), Rice Weevil (<i>Sitophilus oryzae</i>) Red Flour beetle (<i>Tribolium castaneum</i>) Identifying feature and economic importance of | |

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| | | Helicoverpa armigera (Cotton bollworm), Papilio demoleus (Lime butterfly), Pyrilla perpusilla (Sugarcane plant hopper), Callosobruchus chinensis (Pulse beetle), Sitophilus oryzae (Rice weevil), Tribolium castaneum (Red flour beetle) |
| February | Paper-VII DSC-C (REPRODUCTIVE BIOLOGY - NEP 2020) | |
| | Unit IV | Reproductive Health d. In vitro fertilization (IVF): Ovarian stimulation, Egg retrieval, Sperm retrieval, Fertilization and Embryo transfer |
| | Practical I | Estimation of total protein in given solutions by Lowry's method |
| | Practical II | Revision |
| March | Paper-VII DSC-C (REPRODUCTIVE BIOLOGY - NEP 2020) | |
| | Unit V | Contraceptive Methods: a. Temporary methods b. Permanent Method |
| | Practical I | Urea, urease enzyme activity |
| | Practical II | UNIT III Poultry To study the breeds of poultry birds with the help of photographs (2 Indigenous and 2 Exotic poultry birds) Sericulture To study the Life cycle of mulberry silk moth (Bombyx mori) Types of silk moths: Muga silk moth, Tasar silk moth, Eri silk moth |
| | Practical I | Practical exam |
| | Practical II | |
| May | Theory exam | |


Head

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Signature of Teacher

Department of Zoology

Annual Teaching Plan for academic year 2023-24

B.Sc. Part-III

Name of Faculty: Dr. R. A. Sanadi

| Month | Topic / Unit | Sub-unit Planned | |
|-------|--|--|----------------------------------|
| July | B.Sc. Part-III Semester -V, Zoology Paper-XI DSE-F30 (Bio-techniques and Biostatistics) Term I (03 July, 2023 to 11 November, 2023) | | |
| | Unit 1: Genetically modified organisms – | 1. Production of cloned and transgenic animals: a. Nuclear Transplantation b. Retroviral Method c. DNA microinjection 2. Applications of transgenic animals: a. Productions of pharmaceuticals b. Production of donor organs 3. Knockout mice. | |
| | Unit 2: Culture techniques and applications - 6 | a. Animal cell culture: Introduction, principle and applications b. Stem Cells: Introduction to stem cells i) Potency of stem cells: Totipotency, Pleurepotency, Multipotency, Unipotency ii) Sources of stem cells- Embryo, Fetal, Adult, Bone marrow | |
| | Paper-XII DSE-F31 Aquatic Biology | | |
| | Unit I- Aquatic Biomes | a. Freshwater ecosystem (lakes, wetlands, streams and rivers), b. Estuaries c. Intertidal zones d. Oceanic pelagic zone e. Marine benthic zone f. Coral reefs | |
| | Unit II Fresh water Biology 1. Lakes | a. Lake as an Ecosystem b. Lake Morphometry c. Physico-chemical characteristics Light, Temperature , Thermal Stratification , Dissolved solid, Carbonates, Bicarbonates, Phosphates and Nitrates Turbidity Dissolved gases (Oxygen Carbon dioxide, Nutrient Cycle – (Nitrogen, Sulphur & Phosphorus) | |
| | Zoology Practical-IV | | |
| | Aquatic biology, insect vector & diseases | Histology of Following mammalian organs- | |
| | | a. Tooth (V.S.) | b. Tongue c. Salivary gland |
| | | d. Stomach | e. Duodenum f. Liver |
| | g. Ileum | h. Pancreas i. Kidneys | |
| | | Endocrine glands (Anatomy and Histology) – Thyroid, Parathyroid, Adrenal and Pancreas. | |

August

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| Instruments used in limnology & their significance | |
| a) Secchi disc b) Van Dorn bottle c) Conductivity meter d) Turbidity meter e) PONAR grab sampler | |
| Zoology Practical – II | |
| Applied Zoology–II and Immunology | 3. Preparation of stained blood smears to study various types of blood cells 4. Determination of ABO blood groups 5. Demonstration of a. ELISA b. Immuno-electrophoresis c. Cell counting and viability test from splenocytes of farm breed animals / cell lines |
| Zoology Paper-XI DSE-F30 (Bio-techniques and Biostatistics) | |
| Unit III: Biostatistics | a. Classification of Biological data b. Frequency distribution c. Tabulation d. Graphical representation of data |
| Paper-XII DSE-F31 Aquatic Biology | |
| Unit II Streams | a. Different stages of stream development b. Physico-chemical Environment c. Adaptation of hill stream fishes |
| Zoology Practical–IV | |
| Aquatic biology, insect vector & diseases | 1. Identify the zooplanktons present in lake ecosystem 2. Determination of dissolved oxygen 3. Determination of free CO ₂ 4. Estimation of total hardness of water |
| Zoology Practical – II | |
| Applied Zoology – II and Immunology | 1. Apiculture a. Casts of Honey Bees b. Bee Hive (Photographs or models) c. Pollen Basket d. Sting Apparatus e. Honey f. Newton's model of Bee Hive (Photographs or models) g. Bee keeping Equipments (Photographs or models) 2. Preservation & Artificial insemination in cattles 3. Pearl culture a. Species of oyster b. Process of Pearl formation: natural and artificial c. Importance of Pearl 4. Freshwater prawn culture a. Species of Prawn b. Site selection c. Farm Construction d. Production system e. Harvestin |

