*Satyaniketan’s*

Adv. M. N. Deshmukh Arts, Science and Commerce College, Rajur

**Annual Teaching Planning 2023-24**

**T.Y. B.Sc. Zoology** Semester V

**Subject Name -: ZO-352 Histology**

**Teacher’s Name- Prof. Yadav K .Y.**

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| Sr. No. | Month | Topic | No. of Periods |
|  | **August 2023** | |  |  | | --- | --- | | **1. Introduction:**  Definition and Scope of Histology. |  | | **2. Definitions and Review of Types of Tissues:**  2.1 Epithelial tissue.  2.2 Connective tissue.  2.3 Nervous tissue.  2.4 Muscular tissue. |  | | **3. Histological study of following mammalian organs:**  3.1 Skin (V. S.).  3.2 Tooth (V. S.).  3.3 Tongue (C. S.) with reference to mucosa papillae and taste buds. | | | 9 |
|  | **September 2023** | |  |  | | --- | --- | | **4. Histological study of Alimentary canal and Liver:**  4.1 Oesophagus (T. S.).  4.2 Stomach (T. S.).  4.3 Duodenum (T. S.).  4.4 Rectum (T. S.).  4.5 Liver (C. S.). |  | | **5. Histological study of Respiratory organs:**  5.1 Trachea (T. S.).  5.2 Lung (C. S.). |  | | **6. Histological study of Excretory organs:**  6.1 Kidney (L. S.).  6.2 Juxtaglomerular complex. |  | | 11 |
|  | **October 2023** | |  |  | | --- | --- | | **7. Histological study of Reproductive organs:**  7.1 Testis (T. S.) with reference to Seminiferous Tubules and Cells of Leydig.  7.2 Ovary (C. S.). |  | | **8. Histology of Endocrine glands:**  8.1 Pituitary gland.  8.2 Thyroid gland.  8.3 Adrenal gland.  8.4 Pancreas (C. S.) including both exocrine and endocrine components. | | | 10 |
|  |  | **Total** | 30 |

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Adv. M. N. Deshmukh Arts, Science and Commerce College, Rajur

**Annual Teaching Planning 2023-24**

**T.Y. B.Sc. Zoology** Semester V

**Subject Name -: ZO-354 Genetics**

**Teacher’s Name- Prof. Yadav K .Y.**

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| Sr. No. | Month | Topic | No. of Periods |
|  | **August 2023** | |  |  | | --- | --- | | **1. Introduction to genetics:**  1.1 Classical and Modern concept of Gene, Cistron, Muton Recon.  1.2 Mendel’s laws of Inheritance. |  | | **2 Exceptions to Mendelian Inheritance:**  2.1 Incomplete dominance.  2.2 Co-dominance.  2.3 Multiple alleles: Concept, characteristics and importance of multiple. alleles, ABO & Rh - blood group system and its medico legal importance.  2.4 Lethal alleles. | | | **3. Gene Mutation:**  3.1 Definition.   |  | | --- | |  | | | | 10 |
|  | **September 2023** | |  | | --- | | 3.2 Types of mutations: spontaneous, induced, somatic, gametic, forward, reverse. Types of point mutation - deletion, insertion, substitution, transversion, transition.  3.3 Mutagenic agents  a) UV radiation and ionising radiation.  b) Base analogs, alkylating and intercalating agents.  **4. Sex-determination:**  4.1 Introduction.  4.2 Types of sex determination: -XX-XY, ZZ-ZW, XX-XO and Parthenogenesis, Hypodiploidy.  4.3 Gynandromorphism.  **5. Population Genetics:**  5.1Basic Concepts in population genetics: Mendelian population, gene pool, Gene / allele, Frequency, chance mating (Panmictic mating).  5.2 Hardy Weinberg law and its equilibrium. | | 12 |
|  | **October 2023** | **6. Human Population Genetics:**  6.1 Karyotype.  6.2 Genetic disorders, Structural & numerical alterations of chromosomes (chromosomal aneuploidy - Down, Patau, Edward, Turner and Klinefelter syndromes).  **7. Sex linked inheritance in human:**  7.1 Colour – blindness.  7.2 Haemophilia.  7.3 Hypertrichosis.  **8. Application of genetics:**  8.1 Genetic counselling.  8.2 Diagnostics & breeding technology. | 8 |
|  |  | **Total** | 30 |

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**Adv. M. N. Deshmukh Arts, Science and Commerce College, Rajur**

