

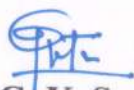
"Dissemination of Education for Knowledge, Science and Culture"

-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's
Vivekanand College, Kolhapur
(An Empowered Autonomous Institute)
Department of Zoology
Academic year: 2025-26

Annual Teaching Report (Term II)

1. Dr. G. K. Sontakke
2. Dr. T. C. Gaupale
3. Dr. S. S. Desai
4. Mr. G. H. Fadake
5. Ms. N. A. Patel
6. Dr. T. C. Patil
7. Ms. P. S. Shetfalkar
8. Ms. N. A. Jadhav
9. Ms. P. R. Gaikwad
10. Ms. M. L. Patil



Dr. G. K. Sontakke
Head

Department of Zoology
Vivekanand College Kolhapur
(An Empowered Autonomous Institute)



Dr. S. P. Thorat
I/c Principal

Vivekanand College, Kolhapur
(An Empowered Autonomous Institute)

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Vivekanand College, Kolhapur (An Empowered Autonomous Institute)

Department of Zoology

Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Dr. G. K. Sontakke

Term: II

Class: B.Sc. III (Theory)

Name of the Paper: Paper-DSC-XIV, DSC03ZOO63, Aquatic Biology

Month	Module unit	Sub unit
December 2025	UNIT- I	1. Limnology: Introduction and Importance of limnology 2. Aquatic biome: Freshwater ecosystem (Lentic & Lotic), Estuaries, intertidal zones, oceanic pelagic zone, marine benthic zone 3. Ponds and lakes: Origin, Classification, Characteristics, Physicochemical properties, Thermal stratification, Primary production, Role of plankton in the aquatic food chain
January 2026	UNIT- I	4. Streams: Types of streams, physicochemical environment, conservation of streams, adaptation of hill stream fishes 5. Wetland: Types, classification, and significance of wetland
February 2026	UNIT- II	6. Properties of seawater- Concept of chlorinity and salinity of seawater. 7. Coral & coral reefs: Types & economic importance
March 2026	UNIT- II	8. Continental shelf and adaptations of deep-sea organisms 9. Estuaries: Definition, Classification, Characteristics 10. Management of Aquatic Resources- Freshwater pollution, causes of pollution (sewage, Agricultural runoff, industrial discharge), eutrophication, Management

Class: B.Sc. I (PR)

Practical: ZOOLOGY LAB (2): 2DSC03ZOO29 (Practical II)

Month	Practical
December 2025	1. Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: Amphioxus Cyclostomata: Petromyzon, Myxine, 2. Study of the Pisces 3. Study of the Ambhibia 4. Study of the Reptiles 5. Study of the Aves 6. Study of the Mammals
January 2026	7. Characters identifying venomous and non-venomous snakes 8. Study of any six common birds from different orders 9. Mounting of placoid/cycloid scale 10. Demonstration of Barr bodies

	11. Study of Mendelian Inheritance using suitable examples
February 2026	12. Study of gene interactions (Non-Mendelian Inheritance) 13. Study of Human Karyotypes (normal and abnormal) 14. Study of polytene chromosome 15. Study of Sex determination in Drosophila
March 2026	16. Examples based on pedigree analysis 17. Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's syndrome, Down syndrome

Class: B.Sc. III Minor (PR) Practical -ZOOLOGY LAB-6 : MIN03ZOO69 (Practical VI)

Month	Practical
December 2025	1. Identification of mulberry and non-mulberry silkworms 2. Identification of different larvae of silk worm- using specimens / pictures 3. Mounting of mouth parts of adult silkworm/ silk gland of larva 4. Identification of different types of honey bees 5. Determination of purity of Honey
January 2026	11. Identification of breed in goat farming 12. Fodder Preparation Techniques for Goat Farming 13. Determination of adulteration in milk 14. Field visits to a Sericulture /Apiculture / Dairy/Goat farming unit
February 2026	6. Identification of cattle breeds and their characteristics (indigenous & exotic) 7. Determination of acidity, specific gravity, and density of milk 8. Determination of Fat % in Milk (Gerber Method) 9. Determination of SNF% (Solid-Not-Fat) 10. Estimation of reducing sugars/ lactose /protein/ calcium content from the given milk

Class: B.Sc. II (VSC) (PR) ZOOLOGY LAB (4) Practical: 2VSC03ZOO49 (Practical III)

Month	Practical
December 2025	1. To study the anatomy of the fin fishes 2. To study the digestive and reproductive system of fin fishes 3. Mounting of placoid and cycloid scales 4. To study the induced breeding in fishes
January 2026	5. Identification of commercially important fin fishes 6. Identification of commercially important shell fishes 7. Estimation of carbonate and bicarbonate in water samples 8. Estimation of chloride from water samples 9. Estimation of ammonia from water samples
February 2026	10. Methods of quality assessment to examine the freshness of fish. 11. Maintenance of collected fishes/ Preservation techniques 12. Method of Transportation of Fish Seeds 13. Study of Fish by-products
March 2026	14. Modern Crafts and Gears. 15. Estimation of muscle protein in fish by Biuret method. 16. Visit to fish market.

