*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** |

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| **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.   |

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|  | **September 2023** |

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| **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.  |  |

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|  | **October 2023** |

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| **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.  |

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|  |  | **Total** | 30 |

*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-354 Genetics**

**Teacher’s Name- Prof. Yadav K .Y.**

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| Sr. No.  | Month | Topic  | No. of Periods |
|  | **August 2023** |

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| **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.

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|  | **September 2023** |

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| 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.  |

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|  | **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** |

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| **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.  |

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| 2 | **September 2023** |

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| **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.  |

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| 3 | **October 2023** |

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| 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.  |

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| **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** |

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| **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.  |

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| 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** |

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| **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.  |

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| 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 |

Satyaniketan’s

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** |

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| **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.  |  |

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| 2 | **January 2024** |

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| 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.  |  |

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| 3 | **February 2024** |

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| **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, |

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| 4 | **March 2024** |

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| 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.  |  |

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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 |

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| **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).  |  |

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| 2 | February 2024 |

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| **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.  |  |

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| 3 | March 2024 |

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| **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.  |  |

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|  |  | **Total** | 17 |