

K. T. S. P. Mandal's
Hutatma Rajguru Mahavidyalaya, Rajgurunagar.
Department of Zoology
Teaching Plan (A.Y.2023–2024)

T.Y. B. Sc. (Zoology)

Course Title: Developmental Biology

Course code: ZO 355

Sr. No	Month	Topics	Teacher
1	Sept	1. Fundamentals of Developmental Biology: 1.1 Definition and scope. 1.2 Concepts in Developmental Biology: Growth, Differentiation, Dedifferentiation, Cell determination, Cell communication, Morphogenesis, Induction and Regeneration.	DRB
2	Sept	2. Theories of Developmental Biology: 2.1 Preformation. 2.2 Pangenesis. 2.3 Epigenesis. 2.4 Axial gradient. 2.5 Germplasm.	DRB
3	Sept & Oct	3. Gametogenesis: 3.1 Spermatogenesis & Structure of sperm with respect to human. 3.2 Oogenesis & Structure of ovum with respect to human. 3.3 Types of eggs.	DRB
4	Oct	4. Fertilization: 4.1 Concept and types. 4.2 Chemotaxis. 4.3 Sperm penetration: Acrosome reaction, Capacitation & Decapacitation. 4.4 Activation of ovum: Fertilization cone. 4.5 Prevention of polyspermy: Fast block & Slow block. 4.6 Significance of fertilization.	DRB
5	Oct	5. Cleavage and Blastula: 5.1 Planes and symmetry of cleavage. 5.2 Types of cleavage. 5.3 Significance of cleavage. 5.4 Definition and types of Blastula.	DRB
6	Nov	6. Gastrulation: 6.1 Definition and Concept. 6.2 Basic cell movements in gastrulation: Epiboly, Emboly, Convergence, Invagination, Ingression & Involution with reference to frog. 6.3 Concept of Organizer : Primary, Secondary and Tertiary.	DRB

7	Nov	7. Chick Embryology: 7.1 Structure of Hen's egg. 7.2 Fertilization and cleavage in Chick. 7.3 Formation of primitive endoderm. 7.4 Primitive streak development. 7.5 Head process and regression of Primitive streak.	DRB
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D.R. Borhade

Prof. D. R. Borhade



T. Y.B. Sc. Zoology
Course Code: ZO – 352
Course Title:- Histology

Sr. no.	Month	Topics	Teacher
1.	Sept	1. Introduction: Definition and Scope of Histology. Definitions and Review of Types of Tissues: 2.1 Epithelial tissue. 2.2 Connective tissue. 2.3 Nervous tissue. 2.4 Muscular tissue.	DRB
2.	Sept	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 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.).	DRB
3.	Oct	5.Histological study of Respiratory organs: 5.1 Trachea (T. S.). 5.2 Lung (C. S.).	DRB
4.	Oct	6. Histological study of Excretory organs: 6.1 Kidney (L. S.). 6.2 Juxta glomerular complex.	DRB
5.	Nov	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.).	DRB
6.	Nov	8. Histology of Endocrine glands: 9. 8.1 Pituitary gland. 8.2 Thyroid gland. 8.3 Adrenal gland. 8.4 Pancreas (C. S.) including both exocrine and endocrine components.	DRB

DRB

Prof. D. R. Borhade



T.Y. B. Sc.

Course Title: Medical & Forensic Zoology

Course Code: ZO-361

Month	Title	Teacher Name
Dec	Introduction to medical zoology and its importance :	DRB
Dec	Medico-legal Autopsy: 2.1 Death and its Causes- External examination of deceased body – Internal Examination - Determination of time since death and cause of death. 2.2 Injuries – Classification - Medico-legal aspects of injuries. 2.3 Post-mortem changes - collection of post-mortem samples and Preservation.	DRB
Jan	Urine Analysis: 3.1 Physical characteristics, abnormal constituents, renal failure, renal calculi, dialysis.	DRB
Jan	Non infectious Diseases: 4.1 Causes, Types, Symptoms, Complications, Diagnosis and Prevention of Diabetes (Type I and II), Hypertension, Hypotension, Obesity, Atherosclerosis, Myocardial Infraction.	DRB
Jan	Infectious Diseases: 5.1 Causes, Types, Symptoms, Complications, Diagnosis and Prevention of Tuberculosis and Hepatitis.	DRB
Feb	Introduction to Forensic Zoology: 6.1 Definition, Scope and Application of Forensic Zoology. 6.2 Forensic Laboratories in India. 6.3 Basic Principles of Forensic Science with Examples.	DRB
Feb	Forensic Medicine: 7.1 Introduction to Forensic Medicine: Definitions of Forensic Medicine. 7.2 Medical Jurisprudence. 7.3 Medical evidence documentations.	DRB
March & April	Forensic Analysis: 8.1 Examination of Biological Materials: Examination of Hair, Fibres, Diatoms, plants materials, human tissues. 8.2 Examination of Body Fluid: Blood, Semen and Saliva. 8.3 Forensic Importance of Insects: Insects of forensic importance -indicators of time of death stages of insect development & comparative decomposition of human body - colonization - Evidence collection of insects – Territorial & Aquatic Insects. 8.4 DNA Fingerprint Technique and Examination of Biological Traces: Liquid blood, blood stains, & swabs, semen, Seminal stains, tissues, Bones, Hairs, Teeth, Saliva, Skeletal remains. 8.5 Toxicological Investigations: Poisons – Definition, Forms of Poison – Physical, Chemical & Mechanical state. Introduction with examples of – Neurotoxic Poisons – Cerebral & Spinal, Cardiovascular Poisons, Asphyxiants, Miscellaneous poisons – Pesticides, Pharmaceutical drugs, Petroleum poisons, Food poisons, Radioactive poisons.	DRB

DRB

Prof. D. R. Borhade

T.Y. B. Sc.

Course Title: Animal Physiology

Course Code: ZO-362

Month	Title	Teacher Name
Dec	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.	DRB
Jan	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. 2.3 Transport of gases : O ₂ and CO ₂ 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.	DRB
Feb	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.	DRB
Feb	5.Muscles: 5.1 Structure of smooth, skeletal and cardiac muscles. 5.2 Mechanism of muscle contraction by Sliding filament theory.	DRB
March	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. Structure and functions of pituitary, thyroid, parathyroid, pancreas and adrenal glands.	DRB

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