Month	Practical
December 2025	1. Histological study of bone marrow, thymus, spleen and lymph nodes 2. Demonstration of lymph node, spleen, mucosal-associated lymphoid tissue (MALT) 3. Study of the types of cells of the immune system (white blood cells). 4. Staining of Spleen Sections for T cell and B cell zones 5. Differential WBC count from a given blood sample.
January 2026	6. Antigen-antibody reaction by double immuno-diffusion method. 7. Antigen-Antibody reactions – Agglutination (Blood group test). 8. Agglutination reactions- Latex agglutination reactions. 9. WIDAL test
February 2026	10. Direct antiglobulin test (Coomb's test) 11. Demonstration of ELISA (Photograph) 12. Demonstration of immunoelectrophoresis (Photograph)
March 2026	13. Demonstration of dot blot 14. Report submission on autoimmune diseases/ blood groups/ institutional visit



Dr. G. K. Sontakke

Dr. G. K. Sontakke
HeadDepartment of Zoology
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Annual teaching plan

Name of the Teacher: Dr. T. C. Gaupale

Term: II

Class: B.Sc. II Major (Theory)

Semester – IV

Paper- VII

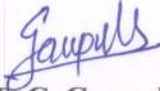
Title of the Paper: Principles of Biochemistry (2DSC03ZOO41)

Month	Module/unit	Subunit /Unit Allotted
December-2025	UNIT- II	Protein metabolism Amino acids- Structure, Essential and non-essential amino acids
January-2025	UNIT- II	Protein metabolism Protein Structure (Primary, Secondary, Tertiary and Quaternary), Transamination, Deamination and Urea Cycle
February-2025	UNIT- II	Enzymes Definition, Properties, Nomenclature and classification of enzymes,
March-2025	UNIT- II	Enzymes Mechanism of action of enzymes (Induced fit model & Lock and key model), Factors affecting enzyme activity, Inhibition and Regulation of enzyme action.

Class: B.Sc. II (PR)

Practical - VIII ZOOLOGY LAB (4): DSC03ZOO49 (Practical IV)

Month	Practical allotted
December-2025	Detection of abnormal urine constituents from a given sample Estimation of glycogen from liver tissue Study of the different types of tissues with the help of permanent slides/photographs -epithelial tissue, connective tissue, muscular tissue, and nervous tissue.
January-2025	Preparation of temporary mounts of striated & smooth muscle fibre. Study of human blood smear to observe different types of blood cells. Study of histological slides of (TS/LS) – bone and cartilage
February-2025	Study of histological slides of (TS/LS) -Oesophagus, Stomach, Duodenum, Rectum, liver, salivary gland. Study of histological slides of (TS/LS) -Brain, spinal cord, kidney, lungs, trachea Study of histological slides of endocrine glands (TS/LS): Pituitary, pancreas, adrenal, thyroid To study types of fixative used in histology
March-2025	To study types of stains Demonstration of histological staining techniques-HE techniques


Dr. T. C. Gaupale


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Annual teaching plan

Name of the Teacher: Dr. T. C. Gaupale

Term: II

Class: B.Sc. III Minor (Theory)

Semester – VI

Paper- VII

Class: B.Sc. III Minor Theory

Title of the Paper: MIN-X: MIN03ZOO61: ECONOMIC ZOOLOGY

Month	Module/unit	Subunit/ unit allotted
November-2025	UNIT- I	Sericulture: History and present status of sericulture in India,
December-2025	UNIT- I	Mulberry and nonmulberry silkworm, Life cycle of Bombyx mori , Silkworm rearing techniques, Silkworm diseases & pests and its control measures
January-2025	UNIT- I	Apiculture: Introduction and present status of apiculture, Species of honey bees, Life cycle of honey bee, Colony organization, division of labor and communication, Bee keeping methods and equipments, Pests and diseases of bees and their management
February-2025	UNIT- II	Dairy Farming: Importance; scope and management of farm animals, breeds of cows and buffaloes, nutrition requirements, housing and hygiene of dairy animals, milk and milk byproducts, processing, preservation and marketing of milk breeding techniques, artificial insemination, dairy equipment's (Milk machines, chaff cutter, milk cans and containers for liquid food)
March-2025	UNIT- II	Goat farming: Introduction to Goat Farming, Goat Breeds and Selection, Housing & Farm Management, Feeding & Nutrition, Health & Disease Management, Breeding & Reproductive Management, Marketing, Business, and Value Addition

Class: B.Sc. III Minor (PR) Practical -ZOOLOGY LAB-6: MIN-PR-VI: MIN03ZOO69

Month	Practical
November-2025	Identification of mulberry and non-mulberry silkworms Identification of different larvae of silk worm- using specimens / pictures Mounting of mouth parts of adult silkworm/ silk gland of larva
December-2025	Identification of different types of honey bees Determination of purity of Honey Identification of cattle breeds and their characteristics (indigenous & exotic) Determination of acidity, specific gravity, and density of milk
January-2025	Determination of Fat % in Milk (Gerber Method) Identification of breed in goat farming Fodder Preparation Techniques for Goat Farming
February-2025	Determination of adulteration in milk, Determination of SNF% (Solid-Not-Fat)
March-2025	Estimation of reducing sugars/ lactose /protein/ calcium content from the given milk Field visits to a Sericulture /Apiculture / Dairy/Goat farming unit


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Name of the Teacher: Dr. T. C. Gaupale

Term: II

Class: B.Sc. I (PR) Practical: ZOOLOGY LAB (2): DSC- PR-II : 2DSC03ZOO29

Month	Practical
November-2025	Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: Amphioxus, Cyclostomata: Petromyzon, Myxine Study of the Pisces with reference to morphological peculiarities and Classification up to orders: Torpedo, Exocoetus, Labeo
December-2025	Study of the Ambhibia with reference to morphological peculiarities and Classification up to orders: Ichthyophis, Bufo Study of the Reptiles with reference to morphological peculiarities and Classification up to orders: Draco, Chamaeleon Study of the Aves with reference to morphological peculiarities and Classification up to orders: Passer, Columba Study of the Mammals with reference to morphological peculiarities and Classification up to orders: Funambulus, Loris
January-2025	Characters identifying venomous and non-venomous snakes Study of any six common birds from different orders with the help of photographs and keys. Mounting of placoid/cycloid scale Demonstration of Barr bodies Study of Mendelian Inheritance using suitable examples. Study of gene interactions (Non-Mendelian Inheritance)
February-2025	Study of Human Karyotypes (normal and abnormal) Study of polytene chromosome Study of Sex determination in Drosophila Examples based on pedigree analysis
March-2025	Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's syndrome, Down syndrome Field visit-Museum, National park, Sea shore