September

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| B.Sc. Part-III Semester -V, Zoology Paper-XI | |
| DSE-F30 (Bio-techniques and Biostatistics) | |
| Unit III: Biostatistics | e. Measures of central tendency (Mean, Median, Mode) f. Dispersion – Mean, deviation & standard deviation |
| Zoology Practical–IV | |
| Aquatic biology, insect vector & diseases | 1. Determination of area of a lake using graphimetric & gravimetric method 2. Determination of turbidity or transparency from nearby lake or water body 3. Determination of alkalinity (Carbonates & bicarbonates) from water collected from nearby lake or water body |
| Zoology Practical – II | |
| Applied Zoology – II and Immunology | B] Immunology 1. Study of lymphoid organ's (Photograph, Models, Videos) 2. Histological study of (slides or photographs) a. Spleen b. Thymus c. Lymph nodes |

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| October | Zoology Paper-XI DSE-F30 (Bio-techniques and Biostatistics) | |
| | Unit III: Biostatistics | g. Correlation – Scattered diagram, Karl Pearson’s correlation coefficient and Spearman’s rank correlation coefficient. |
| Send to exam | | |
| B.Sc. Part-III Semester -VI, Zoology Paper-XV DSE-E31 (Applied Zoology - II) Term II (24 November , 2023 to 09 May, 2024) | | |
| November | Unit 1: Apiculture | 1. Types and casts of honey bee 2. Honey Comb 3. Bee Keeping a. Artificial models of bee hive – Newton and Langstroth models b. Bee keeping Equipment’s c. Extraction of Honey 4. Medicinal Value of Honey |
| | Unit 2 : Animal Husbandary | 1. Indigenous and exotic breeds of cattle 2. Preservation and artificial insemination in cattle 3. Induction of early puberty 4. Synchronization of estrus in cattle 5. Commercial importance of dairy farming |
| | Unit 3: Pearl culture | 1. Species of oyster 2. Process of Pearl formation: natural and artificial 3. Maintenance of oysters 4. Harvesting 5. Importance of Pearl |
| | Unit 4: Freshwater prawn culture | 1. Species of Prawn 2. Site selection 3. Farm Construction 4. Production system: fertilization, Larval Development, Food and feeding 5. Harvesting |
| | Zoology Practical-IV | |
| | | 10. Study of different kinds of mouthparts of insects a) Chewing & biting b) Chewing & lapping c) Piercing & sucking d) Sponging e) Siphoning 11. Study of following insect vectors through permanent slides or photograph a) Insect vector – Mosquito, sandfly & housefly |
| | Zoology Practical – II | |
| | 10. Goat farming | a. Breeds b. Housing c. Feeding 6. Visit to goat farm or animal breeding center – |
| | Zoology Paper-XV DSE-E31 (Applied Zoology - II) | |
| | Unit 5: Fish Technology | Genetic improvements in aquaculture industry: : 1. Induced breeding 2. Transportation of fish seed 3. Feeding and development 4. Harvesting and Marketing |
| Unit 6 : Goat Farming | 1. Breeds 2. Feeding 3. Housing 4. Economic Importance | |
| Zoology Paper- XVI DSE-F32 (Insect Vectors and Histology) | | |
| Unit I: Dipteran as Disease Vectors | 1. Dipteran as important insect vectors : a. Mosquitoes b. Sand fly c. Houseflies | |
| Zoology Practical-IV | | |
| | b) mosquito borne diseases – Malaria, dengue, chikungunya, encephalitis, filariasis c) Study of sandfly borne diseases – Visceral leishmanians, Cutaneous leishmanians, Phlebotomus fever d) Study of housefly born diseases – Myiasis e) Study of flea borne diseases – Plague, typhus | |
| December | | |

January

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| Zoology Practical – II | |
| Revision B] Immunology | 1. Study of lymphoid organ's 2. Histological study of: a. Spleen b. Thymus c. Lymph nodes 3. Preparation of stained blood smears to study various types of blood cells 4. Determination of ABO blood groups 5. Demonstration of : a. ELISA b. Immuno-electrophoresis C] Cell counting and viability test from splenocytes of farm breed animals / cell line |

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| Zoology Paper- XVI DSE-F32 (Insect Vectors and Histology) | |
| Unit I: Dipteran as Disease Vectors | 2. Study of mosquito borne diseases – a. Malaria b. Dengue c. Chikungunya d. Viral encephalitis e. Filariasis 3. Control measures of Mosquitoes 4. Study of house fly as important mechanical vector a. Myiasis, Control of house fly |

