

**K. T. S. P. Mandal's**  
**Hutatma Rajguru Mahavidyalaya, Rajgurunagar.**  
**Department of Zoology**  
**Teaching Plan (A.Y.2025–2026)**

**T.Y. B. Sc. (Zoology)**

**Course code: ZO 355**

**Course Title: Developmental Biology**

<b>Sr. No</b>	<b>Month</b>	<b>Topics</b>	<b>Teacher</b>
<b>1</b>	<b>July</b>	<b>1. Fundamentals of Developmental Biology:</b> 1.1 Definition and scope. 1.2 Concepts in Developmental Biology: Growth, Differentiation, Dedifferentiation, Cell determination, Cell communication, Morphogenesis, Induction and Regeneration.	<b>DRB</b>
<b>2</b>	<b>July</b>	<b>2. Theories of Developmental Biology:</b> 2.1 Preformation. 2.2 Pangenesis. 2.3 Epigenesis. 2.4 Axial gradient. 2.5 Germplasm.	<b>DRB</b>
<b>3</b>	<b>Aug</b>	<b>3. Gametogenesis:</b> 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.	<b>DRB</b>
<b>4</b>	<b>Aug &amp; Sept</b>	<b>4. Fertilization:</b> 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.	<b>DRB</b>
<b>5</b>	<b>Sept</b>	<b>5. Cleavage and Blastula:</b> 5.1 Planes and symmetry of cleavage. 5.2 Types of cleavage. 5.3 Significance of cleavage. 5.4 Definition and types of Blastula.	<b>DRB</b>
<b>6</b>	<b>Oct</b>	<b>6. Gastrulation:</b> 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.	<b>DRB</b>

7	Oct	<b>7. Chick Embryology:</b> 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**

<b>Sr. No.</b>	<b>Month</b>	<b>Topics</b>	<b>Teacher</b>
<b>1.</b>	<b>July</b>	<b>1. Introduction:</b> Definition and Scope of Histology. <b>Definitions and Review of Types of Tissues:</b> 2.1 Epithelial tissue. 2.2 Connective tissue. 2.3 Nervous tissue. 2.4 Muscular tissue.	<b>DRB</b>
<b>2.</b>	<b>Aug</b>	<b>3.Histological study of following mammalian organs:</b> 3.1 Skin (V. S.). 3.2 Tooth (V. S.). 3.3 Tongue (C. S.) with reference to mucosa papillae and taste buds <b>4.Histological study of Alimentary canal and Liver:</b> 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.).	<b>DRB</b>
<b>3.</b>	<b>Sept</b>	<b>5.Histological study of Respiratory organs:</b> 5.1 Trachea (T. S.). 5.2 Lung (C. S.).	<b>DRB</b>
<b>4.</b>	<b>Sept</b>	<b>6. Histological study of Excretory organs:</b> 6.1 Kidney (L. S.). 6.2 Juxta glomerular complex.	<b>DRB</b>
<b>5.</b>	<b>Oct</b>	<b>7.Histological study of Reproductive organs:</b> 7.1 Testis (T. S.) with reference to Seminiferous Tubules and Cells of Leydig. 7.2 Ovary (C. S.).	<b>DRB</b>
<b>6.</b>	<b>Oct</b>	<b>8. Histology of Endocrine glands:</b> 9. 8.1 Pituitary gland. 8.2 Thyroid gland. 8.3Adrenal gland. 8.4 Pancreas (C. S.) including both exocrine and endocrine components.	<b>DRB</b>

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**Teaching Plan (A.Y.2025–2026)**

**S. Y. B. Sc. ZOOLOGY MINOR**  
**Course Code :- ZOO - 242 - MN**  
**Course Title:- Amazing World of Invertebrates – I**