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Annual teaching plan

Name of the Teacher: Dr. S. S. Desai

Term: II

Class: B.Sc. I (Theory)

Name of the Paper: Paper III Animal Diversity II (2DSC03ZOO21)

Month	Module unit	Sub unit
December 2025	Unit-I	1. Protochordata: General characters and Classification of Protochordata 2. Agnatha: General characters of Agnatha and Classification of cyclostomes up to classes
January 2026	Unit-I	3. Pisces: General characters of Pisces, General characters of Chondrichthyes and Osteichthyes with examples; aquatic adaptations of fishes
February 2026	Unit-I	4. Amphibia: General features and Classification up to orders
March 2026	Unit-I	5. Parental care in Amphibia

Class: B. Sc. III (Theory) Name of the Paper: Developmental Biology (DSC03ZOO62)

Month	Module unit	Sub unit
December 2025	Unit-I	1. Early and late Embryonic Development in human: Gametogenesis (Spermatogenesis & Oogenesis), Structure of mature egg and sperm, Fertilization process & prevention of polyspermy, Cleavage, blastula, gastrula, fate of three germ layer, Implantation, formation of placenta and its functions
January 2026	Unit-I	2. Control of Development: Gene activation, determination, induction, Differentiation, morphogenesis, Intercellular communication, Cell movements and cell death
February 2026	Unit- II	3. Early Development in Frog: Structure of mature egg and its membranes, Cleavage, Blastula and its fate map, Process of gastrulation, Neurulation, Metamorphosis in frog and its hormonal regulation
March 2026	Unit-II	4. Extra-Embryonic Membranes and Early Development in Chick: Development, structure and functions of yolk sac, amnion, chorion and allantois, Structure of hen's egg, Cleavage, blastula, gastrulation, Origin and structure of primitive streak, Structure of 18, 24, 33 and 48 hrs. chick embryos

Class: B.Sc. I (PR II)**Practical: ZOOLOGY LAB (2): 2DSC03ZOO29**

Month	Practical
December 2025	1. Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: Amphioxus Cyclostomata: Petromyzon, Myxine, 2. Study of the Pisces 3. Study of the Ambhibia 4. Study of the Reptiles 5. Study of the Aves 6. Study of the Mammals
January 2026	7. Characters identifying venomous and non-venomous snakes 8. Study of any six common birds from different orders 9. Mounting of placoid/cycloid scale 10. Demonstration of Barr bodies 11. Study of Mendelian Inheritance using suitable examples.
February 2026	12. Study of gene interactions (Non-Mendelian Inheritance) 13. Study of Human Karyotypes (normal and abnormal) 14. Study of polytene chromosome 15. Study of Sex determination in Drosophila
March 2026	16. Examples based on pedigree analysis 17. Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's syndrome, Down syndrome

Class: B.Sc. II (PR III)**Practical: 2VSC03ZOO49**

Month	Practical
December 2025	1. To study the anatomy of the fin fishes 2. To study the digestive and reproductive system of fin fishes 3. Mounting of placoid and cycloid scales 4. To study the induced breeding in fishes 5. Identification of commercially important fin fishes
January 2026	6. Identification of commercially important shell fishes 7. Estimation of carbonate and bicarbonate in water samples 8. Estimation of chloride from water samples 9. Estimation of ammonia from water samples 10. Methods of quality assessment to examine the freshness of fish.
February 2026	11. Maintenance of collected fishes/ Preservation techniques 12. Method of Transportation of Fish Seeds 13. Study of Fish by-products
March 2026	14. Modern Crafts and Gears. 15. Estimation of muscle protein in fish by Biuret method.

Month	Practical
December 2025	1. Study of sperm in any suitable animal (permanent slides/ microphotographs). 2. Study of types of eggs a. Amphioxus egg b. Frog Egg c. Hen's Egg d. Insect Egg 3. Study of developmental stages of frog (permanent slides/ microphotographs)-Cleavage Blastulation, Gastrulation, Neurulation.
January 2026	4. Stages of metamorphosis in frog (permanent slides /microphotographs/specimen)- External gill stage, Internal gill stage, Forelimb stage, Hind limb stage, Tail bud stage, Juvenile stage. 5. Study of whole mount of chick embryo – 18, 24, 33, 48 and 72 hours (permanent slides /microphotographs) 6. T.S. of chick embryo – 18, 24, 33, 48 and 72 hours.
February 2026	7. Preparation of whole mount chick embryo and submission of slide 8. Demonstration of shell-less culture of early chick embryo in vitro 9. Study of histological structures of the placenta
March 2026	10. Study Morphological Types of placenta 11. Study of developmental stages of Drosophila



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Department of Zoology

Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Mr. Ganesh H. Fadake

Term: II

Class: B.Sc. I (Theory)

Name of the Paper: Paper IV, GENETICS (2DSC03ZOO22)

Month	Module unit	Sub unit
Dec-2025	UNIT-I	1. Introduction to Genetics: Definition, scope and importance of genetics, Classical and modern concept of gene (Cistron, Muton, Recon),
Jan-2026	UNIT-I	2. Brief explanation of following terms: Alleles, Wild type, Mutant allele, Locus,
Feb- 2026	UNIT-I	3. Dominant and recessive trait, Homozygous and heterozygous, Genotype and phenotype, Genome 4. Mendelian Genetics: Mendel's law of inheritance (Law of Dominance, Segregation and Independent assortment) Monohybrid cross, Dihybrid Cross, Test cross, Back cross.
Mar- 2026	UNIT-I	5. Extension of Mendelian Genetics: Chromosomal theory of inheritance, Incomplete dominance and co-dominance, Multiple alleles with respect to ABO, RH blood group, Polygenic inheritance with reference to skin colour and eye colour in man, Lethal Alleles, Concept of Pleiotropy.