**Annual Teaching Planning 2023-2024**

**T.Y. B.Sc. Zoology** Semester V

**Subject Name -: Zo 3510 : Aquarium Management**

**Teacher’s Name- Prof. Yadav K .Y.**

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| **Sr. No.** | **Month** | **Topic** | **No. of Periods** |
| 1 | **August 2023** | |  |  | | --- | --- | | **1. Introduction to Aquarium Fish Keeping:**  1.1 The potential scope of Aquarium Fish Industry as a Cottage Industry.  1.2 Exotic and Endemic species of Aquarium Fishes.  1.3 Nutritional value of fish. |  | | **2. Biology of Aquarium Fishes:**  2.1 Common characters and sexual dimorphism of Aquarium fishes - Guppy, Molly, Sword tail, Gold fish, Angel fish, Blue morph, Anemone fish, Butterfly fish and Fighter fish. | | | 10 |
| 2 | **September 2023** | |  |  | | --- | --- | | **3. Food and feeding of Aquarium Fishes:**  3.1 Use of live fish feed organisms.  3.2 Preparation and composition of formulated fish feeds.  3.3 Overview on types of fish food. |  | | **4. Fish Transportation:**  4.1 Live fish transport: a) Fish handling.  b) Fish packing.  c) Fish forwarding techniques.  4.2 Causes of mortality in transport. |  | | **5. Maintenance of Aquarium:**  5.1 General Aquarium Maintenance - budget for setting up an Aquarium. | | | 10 |
| 3 | **October 2023** | |  |  | | --- | --- | | 5.2 Fish Farm as a Cottage Industry, Rules & regulations of fish rearing.  5.3 Common diseases of Aquarium fish.  **6. Physico-chemical parameters of water for fish culture:**  6.1 Acidity, Alkalinity, Calcium, Nitrate, Ammonia, Total hardness. |  | | **7. Fish preservation:**  7.1 Fish preservation and processing. |  | | 7.2 Fish preservation techniques. | | **8. Fish breeding:**  8.1 Types of fish breeding -  a) Natural fish breeding.  b) Induced fish breeding. | | 10 |
| **Total** | | | **30** |

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Adv. M. N. Deshmukh Arts, Science and Commerce College, Rajur

**Annual Teaching Planning 2023-24**

**T.Y. B.Sc. Zoology** Semester VI

**Subject Name -: ZO-362 Animal Physiology**

**Teacher’s Name- Prof.K.Y.Yadav.**

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| Sr. No. | Month | Topic | No. of Periods |
| 1 | **December 2023** | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | |  |  | | --- | --- | | **1. Nutrition and digestion:**  1.1 Nutritional requirement & balanced diet.  1.2 Digestion and absorption of carbohydrates, proteins and lipids.  1.3 Vitamins - outline of fat soluble and water-soluble vitamins; Sources,  deficiency and diseases. |  | | **2. Respiration:**  2.1 Mechanism of respiration: Regulation of ventilation in lungs, exchange of  gases at respiratory surface.  2.2 Respiratory pigments in animals: Haemoglobin, Hemocyanin, Hemerythrin, Chlorocruorin. | | | | 5 |
| 2 | **January2024** | 2.3 Transport of gases : O2 and CO2 transport.  **3. Circulation:**  3.1 Blood: Definition and its constituents, functions of blood.  3.2 Heart: Structure of human heart, Pace maker, Cardiac Cycle.  3.3 Origin and conduction of heart beat. | 8 |
| 3 | **February 2024** | |  |  | | --- | --- | | **4. Excretion:**  4.1 Structure of Uriniferous tubule.  4.2 Mechanism of urine formation.  4.3 Normal and abnormal constituents of urine, Elementary idea of dialysis. |  | | **5. Muscles:**  5.1 Structure of smooth, skeletal and cardiac muscles.  5.2 Mechanism of muscle contraction by Sliding filament theory. | | | 8 |
| 4 | **March 2024** | **6. Reproduction and Endocrine Glands:**  6.1 Physiology of male reproduction, hormonal control of spermatogenesis.  6.2 Physiology of female reproduction, hormonal control of menstrual cycle.  6.3 Structure and functions of pituitary, thyroid, parathyroid, pancreas and  adrenal glands | 9 |
|  |  | **Total** | 30 |

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Adv. M. N. Deshmukh Arts, Science and Commerce College, Rajur