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| Zoology Practical-IV | |
| Revision | 1. Determination of area of a lake using graphimetric & gravimetric method 2. Identify the zooplanktons present in lake ecosystem 3. Determination of turbidity or transparency from nearby lake or water body 4. Determination of dissolved oxygen 5. Determination of free CO ₂ 6. Determination of alkalinity (Carbonates & bicarbonates) from water collected from nearby lake or water body 7. Estimation of total hardness of water |

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| Zoology Practical – II | |
| Revision Unit 1: Applied Zoology | 1. Apiculture : a. Casts of Honey Bees b. Bee Hive c. Pollen Basket d. Sting Apparatus e. Honey f. Newton's model of Bee Hive g. Bee keeping Equipments (Photographs or models) 2. Preservation & Artificial insemination in cattles 8. Pearl culture : a. Species of oyster b. Process of Pearl formation: natural and artificial c. Importance of Pearl |

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| Zoology Paper- XIII DSE-E30 (DEVELOPMENTAL BIOLOGY OF VERTEBRATES) | |
| Unit 3: Chick Embryology | 1. Structure of sperm 2. Structure of egg and vitellogenesis 3. Fertilization and cleavage 4. Blastula and its fate map 5. Process of gastrulation 6. Organogenesis a. Development of neural tube and brain up to 72 hours of incubation |


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| Zoology Practical – II | |
| Revision | 7. Estimation of total hardness of water 8. Instruments used in limnology & their significance a) Secchi disc b) Van Dorn bottle c) Conductivity meter d) Turbidity meter e) PONAR grab sampler 10. Endocrine glands – Thyroid, Parathyroid, Adrenal and Pancreas. 9. Visit to seashore/water reservoir/animal sanctuary to study animal diversity. |

March

| Zoology Practical – II | |
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| Revision Unit 1: Applied Zoology | <p>9. Freshwater prawn culture : a. Species of Prawn b. Site selection c. Farm Construction d. Production system e. Harvesting</p> <p>10. Goat farming : a. Breeds b. Housing c. Feeding</p> |
| Practical Examination | |
| April | Zoology Paper- XIII DSE-E30 (DEVELOPMENTAL BIOLOGY OF VERTEBRATES) |
| | <p>Unit 3: Chick Embryology</p> <p>b. Development of gut up to 72 hours of incubation c. Development of blood and heart up to 72 hours of incubation d. Foetal membranes and significance</p> |
| May | Send to exam |



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Kavathe Mahankal, Dist.-Sangli.


signature of Teacher.

Annual Teaching Plan

Mr. Shivam P. Jaganade

Academic Year – 2023-24

Class- B.Sc. I

Subject- Zoology

Paper No.- II

| Month | Topic / Unit | Sub-unit Planned |
|--|---|--|
| Sem I 03/07/2023 to 11/11/2023 July | Paper II Evolutionary Biology Unit 2: History of Life | a. Introduction to syllabus b. Major Events in History of Life c. Introduction to theories of origin of life d. study of theory of chemical evolution |
| August | Introduction to Evolutionary Theories Practical | - Lamarckism - Darwinism - Neo-Darwinism Study of Amoeba, Euglena, Plasmodium, Paramecium, its classification and locomotion |
| September | Direct Evidences of Evolution Practical | - Types of fossils - formation of fossils - dating of fossils - Study of Sycon, Hyalonema, Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium, Taenia solium, (Male and female) Ascaris lumbricoides, Aphrodite, Nereis, Pheretima, Hirudinaria, |
| October | Extinction Practical | - Mass extinction (Causes, Names of five major extinctions, K-T extinction in detail) - Role of extinction in evolution - Study of Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus, Periplaneta, Apis, Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus, Pentaceros, Ophiura, Echinus, Cucumaria and Antedon, - Study of fossil evidences from plaster cast model sand pictures. |
| November 11/11/2023 Term end | Send to exam | |

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| Sem II 24/11/2023 to 14/05/2024 | Paper III Animal Diversity and Insect Vectors | |
| November | Unit: II : Insect Vectors | - Introduction to syllabus |
| December | 1. Mosquito as an insect vector Practical | Mosquito born diseases with respect to causal organism, life cycle and symptoms a. Malaria b. Dengue - Preparation of haemin crystals - Preparation of blood smear and identification of ABO and Rh blood groups |
| January | Practical | c. Chikungunya - Control Measures of mosquitoes - Mitochondria – Stained preparation of mitochondria from Oral mucosal cells by using Janus Green -B stain - Polytene Chromosomes – Stained preparation of polytene chromosome in Chironomous larva/Drosophila larva. - Demonstration of Rat to study, Digestive system, Lungs, Heart, Kidney, Testis, Ovary and Brain of Rat |
| February | 2. Housefly as an important mechanical vector Practical | Housefly born diseases with respect to Causal organism, life cycle, symptoms - Myiasis - Control Measure of housefly - Study of Mendelian Inheritance and gene interactions (Non-Mendelian Inheritance) using suitable examples - Monohybrid & Dihybrid ratio, Incomplete dominance, Co-dominance, Multiple alleles, Sex linked inheritance, Linkage, Crossing over and Gene interaction |