Class: B. Sc. III (Theory)

Name of the Paper: Paper- XII, Molecular Biology (DSC03ZOO61)

Month	Module unit	Sub unit
Dcc-2025	UNIT-I	1) Introduction to basic concepts in immunology 2) The components of the immune system. 3) Types and features of immunity- Innate and Adaptive 4) Haematopoiesis 5) Cells in the immune system
Jan-2026	UNIT-I	6) Organs of the immune system- Primary lymphoid organ- bone marrow, thymus, Secondary lymphoid organ- lymph node, spleen 7) Other lymphoid tissues- Tonsils, payers patches, mucosal-associated lymphoid tissue (MALT) 8) Primary and secondary immune responses
Feb- 2026	UNIT-II	9) Antigens: Basic properties of antigens 10) B and T Epitopes, haptens and adjuvants

Mar- 2026	UNIT-II	11) Antibodies: Structure, types and function 12) Antigen-antibody interactions. 13) Types of ELISA 14) Hybridoma technology 15) Monoclonal vs Polyclonal antibodies. Application of monoclonal antibody 16) Introduction to Vaccines- Properties and types of vaccines
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Class: B.Sc. I (PR II)

Practical: ZOOLOGY LAB (1I): 2DSC03ZOO29

Month	Practical
Dec-2025	1) Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: Amphioxus Cyclostomata: Petromyzon, Myxine 2) Study of the Pisces with reference to morphological peculiarities and Classification up to 3) orders: Torpedo, Exocoetus, Labeo 4) Study of the Ambhibia with reference to morphological peculiarities and Classification up to orders: Ichthyophis, Bufo
Jan-2026	1) Study of the Reptiles with reference to morphological peculiarities and Classification up to orders: Draco, Chamaeleon 2) Study of the Aves with reference to morphological peculiarities and Classification up to orders: Passer, Columba 3) Study of the Mammals with reference to morphological peculiarities and Classification up to orders: Funambulus, Loris 4) Characters identifying venomous and non-venomous snakes 5) Study of any six common birds from different orders with the help of photographs and keys. 6) Mounting of placoid/cycloid scale
Feb- 2026	1) Demonstration of Barr bodies 2) Study of Mendelian Inheritance using suitable examples. 3) Study of gene interactions (Non-Mendelian Inheritance) 4) Study of Human Karyotypes (normal and abnormal)
Mar- 2026	1) Study of polytene chromosome 2) Study of Sex determination in Drosophila 3) Examples based on pedigree analysis 4) Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's 5) syndrome, Down syndrome

Class: B.Sc. II (PR-IV)**Name of the Paper: Tools and Techniques in Biology (MIN03ZOO41) and
Insect Pest Management (MIN03ZOO42)**

Month	Sub unit
Dec-2025	1. Introduction to microscope 2. Cleaning and maintenance of microscope. 3. Demonstration of different types of Microscope (Simple, Compound, Stereozoom, fluorescence)
Jan-2026	1. Demonstration of microtomy processes 2. Separation of amino acids using paper chromatography 3. Separation of amino acids using thin layer chromatography 4. To study the Principles and application of the following Instruments. (a) Incubator (b) Spectrophotometer (c) Colorimeter (d) Rotary microtome (e) Cooling Centrifuge (f) Oven
Feb- 2026	1. Demonstration of DNA separation by agarose gel electrophoresis. 2. Study of morphology of insect (Cockroach/Grasshopper) 3. Study of different types of mouth parts in insect 4. Technique of collection and preservation of insect pests 5. Wet preservation
Mar- 2026	1. Study of following insect pests with reference to classification, life cycle, marks of 2. identification, nature of damage and management. (a) Jowar – Stem borer (b) Sugarcane – White grub (c) Gram – Pod borer (d) Mango – Jassids 3. Study of following stored grain pests with reference to scientific name, life cycle, marks of 4. identification, nature of damage and management. (a) Rice weevil (b) Pulse beetle 5. Study of beneficial insects and mites belongs to predators and parasitoid (Any two)

Class: B.Sc. III (PR VI)**Practical: DSC-PR-VI: DSC03ZOO69**

Month	Practical
Dec-2025	1. Histological study of bone marrow, thymus, spleen and lymph nodes 2. Demonstration of lymph node, spleen, mucosal-associated lymphoid tissue (MALT) 3. Study of the types of cells of the immune system (white blood cells).

Jan-2026	1. Differential WBC count from a given blood sample. 2. Antigen-antibody reaction by double immuno-diffusion method. 3. Antigen-Antibody reactions – Agglutination (Blood group test). 4. Agglutination reactions- Latex agglutination reactions.
Feb- 2026	1. WIDAL test 2. Direct antiglobulin test (Coomb's test) 3. Demonstration of ELISA (Photograph) 4. Demonstration of immunoelectrophoresis (Photograph)
Mar- 2026	1. Demonstration of dot blot 2. Staining of Spleen Sections for T cell and B cell zones

Gadani

Mr. Ganesh H. Fadake

G.K.

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Department of Zoology

Academic year: 2025-26

Teaching Plan

Name of the Teacher: Dr. Tejashri C. Patil

Term: II

Class: B.Sc. II

Name of the Paper: Biochemistry (2DSC03ZOO41)

and Histology (2DEC03ZOO42)

Month	Module unit	Sub unit
December-2025	UNIT-I	1. Introduction: Definition and Scope of Histology. 2. Definitions and Types of Tissues: Epithelial tissue, Connective tissue, Nervous tissue, Muscular tissue. 3. Histological study of the alimentary canal: Oesophagus, Stomach, Duodenum,
January -2026	UNIT-I	Histology of Rectum, Liver, Salivary gland 4. Histological study of the respiratory system- lungs and trachea 5. Histological study of excretory organs: Kidney, Juxtaglomerular complex.
February-2026	UNIT-I	Carbohydrate Metabolism Structure, classification and function of Carbohydrate, Glycolysis, Krebs cycle, Electron transport chain, Pentose phosphate pathway, Gluconeogenesis, Glycogenolysis
March-2026	UNIT-I	Lipid Metabolism Structure, classification, properties, types and functions of lipids, Biosynthesis of fatty acids and cholesterol, β oxidation of palmitic acid