**Annual Teaching Planning 2023-24**

**T.Y. B.Sc. Zoology** Semester VI

**Subject Name -: ZO-365 Techniques in Biology**

**Teacher’s Name- Prof. Yadav K.Y.**

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| Sr. No. | Month | Topic | No. of Periods |
| 1 | **December 2023** | |  |  |  |  | | --- | --- | --- | --- | | |  |  | | --- | --- | | **1. Microscopy:**  1.1 Definitions - Resolving Power, Limit of Resolution and Magnification, Numerical Aperture.  1.2 Basic principle of microscopes - Light, Fluorescence, Phase Contrast,  Stereo Microscope, SEM and TEM.  **2. Microtomy: Tissue fixation and Processing**  2.1 Methods of tissue fixation: Chemical fixation and physical fixation.  2.2 Procurement of tissue and importance of fixation of tissues. |  | |  | |  | | | 5 |
| 2 | **January 2024** | |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | 2.3 Dehydration, clearing, impregnation, embedding and block making.  2.4 Types of microtomes.  2.5 Section cutting: steps and precautions**,** common faults in section cutting,  reasons & remedies.  2.6 Mounting and spreading of ribbons.  2.7 General procedure for staining of sections.  2.8 Demonstration of Nucleic acid (Feulgen Reaction).  **3. Haematological Techniques:**  3.1 Total count of RBCs, WBCs and Differential count of WBCs and their  significance.  3.2 Bleeding time, clotting time and their significance. |  | | | 8 |
| 3 | **February 2024** | |  |  | | --- | --- | | **4. Immunological Techniques:**  4.1 Antigen-Antibody Interactions – Immunodiffusion.  4.2 Principle & Working of ELISA.  4.3 Raising Monoclonal Antibodies.  4.4 Application of Immunological techniques in disease diagnosis. |  | | **5. Types of PCR & DNA Barcoding :**  **6. Methods in Biodiversity:**  6.1 Introduction to sampling and sample size. |  | | 6.2 Biodiversity Indices - Species richness, Simpson Diversity Index, | | | 6 |
| 4 | **March 2024** | |  |  | | --- | --- | | 6.3 Measuring Biodiversity- Quadrat sampling, Transect sampling, Insect  survey - Active (sweep netting, aquatic nets) and Passive methodology (Pit fall traps, Light traps). |  | | **7. Instruments in Field Biology:**  7.1 Binoculars, GPS, Basic digital camera techniques: Camera lens - prime and kit lens, Aperture mode, Shutter mode, Megapixels, Telephoto lens, macro lens.  7.2 Adapters for camera and microscopes, Mobile’s camera.  **8. Laboratory techniques:**  8.1 Microphotographic techniques - CCD and CMOS camera, digital  camera.  8.2 Software for image analysis - Image J and GIMP. |  | | 7 |
|  |  | Total | 26 |

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Adv. M. N. Deshmukh Arts, Science and Commerce College, Rajur

**Annual Teaching Planning 2023-24**

**T.Y. B.Sc. Zoology** Semester VI

**Subject Name -: ZO-3610 Environment Impact Assessment**

**Teacher’s Name- Prof. Yadav K.Y.**

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| Sr. No. | Month | Topic | No. of Periods |
| 1 | January 2024 | |  |  |  |  |  | | --- | --- | --- | --- | --- | | |  | | --- | | **1. Environment:**  1.1 Definition.  1.2 Divisions.  1.3 Importance. | | **2. Pollution:**  2.1 Definition and types.  2.2 Impact on wildlife, natural resources, development. | |   **3. Sustainable development**  3.1 Definition and need.  3.2 Exploitation of natural resources.  3.3 Concept of carrying capacity.  3.4 Three pillars of Sustainability.  3.5 UN 17 Sustainable Development Goals (SDGs). |  | | 7 |
| 2 | February 2024 | |  |  | | --- | --- | | **5. Environmental Impact Assessment (EIA):**  5.1 Definition, need and importance of EIA.  5.2 EIA notification 2006 - key elements, History and Evolution of EIA.  5.3 Categories of Industries / establishments requiring EIA, Types of EIA -  strategic EIA, regional EIA, sectoral EIA, project level EIA and life cycle assessment.  5.4 Rapid and comprehensive EIA. |  | | 5 |
| 3 | March 2024 | |  |  | | --- | --- | | **8. Overview of Scheme for Accreditation of EIA Consultant Organizations (NABET / QCI):**  8.1 Eligibility and benefits.  8.2 EIA coordinator (EC), Functional area experts (FAEs).  8.3 Functional area associate (FAA) and team members: Role, educational  qualification, experience and functions. |  | | **8. Overview of Scheme for Accreditation of EIA Consultant Organizations (NABET / QCI):**  8.1 Eligibility and benefits.  8.2 EIA coordinator (EC), Functional area experts (FAEs).  8.3 Functional area associate (FAA) and team members: Role, educational  qualification, experience and functions. |  | | 5 |
|  |  | **Total** | 17 |