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| March | 3. Flea as an insect vector Practical | Flea born diseases with respect to Causal organism, life cycle and symptoms a. Plague b. Typhus fever - Control of fleas - Study of following insect vectors through permanent slides or photographs 1. Mosquito born diseases (Causal organism, symptoms and control measures) a. Malaria b. Dengue c. Chikungunya 2. Housefly born diseases (Causal organism, symptoms and control measures) a. Myiasis 3. Flea born diseases (Causal organism, symptoms and control measures) a. Plague b. Typhus fever |
| April | Send to Exam | |
| May 14/05/2023 Term end | | |


Head
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Annual Teaching Plan

Mr. Shivam P. Jaganade

Academic Year – 2023-24


Class- B.Sc. II

Subject- Zoology

Paper No.- VI


| Month | Topic / Unit | Sub-unit Planned |
|--|---|--|
| Sem I 03/07/2023 to 11/11/2023 July | Paper V- ANIMAL DIVERSITY-II Unit I: Hemichordata | - Introduction to syllabus - General characters and Classification |
| August | Protochordata Agnatha | - General characters and Classification of Protochordata - General characters of Agnatha and Classification of cyclostomes up to classes |
| September | Pisces Aves | - General characters and Classification up to orders - General characters and Classification up to orders |
| October | Paper-VI BIOCHEMISTRY Unit III: Enzymes | 1) Introduction, Classification and Nomenclature 2) Mechanism of enzyme action 3) Enzyme Kinetics 4) Inhibition and Regulation 5) Isoenzymes, Co-enzymes and Co-factors. |
| November 11/11/2023 Term end | | |
| Sem II 24/11/2023 to 14/05/2024 | | |

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| December | Paper-VIII APPLIED ZOOLOGY-I Unit IV: Insects of Economic Importance: | - Introduction to syllabus Biology, Control and damage caused by 1) Gram pod borer (<i>Helicoverpa armigera</i>) 2) Sugarcane leaf hopper (<i>Pyrrilla perpusilla</i>) 3) Lemon Butterfly (<i>Papilio demoleus</i>) 4) Pulse Beetle (<i>Callosobruchus chinensis</i>) 5) Rice Weevil (<i>Sitophilus oryzae</i>) 6) Red Flour beetle (<i>Tribolium castaneum</i>) |
| January | Unit V: 1. Poultry Farming: | 1) Principles of poultry breeding, 2) Indigenous and Exotic poultry breeds 3) Management of breeding stock and broilers, 4) Processing and Preservation of eggs. |
| February | 2. Sericulture | a. Life cycle of <i>Bombyx mori</i> b. Types of silkworm c. Rearing equipments d. Diseases and management e. Cocoon formation and Economic importance of silk |
| March | Paper-VII REPRODUCTIVE BIOLOGY Unit V: Contraceptive Methods: | a. Temporary methods b. Permanent Methods |
| April | Send to Exam | |
| May 14/05/2023 Term end | | |


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| November | Unit: II : Insect Vectors | - Introduction to syllabus |
| December | 1. Mosquito as an insect vector Practical | Mosquito born diseases with respect to causal organism, life cycle and symptoms d. Malaria e. Dengue - Preparation of haemin crystals - Preparation of blood smear and identification of ABO and Rh blood groups |
| January | Practical | f. Chikungunya - Control Measures of mosquitoes - Mitochondria – Stained preparation of mitochondria from Oral mucosal cells by using Janus Green -B stain - Polytene Chromosomes – Stained preparation of polytene chromosome in Chironomous larva/Drosophila larva. - Demonstration of Rat to study, Digestive system, Lungs, Heart, Kidney, Testis, Ovary and Brain of Rat |
| February | 2. Housefly as an important mechanical vector Practical | Housefly born diseases with respect to Causal organism, life cycle, symptoms - Myiasis - Control Measure of housefly - Study of Mendelian Inheritance and gene interactions (Non-Mendelian Inheritance) using suitable examples - Monohybrid & Dihybrid ratio, Incomplete dominance, Co-dominance, Multiple alleles, Sex linked inheritance, Linkage, Crossing over and Gene interaction |
| March | 3. Flea as an insect vector Practical | Flea born diseases with respect to Causal organism, life cycle and symptoms c. Plague d. Typhus fever - Control of fleas - Study of following insect vectors through permanent slides or photographs 1. Mosquito born diseases (Causal organism, symptoms and control measures) a. Malaria b. Dengue c. Chikungunya 2. Housefly born diseases (Causal organism, symptoms and control |

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| | | measures) a. Myiasis 3. Flea born diseases (Causal organism, symptoms and control measures) a. Plague b. Typhus fever |
| April | Send to Exam | |
| May 14/05/2023 Term end | | |


Head
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**SHIKSHAN PRASARAK SANSTHA'S
PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA, KAVATHE
MAHANKAL
DEPARTMENT OF ZOOLOGY**