Dr. Tejashri C. Patil


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Class: B.Sc. I Batch B1 Practical: Based on: Animal Diversity II Zoology and Genetics (2DSC03ZOO19)

Month	Practical
Dec- 2025	1. Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: Amphioxus Cyclostomata: Petromyzon, Myxine 2. Study of the Pisces with reference to morphological peculiarities and Classification up to orders: Torpedo, Exocoetus, Labeo 3. Study of the Ambhibia with reference to morphological peculiarities and Classification up to orders: Ichthyophis, Bufo
January-2026	4. Study of the Reptiles with reference to morphological peculiarities and Classification up to orders: Draco, Chamaeleon 5. Study of the Aves with reference to morphological peculiarities and Classification up to orders: Passer, Columba 6. Study of the Mammals with reference to morphological peculiarities and Classification up to orders: Funambulus, Loris 7. Characters identifying venomous and non-venomous snakes
February-2026	5. Study of the Aves with reference to morphological peculiarities and Classification up to orders: Passer, Columba 6. Study of the Mammals with reference to morphological peculiarities and Classification up to orders: Funambulus, Loris 7. Characters identifying venomous and non-venomous snakes 8. Study of any six common birds from different orders with the help of photographs and keys. 9. Mounting of placoid/cycloid scale
March-2026	GENETICS LAB (At least 7 experiments) 1. Demonstration of Barr bodies 2. Study of Mendelian Inheritance using suitable examples. 3. Study of gene interactions (Non-Mendelian Inheritance) 4. Study of Human Karyotypes (normal and abnormal)
April-2026	5. Study of polytene chromosome 6. Study of Sex determination in Drosophila 7. Examples based on pedigree analysis 8. Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's syndrome, Down syndrome 9. Field visit-Museum, National Park, Sea shore

Class: B.Sc. I Batch O8 Practical: Based on: Basics of hematology (2OEC03LFS22)

Month	Practical
Dec- 2025	1. Study of composition of blood 2. Separation of plasma/serum/blood cells from given blood sample 3. Preparation of blood smear to study different types of blood cells
January-2026	4. Total WBCs count from given blood sample 5. Total RBCs count from given blood sample 6. Detection of bleeding time of own blood
February-2026	7. Detection of clotting time of own blood 8. Detection of blood group 9. Estimation of Haemoglobin
March-2026	10. study of Erythrocytes sedimentation rate 11. Preparation of hemin crystal
April-2026	12. effect of tonicity of solution on plasma membrane of RBCs 13. Submission of survey report.

**Class: B.Sc. II Batch Z1 Practical: Based on: Biochemistry (2DSC03ZOO41)
and Histology (2DSC03ZOO42)**

Month	Practical
Dec- 2025	1. Estimation of glucose by using DNSA methods 2. Separation of amino acids by paper chromatography 3. Identification of Lipids by TLC
January- 2026	4. Qualitative tests to identify proteins and lipids in a given sample 4. Qualitative tests to identify lipids in a given sample 6. Qualitative tests to identify carbohydrates in given solutions (Glucose, Fructose, Sucrose, Lactose, and Starch)
February- 2026	7. Estimation of total protein in given solutions by Lowry's method/Biuret method. 8. Effect of pH on Salivary Amylase 9. Effect of Temperatures on Salivary Amylase
March- 2026	10. Detection of abnormal urine constituents from a given sample 11. Estimation of glycogen from liver tissue 12. Study of the different types of tissues with the help of permanent-slides/photographs -epithelial tissue, connective tissue, muscular tissue, and nervous tissue
April-2026	13. Preparation of temporary mounts of striated & smooth muscle fibre. 14. Study of human blood smear to observe different types of blood cells

Class: B.Sc. III Batch Z1 Practical: Based on: VSC-PR-IV: VSC03ZOO69: Poultry Farming

Month	Practical
Dec- 2025	1. Poultry farming – Scope and importance 2. Morphology of poultry birds 3. Indigenous breeds and exotic breeds of chicken.
January- 2026	4. Types of poultry rearing system 5. Types of poultry houses and its equipment's 6. Scientific feeding or feed formulation and nutrition management in poultry bird
February- 2026	7. Breeding, incubation and hatchery management 8. Techniques used in processing and preservation of egg and meat 9. Poultry diseases
March- 2026	10. Disease management, prevention and vaccination in poultry birds 11. Poultry waste management 12. Visit to any poultry farm/hatchery

Dr. Tejashri C. Patil


Dr. G. K. Sontakke

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Annual teaching plan

Name of the Teacher: Ms P. S. Shetfalkar

Term: II

Class: B.Sc. II Minor (Theory) Name of the Paper: Paper-VIII,

Insect Pest Management (2MIN03ZOO42)

Month	Module unit	Sub unit
December 2025	UNIT- II	Identification, Characteristics, Life cycle, Damage and Control of following insect pests. Medicinal Pests: Mosquitoes, Bedbug, Sandfly, Tse-Tse fly
January 2026	UNIT- II	Veterinary pests: Sandfly, Horsefly, Stable fly, Rat flea
February 2026	UNIT- II	Integrated Pest Management (IPM): Need, its tools and limitations. Natural Control, Applied control,
March 2026	UNIT- II	Biopesticides- Definition, types and Advantages

Class: B.Sc. II (PR)

Practical -ZOOLOGY LAB (4): 2DSC03ZOO41 (Practical IV)