<b>Sr. No.</b>	<b>Month</b>	<b>Topics</b>	<b>Teacher</b>
<b>1.</b>	<b>July</b>	<b>Introduction to Taxonomy :</b> 1.1 Basic terminology and scope: Alpha, Beta, and Gamma taxonomy. 1.2 Introduction to systematics and its role in evolutionary biology. 1.3 Linnaean hierarchy and concept of taxonomic ranks. 1.4 Binomial nomenclature: rules and conventions. 1.5 Overview of five-kingdom classification.	<b>DRB</b>
<b>2.</b>	<b>Aug</b>	<b>Phylum Protozoa :</b> 2.1 Introduction to Kingdom Protista and Phylum Protozoa. 2.2 General characters and classification (with e. g. – names only): Class Rhizopoda – <i>Entamoeba</i> , <i>Arcella</i> , Class Mastigophora – <i>Euglena</i> , <i>Trypanosoma</i> , Class Ciliata – <i>Paramecium</i> , <i>Opalina</i> , Class Sporozoa – <i>Plasmodium</i> , <i>Toxoplasma</i> . 2.4 Protozoan locomotion: Pseudopodia, Flagella, and Cilia (with examples). 2.5 <i>Paramecium caudatum</i> – structure, feeding, excretion, and reproduction – binary fission and conjugation. 2.6 Economic roles of Protozoa: Pathogenic: <i>Plasmodium</i> , <i>Entamoeba</i> . Beneficial: <i>Trichonympha</i> .	<b>DRB</b>
<b>3.</b>	<b>Sept</b>	<b>Phylum Porifera :</b> 3.1 General characters and classification (with e. g. – names only): Calcarea – <i>Leucosolenia</i> , <i>Sycon</i> , Hexactinellida – <i>Euplectella</i> , <i>Hyalonema</i> , Demospongiae – <i>Spongilla</i> , <i>Chalina</i> . 3.3 Types of canal systems: Asconoid, Syconoid, Leuconoid. 3.4 Sponge skeleton: spicules (microscleres & mMegascleres) and spongin fibers. 3.5 Regeneration in sponges and their ecological importance.	<b>DRB</b>
<b>4.</b>	<b>Sept</b>	<b>Phylum Cnidaria :</b> 4.1 General characters and classification (with e. g. – names only): Hydrozoa – <i>Hydra</i> , <i>Physalia</i> , Scyphozoa – <i>Aurelia</i> , <i>Leucernaria</i> , Anthozoa – <i>Metridium</i> .	<b>DRB</b>

		4.2 Polymorphism and colony organization in Hydrozoans. 4.3 Coral reefs: Formation, types and ecological significance.	
5.	Oct	<b>Phylum Platyhelminthes (Flatworms) :</b> 5.1 General characters and classification (with e. g. – names only): Turbellaria – <i>Dugesia</i> , <i>Bipallium</i> , Trematoda – <i>Fasciola</i> , <i>Schistosoma</i> , Cestoda – <i>Taenia</i> , <i>Echinococcus</i> . 5.2 Adaptations of parasitic flatworms: Morphological and physiological. 5.3 Human and veterinary importance of flatworms.	DRB

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**S. Y. B. Sc. ZOOLOGY MAJOR**

Course Code :- ZOO – 200 - IKS

Course Title:- Treasures of Animal Kingdom (T)

Sr. No.	Month	Topics	Teacher
1.	July	<b>Introduction :</b> Natural fauna history of India.	DRB
2.	July	<b>Indian authors and sages :</b> Shalihotra, Palakapya, Bhoja, Paramar, Hamsadev.	DRB
3.	Aug	<b>Animals in Indian History :</b> 3.1 Pre-historic to Indus valley civilization of tradition of animal conservation. 3.2 Names and kinds of birds and animals during the Vedic period to Maurya dynasty. 3.3 Animal killing as major sports during mughal and colonial period.	DRB
4.	Aug	<b>Ecosystem of India :</b> 4.1 Trans-Himalaya, Himalaya, Desert, Semi-arid, Western Ghats, Deccan Plateau, Gangetic plains, Coastal India, Islands - Andaman and Nicobar.	DRB
5.	Sept	<b>Colonial Hunting and Indian Conservation Pioneers :</b> 5.1 Environmental and wildlife conservation issues with reference to hunting during colonial India. 5.2 Contribution of - Dr. Salim Ali & Dr. Hora's to Indian Ichthyology, Satpura Hypothesis.	DRB
6..	Sept & Oct	<b>Wildlife Governance in India :</b> 6.1 Establishment of Wildlife institute of India, Zoological Survey of India, Its branches and role, responsibility, and present-day research. 6.2 Wildlife Protection Act in India with information on various schedules.	DRB
7.	Oct	Indian Natural History Museums.	DRB



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