Teaching Plan for academic year 2019-20

B.Sc. Part-I Semester –I and II

Name of Teacher: Mr Ingole S.G.

| Month | Topic / Unit | Sub-unit Planned |
|--|--|---|
| 11 June | (ANIMAL DIVERSITY-I) Phylum Platyhelminthes | General characters and classification up to classes; Life history of <i>Taenia solium</i> and its parasitic adaptations |
| July | Phylum Nematelminthes | General characters and classification up to classes; Life history of <i>Ascaris lumbricoides</i> and its parasitic adaptations |
| August | Phylum Annelida | General characters and classification up to classes; Metamerism in Annelida |
| September | Phylum Arthropoda Practical- 1. Study of the following specimens | General characters and classification up to classes; Vision in Arthropoda, Metamorphosis in Insects i. Study of Amoeba, Euglena, Plasmodium, Paramecium, w.r.t. classification and locomotion Study of Sycon, Hyalonema, and Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium, |
| October 24.10.2019 to 21.11.2019 | Diwali holiday | |
| November | Cell Biology & Evolutionary Biology Ultra structure and functions of the following | Plasma membrane (Fluid Mosaic Model) Mitochondria |
| December | | Endoplasmic reticulum Golgi complex Lysosome |
| January | Practicals- 2. Study of the following : 1. Preparation of 2. Identification of 6. Cytological Preparations.: | T.S. and L.S. of Sycon, ii. Life history Taeni and Ascaris and their parasitic adaptations - hemin and hemochromogen crystals - ABO and Rh blood groups - Mitochondria – Stained preparation of |

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| | B. Polytene Chromosome – | mitochondria from Oral mucosa by using Janus Green - Stained preparation of Polytene chromosome in chironomous larva/ Drosophila larva |
| February | Practicals- 7. Study of fossil evidences 9. Examples on Genetics 4. Study Tour : | from plaster cast models and pictures Examples on Mono, Dihybrid ratio, Incomplete dominance, Co-dominance, Multiple alleles, Sex linked inheritance, Museum and submission of report |
| March | | Linkage and Crossing over and Gene interaction). Visit to Natural History |
| April | | Exam |
| 3.5.2019 | | |


 Prof. (Dr.) S. B. More
 Co-Ordinator & Head
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SHIKSHAN PRASARAK SANSTHA'S

PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA, KAVATHE
MAHANKAL
DEPARTMENT OF ZOOLOGY


Teaching Plan for academic year 2019-20

B.Sc. Part-I Semester –I and II

Name of Teacher: Ms. Zamake P. K.

| Month | Topic / Unit | Sub-unit Planned |
|--|--|--|
| 11 June | (ANIMAL DIVERSITY-I) Phylum Mollusca | General characters and classification up to classes; Torsion in gastropods |
| July | Phylum Echinodermata | General characters and classification up to classes; |
| August | | Water-vascular system in Asteroidea |
| September | Practical- 1. Study of the following specimens | Study of Amoeba, Euglena, Plasmodium, Paramecium, w.r.t. classification and locomotion Study of Sycon, Hyalonema, and Euplectella, Obelia, Physalia, Aurelia, Tubipora, Metridium, |
| October 24.10.2019 to 21.11.2019 | Diwali holiday | |
| November | Cell Biology & Evolutionary Biology Introduction to Evolutionary Theories | Lamarckism, |
| December | | Darwinism, Neo-Darwinism |
| January | Practical's- 2. Study of the following : | T.S. and L.S. of Sycon, ii. Life history Taeni and Ascaris and their parasitic adaptations |

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| | <p>3.</p> <p>4. Preparation of</p> <p>5. Identification of</p> <p>6. Cytological Preparations.:</p> <p>B. Polytene Chromosome –</p> | <ul style="list-style-type: none"> - hemin and hemochromogen crystals - ABO and Rh blood groups - Mitochondria – Stained preparation of mitochondria from Oral mucosa by using Janus Green - Stained preparation of Polytene chromosome in chironomous larva/ Drosophila larva |
| February | <p>Practicals-</p> <p>7. Study of fossil evidences</p> <p>9. Examples on Genetics</p> <p>4. Study Tour :</p> | <p>from plaster cast models and pictures</p> <p>Examples on Mono, Dihybrid ratio, Incomplete dominance, Co-dominance, Multiple alleles,</p> |
| March | | Sex linked inheritance, Linkage and Crossing over and Gene interaction). |
| April | | Exam |
| 3.5.2019 | | |


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**SHIKSHAN PRASARAK SANSTHA'S
PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA, KAVATHE
MAHANKAL
DEPARTMENT OF ZOOLOGY**


Teaching Plan for academic year 2019-20

B.Sc. Part-I Semester –I and II

Name of Teacher: Ms. Chougule S.A.