Month	Practical
December 2025	1. Estimation of glucose by using DNSA methods 2. Separation of amino acids by paper chromatography 3. Identification of Lipids by TLC 4. Qualitative tests to identify proteins and lipids in a given sample 5. Qualitative tests to identify lipids in a given sample
January 2026	6. Qualitative tests to identify carbohydrates in given solutions (Glucose, Fructose, Sucrose, Lactose, and Starch) 7. Estimation of total protein in given solutions by Lowry's method/Biuret method. 8. Effect of pH on Salivary Amylase 9. Effect of Temperatures on Salivary Amylase 10. Detection of abnormal urine constituents from a given sample
February 2026	11. Estimation of glycogen from liver tissue 12. Study of the different types of tissues with the help of permanent slides/photographs - epithelial tissue, connective tissue, muscular tissue, and nervous tissue. 13. Preparation of temporary mounts of striated & smooth muscle fibre. 14. Study of human blood smear to observe different types of blood cells. 15. Study of histological slides of (TS/LS) – bone and cartilage
March 2026	16. Study of histological slides of (TS/LS) -Oesophagus, Stomach, Duodenum, Rectum, liver, salivary gland. 17. Study of histological slides of (TS/LS) -Brain, spinal cord, kidney, lungs, trachea

	18. Study of histological slides of endocrine glands (TS/LS): Pituitary, pancreas, adrenal, thyroid 19. To study types of fixative used in histology 20. To study types of stains 21. Demonstration of histological staining techniques-HE techniques
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Class: B.Sc. III Minor (PR) Practical -ZOOLOGY LAB-6 : MIN03ZOO69 (Practical VI)

Month	Practical
December 2025	1. Identification of mulberry and non-mulberry silkworms 2. Identification of different larvae of silk worm- using specimens / pictures 3. Mounting of mouth parts of adult silkworm/ silk gland of larva 4. Identification of different types of honey bees 5. Determination of purity of Honey
January 2026	11. Identification of breed in goat farming 12. Fodder Preparation Techniques for Goat Farming 13. Determination of adulteration in milk 14. Field visits to a Sericulture /Apiculture / Dairy/Goat farming unit
February 2026	6. Identification of cattle breeds and their characteristics (indigenous & exotic) 7. Determination of acidity, specific gravity, and density of milk 8. Determination of Fat % in Milk (Gerber Method) 9. Determination of SNF% (Solid-Not-Fat) 10. Estimation of reducing sugars/ lactose /protein/ calcium content from the given milk


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Vivekanand College, Kolhapur (An Empowered Autonomous Institute)
Department of Zoology
Academic year: 2025-2026

Annual Teaching Plan

Name of the Teacher: Miss. Namrata Ajit Jadhav

Term: II- Theory

Class: B.Sc. I Sem.-II

Name of the Paper: DSC-III: Animal Diversity-II (2DSC03ZOO21)

Month	Module Unit	Sub-Unit
December-2025	UNIT- 2	Reptiles: General characters and Classification up to orders, Venomous and non-venomous snakes
January-2026	UNIT- 2	Reptiles: Biting mechanism in snake, Types of venom and anti-venom Aves: General characters
February-2026	UNIT- 2	Aves: Classification up to orders, Flight Adaptations in birds Mammals: General characters
March-2026	UNIT- 2	Mammals: Classification up to subclasses; Important characters of following Eutherian orders with examples, Primates, Chiroptera and Rodentia

Class: B.Sc. II Sem.- IV (Major) Name of the Paper: Paper- VIII, Histology (2DEC03ZOO42)

Month	Module Unit	Sub-Unit
December-2025	UNIT-II	Histological study of the reproductive organ: testes and Ovary Histology of endocrine glands – Hypothalamus, pineal
January-2026	UNIT-II	Histology of endocrine glands – pituitary, thyroid, parathyroid, Thymus, pancreas, adrenal
February-2026	UNIT- II	Histology of Circulatory system – Heart, Arteries, Vein and capillary
March-2026	UNIT- II	Histology of Bone, Cartilage, Ligament

Class: B.Sc. I Sem.-II (PR) (Batch- B7)

Practical: DSC- PR-II : 2DSC03ZOO29

Practicals based on Animal Diversity- II (2DSC03ZOO21) and Genetics (2DSC03ZOO22)

Month	Practical
December - 2025	Practicals based on Animal Diversity- II - Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: <i>Amphioxus</i> Cyclostomata: <i>Petromyzon</i>, <i>Myxine</i> - Study of the Pisces with reference to morphological peculiarities and Classification up to orders: <i>Torpedo</i>, <i>Exocoetus</i>, <i>Labeo</i> - Study of the Ambhibia with reference to morphological peculiarities and Classification up to orders: <i>Ichthyophis</i>, <i>Bufo</i> - Study of the Reptiles with reference to morphological peculiarities and Classification up to orders: <i>Draco</i>, <i>Chamaeleon</i> - Study of the Aves with reference to morphological peculiarities and Classification up to orders: <i>Passer</i>, <i>Columba</i> - Study of the Mammals with reference to morphological peculiarities and Classification up to orders: <i>Funambulus</i>, <i>Loris</i>
January- 2026	- Characters identifying venomous and non-venomous snakes - Study of any six common birds from different orders with the help of photographs and keys. - Mounting of placoid/cycloid scale Practicals based on Genetics- - Demonstration of Barr bodies - Study of Mendelian Inheritance using suitable examples
February- 2026	- Study of gene interactions (Non-Mendelian Inheritance) - Study of Human Karyotypes (normal and abnormal) - Study of polytene chromosome - Study of Sex determination in <i>Drosophila</i>
March- 2026	- Examples based on pedigree analysis - Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's syndrome, Down syndrome

Class: B.Sc. II Sem.- IV (PR) (OEC, Batch- O15)

OEC LFS-PR-IV: 2OEC03LFS42: OEC Zoology Lab-IV

Practicals Based on Aquarium Management

Month	Practical
December- 2025	- Identification of common fresh water ornamental fishes (guppy, molly, sword tail, gold fish, angel fish) - Identification of common fresh water ornamental fishes (Clown Fish, Damsel, Butterfly Fish, Lion Fish) - Study of sexual dimorphism in common ornamental fishes (guppy, sword tail, gold fish)

	4. Study of live-bearing aquarium fishes 5. Preparation and composition of formulated fish feeds
January-2026	6. Preparation, design and construction of a home aquarium 7. To maintenance of water quality of aquarium -pH, hardness, salinity 8. To maintenance of water quality of aquarium -oxygen, carbon dioxide
February-2026	9. To maintenance of water quality of aquarium -chlorine, ammonia, nitrites 10. Maintenance of water quality of aquarium –temperature 11. Study of common aquarium equipments
March-2026	12. To study bacteria diseases of ornamental fishes. 13. To study Protozoan diseases of ornamental fishes and control measures 14. To study Fungal diseases of ornamental fishes and control measures

Class: B.Sc. III, Sem.- VI (PR) (Major, Batch- Z1)

VSC-PR-V: VSC03ZOO69: POULTRY FARMING

Month	Practical
December-2025	1. Poultry farming- Scope and importance 2. Morphology of poultry birds 3. Indigenous breeds and exotic breeds of chicken 4. Types of poultry rearing systems - free-range, intensive, semi-intensive
January-2026	5. Types of poultry houses and it's equipments 6. Scientific feeding or feed formulation and nutrition management in poultry birds 7. Breeding, incubation and hatchery management 8. Techniques used in processing and preservation of eggs and meat
February-2026	9. Poultry diseases - bacterial, viral, fungal and parasitic; symptoms, control and management 10. Disease management, prevention and vaccination in poultry birds 11. Poultry waste management 12. Visit to any poultry farm/ hatchery

Class: B.Sc. III, Sem.- VI (PR) (Minor, Batch- ZM1)

MIN-PR-VI: MIN03ZOO69: MIN Zoology Lab-6

Practicals Based on Paper Economic Zoology

Month	Practical
December-2025	1. Identification of mulberry and non-mulberry silkworms 2. Identification of different larvae of silk worm- using specimens / pictures

	3. Mounting of mouth parts of adult silkworm/ silk gland of larva 4. Identification of different types of honey bees 5. Determination of purity of Honey
January-2026	6. Identification of cattle breeds and their characteristics (indigenous & exotic) 7. Determination of acidity, specific gravity, and density of milk 8. Determination of Fat % in Milk (Gerber Method) 9. Determination of SNF% (Solid-Not-Fat) 10. Estimation of reducing sugars/ lactose /protein/ calcium content from the given milk
February-2026	11. Identification of breed in goat farming 12. Fodder Preparation Techniques for Goat Farming 13. Determination of adulteration in milk 14. Field visits to a Sericulture /Apiculture / Dairy/Goat farming unit



Miss. Namrata Ajit Jadhav



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Annual teaching plan

Name of the Teacher: Ms. Pratiksha R. Gaikwad

Term: II

Class: B.Sc. II, Sem-IV (Minor)

Name of the Paper: Tools and Techniques in Biology (2MIN03Z0041)

Month	Module unit	Sub unit
Dec- 2025	UNIT- I	Basics of Microscopy- Definition, Magnification and Resolving Power, Principle and Application of Microscopy- Light (bright-field, dark-field and phase contrast), Fluorescence Microscope, Electron Microscope (SEM and TEM),
Jan- 2026	UNIT- I	Elements of Microtomy- Pre-microtomy process, microtomy process, Postmicrotomy process, Rotary Microtome, Types of Stain, Methods of staining and mounting.
Feb-2026	UNIT- II	Centrifugation- Basic principle, working and applications of Density gradient centrifugation and Differential centrifugation Chromatography- Basic principle of chromatography; Types of chromatography techniques and their applications- Paper and Thin Layer Chromatography (TLC)
Mar- 2026	UNIT- II	Electrophoresis- Basic principle of electrophoresis, types (Agarose and SDS-PAGE), and their applications

Class: B.Sc. I (PR) (Batch: B8)

Practical: 2DSC03ZOO29 (Practical II)

Practicals based on Animal diversity II (2DSC03ZOO21) and Genetics (2DSC03ZOO22)

Month	Practical
Dec- 2025	1) Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: <i>Amphioxus</i> Cyclostomata: <i>Petromyzon</i> , <i>Myxine</i> 2) Study of the Pisces with reference to morphological peculiarities and Classification up to orders: <i>Torpedo</i> , <i>Exocoetus</i> , <i>Labeo</i> 3) Study of the Ambhibia with reference to morphological peculiarities and Classification up to orders: <i>Ichthyophis</i> , <i>Bufo</i> 4) Study of the Reptiles with reference to morphological peculiarities and Classification up to orders: <i>Draco</i> , <i>Chamaeleon</i>
Jan- 2026	5) Study of the Aves with reference to morphological peculiarities and Classification up to orders: <i>Passer</i> , <i>Columba</i>

	6) Study of the Mammals with reference to morphological peculiarities and Classification up to orders: <i>Funambulus</i> , <i>Loris</i> 7) Characters identifying venomous and non-venomous snakes 8) Study of any six common birds from different orders with the help of photographs and keys.
Feb-2026	9) Mounting of placoid/cycloid scale 10) Demonstration of Barr bodies 11) Study of Mendelian Inheritance using suitable examples. 12) Study of gene interactions (Non-Mendelian Inheritance)
Mar- 2026	13) Study of Human Karyotypes (normal and abnormal) 14) Study of polytene chromosome 15) Study of Sex determination in <i>Drosophila</i> 16) Examples based on pedigree analysis 17) Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's syndrome, Down syndrome

Class: B.Sc. I (PR) (Batch: O9)

Practical: 2OEC03LFS22

Practicals based on Basics of Hematology

Month	Practical
Dec- 2025	1) Study of composition of blood 2) Separation of plasma/serum/ blood cells from given blood sample 3) Preparation of blood smear to study different types of blood cells 4) Total WBCs count from given blood sample
Jan- 2026	5) Total RBCs count from given blood sample 6) Detection of bleeding time of own blood 7) Detection of clotting time of own blood
Feb-2026	8) Detection of blood groups (ABO Blood group system) 9) Estimation of haemoglobin by Sahli's haemometer 10) Study of Erythrocyte Sedimentary Rate (E.S.R)
Mar- 2026	11) Preparation of hemin crystals 12) Effect of tonicity of solutions on plasma membrane of RBCs 13) Submission of survey report- Blood group/Hb/Bleeding/Clotting time 14) Visit to the blood bank and submission of report