| Month | Topic / Unit | Sub-unit Planned |
|---|---|---|
| 11 June | (ANIMAL PHYSIOLOGY) Unit 1: Nerve and muscle | Structure of a neuron, Resting membrane potential, |
| July | | Origin of Action potential and its propagation in non-myelinated nerve fibers, |
| August | | Ultra-structure of skeletal muscle, Molecular and chemical basis of muscle contraction |
| September | Excretion | Structure of nephron, Mechanism of Urine formation, Counter-current Mechanism |
| October 24.10.2019 to 21.11.2019 | Diwali holiday | |
| November | Cell Biology & Evolutionary Biology Direct Evidences of Evolution | Types of fossils, |
| December | | Incompleteness of fossil record, Dating of fossils |
| January | Practicals- 2. Study of the following : 6. 7. Preparation of 8. Identification of 6. Cytological Preparations.: B. Polytene Chromosome – | . T.S. and L.S. of Sycon, ii. Life history Taeni and Ascaris and their parasitic adaptations - hemin and hemochromogen crystals - ABO and Rh blood groups - Mitochondria – Stained preparation of mitochondria from Oral mucosa by using Janus Green - Stained preparation of Polytene chromosome in chironomous larva/ Drosophila larva |

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| February | Practicals- 7. Study of fossil evidences 9. Examples on Genetics 4. Study Tour : | from plaster cast models and pictures Examples on Mono, Dihybrid ratio, Incomplete dominance, Co-dominance, Multiple alleles, Sex linked inheritance, Linkage and Crossing over and Gene interaction). Visit to Natural History Museum and submission of report |
| March | | Practical Exam |
| April | | Exam |
| 3.5.2019 | | |


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**SHIKSHAN PRASARAK SANSTHA'S
PADMABHUSHAN VASANTRAODADA PATIL MAHAVIDYALAYA, KAVATHE
MAHANKAL
DEPARTMENT OF ZOOLOGY**

**Teaching Plan for academic year 2019-20
B.Sc. Part-II Semester –III, IV, V and VI**

Name of Teacher: Mr Ingole S.G.

| Month | Topic / Unit | Sub-unit Planned |
|--|---|---|
| 11 June | (ANIMAL DIVERSITY-II) Unit 1: Protochordates: | General characters and Classification of Protochordata. |
| July | Agnatha | General characters of Agnatha and Classification of cyclostomes up to classes. |
| August | Pisces ZOOLOGY PRACTICAL-I Unit: 1 Animal diversity-II | General characters and Classification up to orders; Respiration in Fishes. Study of the following specimens with reference to morphological peculiarities and classification upto orders: Herdmania, Branchiostoma, Petromyzon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Anguilla, Ichthyophis/Ureotyphlus, Salamandra, Bufo, Hyla, Chelone, Hemidactylus, Chamaeleon, Draco, Crocodylus, Gavialis. |
| September | Practical- 2. Characters identifying venomous and non-venomous snakes: Russell's viper, Saw scaled 3. Study of any six common birds from different orders with the help of photographs and keys. 4. Study of the following specimens with reference to morphological peculiarities and classification up to orders | viper, Common krait, Indian Cobra, Sea snake, Rat snake and Checkered keelback. shrews, Bat, Squirrel and Loris. An "animal album" containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/ topics may be given to students for this purpose. |
| October 24.10.2019 to 21.11.2019 | Diwali holiday | |
| November | Paper-VII (REPRODUCTIVE BIOLOGY) Unit 3: Reproductive Health | Infertility in male and female: causes, diagnosis and management; Assisted Reproductive |
| December | | Technology: sex selection, sperm banks, frozen embryos, in vitro fertilization, ET, EFT, IUT, ZIFT, GIFT, ICSI, PROST; Modern contraceptive technologies |

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| | ZOOLOGY PRACTICAL-I Unit: 1 Animal diversity-II | . Dissection of brain of fowl. 6. Temporary preparation of hyoid apparatus, sclerotic plates, Pecten and Collumella of fowl. |
| January | Paper-VIII (APPLIED ZOOLOGY-I) Unit 1: Introduction to Host-parasite Relationship | Host, Definitive host, Intermediate host, Parasitism, Symbiosis, Commensalism, Reservoir, Zoonosis. |
| February | Practicals- Unit: 2 Biochemistry: 4. Study Tour : | 1. Qualitative tests to identify functional groups of carbohydrates and lipid in given solutions (Glucose, Fructose, Sucrose, Lactose and Lipid). 2. Estimation of total protein in given solutions by Lowry's method/ Quantitative estimation of amino acids by using Ninhydrin reaction. 3. Study of activity of salivary Amylase under optimum conditions. 4. Effect of Temperature, pH and salinity of activity of |
| March | | Practical Exam |
| April | | Exam |
| 3.5.2019 | | |


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Teaching Plan for academic year 2019-20
B.Sc. Part-II Semester – III, IV, V and VI

Name of Teacher: Ms. Zamake P. K.