Class: B.Sc. II (Minor Batch: ZM3)

Practical: 2MIN03ZOO49 (Practical IV)

Practicals based on Tools and Techniques in Biology (2MIN03Z0041) and Insect Pest Management (2MIN03ZOO42)

Month	Practical
Dec- 2025	1) Introduction to microscope 2) Cleaning and maintenance of microscope. 3) Demonstration of different types of Microscopes (Simple, Compound, Stereozoom, fluorescence)
Jan- 2026	4) Demonstration of microtomy processes 5) Separation of molecules by density gradient centrifugation

	6) Separation of amino acids using paper chromatography 7) Separation of amino acids using thin layer chromatography
Feb-2026	8) To study the principles and application of the following Instruments. a) Incubator b) Spectrophotometer c) Colorimeter d) Cooling Centrifuge e) Rotary microtome f) Oven 9) Demonstration of DNA separation by agarose gel electrophoresis. 10) Study of morphology of insect (Cockroach/Grasshopper) 11) Study of different types of mouth parts in insect 12) Technique of collection and preservation of insect pests a. Wet preservation b. Dry preservation
Mar- 2026	13) Study of following insect pests with reference to classification, life cycle, marks of identification, nature of damage and management. a. Jowar – Stem borer b. Sugarcane – White grub c. Gram – Pod borer d. Mango – Jassids 14) Study of following stored grain pests with reference to scientific name, life cycle, marks of identification, nature of damage and management. a. Rice weevil b. Pulse beetle 15) Study of beneficial insects and mites belongs to predators and parasitoid (Any two) 16) Collection, preservation and submission of insect pests (Any two) 17) Identification of Insect using key 18) Field visit and observation of insects, submission of report with photographs (any five insect)



Ms. P. R. Gaikwad



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Vivekanand College, Kolhapur (An Empowered Autonomous Institute)

Department of Zoology

Academic year: 2025-2026

Annual Teaching Plan

Name of the Teacher: Miss. M. L. Patil

Term: II

Class: B.Sc. II Minor (Theory)

Name of the Paper: Paper VIII Insect Pest Management (MIN03ZOO42)

Month	Module unit	Sub unit
December - 2025	UNIT- I	Introduction to Insects and Pest: General characters and morphology of the Insect. Economic importance of insects- A. Beneficial insects (Pollinators of crops, Predators pests, Parasites of pests, Productive insects (Silkworm, Honey bee, Lac insect) B. Injurious insects (House hold pests, Stored grain pests, Medicinal Pests, Veterinary pests)
January- 2026	UNIT- I	Identification, Characteristics, Life cycle, Damage and Control of following insect pests. House hold pests: Cockroach, Clothes Moth, Furniture beetle, Silverfish.
February- 2026	UNIT- I	Identification, Characteristics, Life cycle, Damage and Control of following insect pests. Stored grain pests: Rice weevil, Rice moth, Pulse beetle, Rust red flour beetle.

Class: B.Sc. I (PR)

Practical: ZOOLOGY LAB (2): 2DSC03ZOO29:(Practical II)

Month	Practical
December- 2025	ANIMAL DIVERSITY Study of the following specimens with reference to morphological peculiarities and Classification up to orders: Protochordata: Amphioxus Cyclostomata: Petromyzon, Myxine 2. Study of the Pisces with reference to morphological peculiarities and Classification up to orders: Torpedo, Exocoetus, Labeo 3. Study of the Ambhibia with reference to morphological peculiarities and Classification up to orders: Ichthyophis, Bufo GENETICS 1. Demonstration of Barr bodies 2. Study of Mendelian Inheritance using suitable examples. 3. Study of gene interactions (Non-Mendelian Inheritance)

January-2026	ANIMAL DIVERSITY 4. Study of the Reptiles with reference to morphological peculiarities and Classification up to orders: Draco, Chamaeleon 5. Study of the Aves with reference to morphological peculiarities and Classification up to orders: Passer, Columba 6. Study of the Mammals with reference to morphological peculiarities and Classification up to orders: Funambulus, Loris GENETICS 7. Examples based on pedigree analysis 8. Study of genetic disorders (with images/photographs) Turner's syndrome, Patau's syndrome, Down syndrome 9. Field Visit-Museum, National Park, Sea Shore
February-2026	ANIMAL DIVERSITY 7. Characters identifying venomous and non-venomous snakes 8. Study of any six common birds from different orders with the help of photographs and keys. 9. Mounting of placoid/cycloid scale GENETICS 4. Study of Human Karyotypes (normal and abnormal) 5. Study of polytene chromosome 6. Study of Sex determination in Drosophila

Class: B.Sc. III Minor (PR) Practical -ZOOLOGY LAB-5 : MIN03ZOO59 (Practical V)

Month	Practical
December-2025	1. Identification of mulberry and non-mulberry silkworms 2. Identification of different larvae of silk worm- using specimens / pictures 3. Mounting of mouth parts of adult silkworm/ silk gland of larva 4. Identification of different types of honey bees 5. Determination of purity of Honey
January-2026	11. Identification of breed in goat farming 12. Fodder Preparation Techniques for Goat Farming 13. Determination of adulteration in milk 14. Field visits to a Sericulture /Apiculture / Dairy/Goat farming unit
February-2026	6. Identification of cattle breeds and their characteristics (indigenous & exotic) 7. Determination of acidity, specific gravity, and density of milk 8. Determination of Fat % in Milk (Gerber Method) 9. Determination of SNF% (Solid-Not-Fat) 10. Estimation of reducing sugars/ lactose /protein/ calcium content from the given milk



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