| Month | Topic / Unit | Sub-unit Planned |
|------------------|--|---|
| 11 June | Paper-VI. (BIOCHEMISTRY) Unit 1: Nucleic acids: | DNA and RNA. Structure and types of RNA .DNA- Secondary structure of Watson and Crick. Forms of DNA |
| July | Carbohydrate Metabolism | Glycolysis, Krebs Cycle, Pentose phosphate pathway, Gluconeogenesis |
| August | ZOOLOGY PRACTICAL-I Unit: 1 Animal diversity-II | Glycogenolysis. , Review of electron transport chain. 7. Temporary preparation of Cycloid, Ctenoid and Placoid scales in fishes. |
| September | Unit: 2 Biochemistry: | 1. Qualitative tests to identify functional groups of carbohydrates and lipid in given solutions (Glucose, Fructose, Sucrose, Lactose and Lipid). 2. Estimation of total protein in given solutions by Lowry's method/ Quantitative estimation of amino acids by using Ninhydrin reaction. 3. Study of activity of salivary Amylase under optimum conditions. 4. Effect of Temperature, pH and salinity of activity of salivary amylase. 5. Estimation of total lipids from given sample. 6. DNA isolation from plant/animal. 7. Estimation of uric acid from bird excreta. |

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| October 24.10.2019 to 21.11.2019 | Diwali holiday | |
| November | Paper-VIII (APPLIED ZOOLOGY-I) Unit 2: Epidemiology of Diseases | Transmission, Prevention and control of diseases: Tuberculosis, Typhoid. |
| December | Unit 3: Rickettsia and Spirochaetes | Brief account of <i>Rickettsia prowazekii</i> , <i>Borrelia recurrentis</i> |
| January | Practicals- | - Brief account of <i>Treponema pallidum</i> . |
| February | Practicals- 7. Study of fossil evidences 9. Examples on Genetics 4. Study Tour : | from plaster cast models and pictures Examples on Mono, Dihybrid ratio, Incomplete dominance, Co-dominance, Multiple alleles, |
| March | | Sex linked inheritance, Linkage and Crossing over and Gene interaction). |
| April | | Exam |
| 3.5.2019 | | |


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MAHANKAL
DEPARTMENT OF ZOOLOGY**

**Teaching Plan for academic year 2019-20
B.Sc. Part-II Semester – III, IV, V and VI**

Name of Teacher: Ms. Chougule S.A.

| Month | Topic / Unit | Sub-unit Planned |
|---|--|---|
| 11 June | (ANIMAL PHYSIOLOGY) Unit 1: Nerve and muscle | Structure of a neuron, Resting membrane potential, |
| July | | Origin of Action potential and its propagation in non-myelinated nerve fibers, |
| August | B. Sc. Part II ZOOLOGY PRACTICAL-II Unit: 1 | Ultra-structure of skeletal muscle, Molecular and chemical basis of muscle contraction Reproductive Biology: 1. Study of animal house: set up and maintenance of animal house, breeding techniques, care of normal and experimental animals. 2. Examination of vaginal smear rats from live animals/Study of stages of estrus cycle through permanent slides. |
| September | Excretion ZOOLOGY PRACTICAL-II Unit: 1 | Structure of nephron, Mechanism of Urine formation, Counter-current Mechanism 3. Surgical techniques: principles of surgery in endocrinology. Ovaryectomy, hysterectomy, castration and vasectomy in rats. Demonstration or film only. 4. Examination of histological sections from photomicrographs/ permanent slides of rat: testis, epididymis and accessory glands of male reproductive systems; Sections of ovary, fallopian tube, uterus (proliferative and secretory stages), cervix and vagina. |
| October 24.10.2019 to 21.11.2019 | Diwali holiday | |

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| November | Paper-VIII (APPLIED ZOOLOGY-I) Unit 4: Insects of Economic Importance: B. Sc. Part II ZOOLOGY PRACTICAL-II Unit: 1 | Biology, Control and damage caused by <i>Helicoverpa armigera</i> , <i>Pyrilla perpusilla</i> 5. Human vaginal exfoliate cytology. 6. Sperm count and sperm motility in rat/ Any mammal. 7. Study of modern contraceptive devices by photographs or models. |
| December | B. Sc. Part II ZOOLOGY PRACTICAL-II Unit: 2 Applied Zoology: | <i>Papilio demoleus</i> , <i>Callosobruchus chinensis</i> , <i>Sitophilus oryzae</i> and <i>Tribolium castaneum</i> 1. Study of arthropod vectors associated with human diseases: <i>Pediculus</i> , <i>Culex</i> , <i>Anopheles</i> , <i>Aedes</i> and <i>Xenopsylla</i> . |
| January | Unit 5: Poultry Farming ZOOLOGY PRACTICAL-II Unit: 2 Applied Zoology | Principles of poultry breeding, Management of breeding stock and broilers, Processing and Preservation of eggs. . 2. Study of insect damage to different plant parts/stored grains through damaged products/photographs. |
| February | B. Sc. Part II ZOOLOGY PRACTICAL-II Unit: 2 Applied Zoology: 4. Study Tour : | 3. Identifying feature and economic importance of <i>Helicoverpa (Heliothis) armigera</i> , <i>Papilio demoleus</i> , <i>Pyrilla perpusilla</i> , <i>Callosobruchus chinensis</i> , <i>Sitophilus oryzae</i> and <i>Tribolium castaneum</i> . |
| March | | Practical Exam |
| April | | Exam |
| 3.5.2019 | | |


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DEPARTMENT OF ZOOLOGY

Teaching Plan for academic year 2021-22

B.Sc. Part-I

Name of Faculty: Snehal Ashok Patil

| Month | Topic/Unit | Subunit planned |
|--|--------------------|--|
| B.Sc. Part-I Semester-I, Paper-I DSC-15A (Animal Diversity-I) | | |
| July | Unit I | <p>Kingdom Protist: General characters and classification up to classes; Locomotory organelles and locomotion in Protozoa</p> <p>Phylum: Porifera: General characters and classification up to classes; Canal System in Sycon</p> <p>Phylum:Cnidaria: General characters and classification up to classes; Polymorphism in Hydrozoa</p> |
| | Practical I | <p>A. Kingdom: Protista Amoeba , Euglena , Plasmodium , Paramecium</p> <p>B. Phylum: Porifera: Sycon , Hyalonema, Euplectella</p> <p>C. Phylum: Cnidaria Obelia, Physalia, Aurelia, Tubipora, Metridium</p> <p>D. Phylum: Platyhelminthes : Taenia Solium</p> <p>E. Phylum: Aschelminthes <i>Ascaris Lumbricoides</i> (Male And Female)</p> |
| August | Unit I | <p>Phylum: Platyhelminthes: General characters and classification up to classes; Life history of Taenia solium and its parasitic adaptations</p> <p>Phylum: Nemathelminthes : General characters and classification up to classes; Life history of Ascaris lumbricoides and its parasitic adaptations</p> |
| | Practical I | <p>F. Phylum Annelida: Aphrodite, Nereis, Pheretima, Hirudinaria</p> <p>G. Phylum: Arthropoda: Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus , Periplaneta, Apis</p> <p>H. Phylum- Mollusca :Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus</p> |

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| | Practical I | Demonstration of Rat to study- Digestive system of Rat, Respiratory system of Rat (Lungs) Circulatory system of Rat (Heart) , Excretory system of Rat(Kidney) Male reproductive system of Rat(Testis), Female reproductive system of Rat(Ovary), Nervous system of Rat(Brain) Study of Mendelian Inheritance and gene interactions (Non Mendelian Inheritance) using suitable genetic examples |
| January | Unit: I | Type Study: Rat (<i>Rattus rattus</i>) (Physiology is not expected) Excretory System, Reproductive System , Brain for Rat |
| | Practical I | Study of following insect vector Mosquito borne diseases (Causal organism, symptoms and control measures) : Malaria, Dengue , Chikungunya |
| February | B.Sc. Part-I Semester -II, Paper-IV DSC – 16 B (Genetics) | |
| | Unit II: | Sex Determination: Chromosomal theory, Genic balance theory |
| | Practical I | Study of following insect vector Housefly borne diseases (Causal organism, symptoms and control measures): Myiasis Flea borne diseases (Causal organism, symptoms and control measures): Plague, Typhus fever |
| March | Unit II: | Sex Determination: Haploidy-Diploidy mechanism, Environmental Theory |
| | Practical I | Revision |
| April | Practical Exam | |
| May | Theory Exam | |

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Teaching Plan for academic year 2022-23

B.Sc. Part-I

Name of Faculty: Snehal Ashok Patil

| Month | Topic/Unit | Subunit planned |
|--|--------------------|--|
| B.Sc. Part-I Semester-I, Paper-I DSC-15A (Animal Diversity-I) | | |
| July | Unit I | <p>Kingdom Protist: General characters and classification up to classes; Locomotory organelles and locomotion in Protozoa</p> <p>Phylum: Porifera: General characters and classification up to classes; Canal System in Sycon</p> <p>Phylum:Cnidaria: General characters and classification up to classes; Polymorphism in Hydrozoa</p> |
| | Practical I | <p>A. Kingdom: Protista Amoeba , Euglena , Plasmodium , Paramecium</p> <p>B. Phylum: Porifera: Sycon , Hyalonema, Euplectella</p> <p>C. Phylum: Cnidaria Obelia, Physalia, Aurelia, Tubipora, Metridium</p> <p>D. Phylum: Platyhelminthes : Taenia Solium</p> <p>E. Phylum: Aschelminthes <i>Ascaris Lumbricoides</i> (Male And Female)</p> |
| August | Unit I | <p>Phylum: Platyhelminthes: General characters and classification up to classes; Life history of Taenia solium and its parasitic adaptations</p> <p>Phylum: Nemathelminthes : General characters and classification up to classes; Life history of Ascaris lumbricoides and its parasitic adaptations</p> |
| | Practical I | <p>F. Phylum Annelida: Aphrodite, Nereis, Pheretima, Hirudinaria</p> <p>G. Phylum: Arthropoda: Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Julus , Periplaneta, Apis</p> <p>H. Phylum- Mollusca :Chiton, Dentalium, Pila, Unio, Loligo, Sepia, Octopus</p> |