"Dissemination of Education for Knowledge, Science and Culture"

-Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Empowered Autonomous)

Department of Zoology

Academic year: 2025-26

Annual Teaching Plan (Term I)

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**

VIVEKANAND COLLEGE KOLHAPUR (Empowered Autonomous) ESTD JUNE 1964

Dr. G. K. Sontakke

HEAD
DEPARTMENT OF ZOOLOGY
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

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Department of Zoology

Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Dr. G. K. Sontakke **Term: I**

Class: B.Sc. III (Theory) **Name of the Paper: Paper-DSC-XI, Ecology**

Month	Module unit	Sub unit
July - 2025	UNIT- I	1.Ecology: Abiotic and biotic factors of ecosystem (Forest and Lake) 2.Ecosystem: Structure and function, types of ecosystem (terrestrial and aquatic), Food chain, food web, and ecological pyramids, Biogeochemical cycles (Nitrogen, Carbon, Phosphorus and Water) and its importance & applications
August - 2025	UNIT- I	3.Habitat and Niche: Concept of habitat and niche; niche width and overlap; fundamental and realized niche 4. Species interactions-types of interaction (competition, predation, commensalism, parasitism, mutualism, amensalism)
September-2025	UNIT- II	5.Community Ecology: Nature of communities, characteristics (species richness, dominance, diversity, abundance), ecotone and edge effect. 6. Ecological Succession -Types of succession (primary, and secondary), stages of succession, mechanisms of succession, types of seres (hydrosere, lithosere).
October- 2025	UNIT- II	7. Population Ecology: Characteristics of a population; population growth curves; population regulation; life history strategies (r and K selection); concept of metapopulation 8. Ecological adaptation in aquatic, desert & terrestrial animals

Class: B.Sc. I (PR) **Practical: ZOOLOGY LAB (1): 2DSC03ZOO19 (Practical I)**

Month	Practical
July- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Phylum Porifera to Phylum Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of Sycon b. T.S. of male and female Ascaris lumbricoides 3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules
August- 2025	5. Study of life history stages of Taenia solium 6. Study of life cycle of Ascaris lumbricoides 7. Preparation of *Paramoecium* culture

	8. Temporary preparation of pedicellaria
September-2025	9. Study of compound Microscope : Simple and Compound 10. Temporary preparation of mitotic cells from onion roots 11. Extraction of DNA from given sample 12. Stained squash preparation of salivary gland chromosomes
October- 2025	13. Study of Cell organelles (any three) by using microphotographs 14. Stained preparation of mitochondria from oral mucosa/ onion peels 15. Effect of tonicity of solutions on plasma membrane of RBCs

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

Month	Practical
June - 2025	1. Study of parasitic association with their example - a) Commensalism. b) Parasitism. 2. To study the life cycle, pathogenecity, diagnosis and treatment of Entamoeba histolytica through permanent slides or microphotographs. 3. To study the life cycle, pathogenecity, diagnosis and treatment of Plasmodium vivax through permanent slides or microphotographs
July- 2025	4. To study the life cycle, pathogenicity, diagnosis and treatment of Ascaris lumbricoides through specimens, permanent slides or microphotographs. 5. To study the life cycle, pathogenicity, diagnosis and treatment of Taenia solium through specimens, permanent slides or microphotographs. 6. Study of the following parasites with their role as vectors- Pediculus humanus, Xenopsylla cheopis and Cimex lectularius through permanent slides or photographs.
August- 2025	7.Study of effects of parasites on host body (ectoparasite and endoparasite) 8. Study of the pathogenicity and control measures of ticks (Any two). 9.Study of the pathogenicity and control measures of Mite
September-2025	10. Study of parasites from the gut of any invertebrate (Insect) 11. Study of parasites from the gut of any vertebrate (Fish) 12. Study of parasites of the earthworm
October- 2025	13. Study of parasitic vertebrates-Photographs 14. Collection and identification of parasites from cow dung 15. Collection & submission of various parasites/vectors (Any five parasites)

Class: B.Sc. II (VSC) (PR) ZOOLOGY LAB (3) Practical: VSC03ZOO39 (Practical II)

Month	Practical
June- 2025	1.Types of silk moths classification and description 2. Life cycle of silk Worm Bombyx mori (L)
July- 2025	3. Life cycle of Vanya / Non-Mulberry Silkworm 4. Difference between male and female silk moths of Bombyx mori 5. Sex separation in larva, pupa and adult of silkworm 6. General anatomy of silkworm (Photographs/Images/dissections) 7. Identification of egg, larva, pupa and moths of different non-mulberry silk moths (Photographs/Images).
August- 2025	8. Dissection and display (Photographs/Images/ dissections): a. Digestive system of larva. b. Silk glands. c. Reproductive system of male and female moths. d. Mounting of larval mouth parts and spiracle.

	e. Nervous system of silkworm larva. 9.Silkworm rearing techniques and its maintenance 10. Mulberry cultivation and its maintenance
September-2025	11. Identification of different Mulberry Varieties / Species 12. Calculation of shell ratio and denier scale by using the formula 13. Identification of major Mulberry pests and diseases
October-2025	14. Identification of major silkworm pests & diseases and their disposal 15. Study of sericulture equipment.

Class: B.Sc. III (PR) **Practical -ZOOLOGY LAB-5 : DSC03ZOO53 (Practical V)**

Month	Practical
June - 2025	1. Construction of ecological pyramids with suitable example 2. Study of food chain and food web 3. Study the biotic components of a pond
July- 2025	4. Determination of pH from the given water sample 5. Measurement of the water-holding capacity of the soil 6. Study the characteristics of different types of soils
August- 2025	7. Estimation of moisture content from different soil samples 8. Example based on species richness and abundance 9. Estimation of biomass in a given area (Terrestrial ecosystem)
September-2025	10. Determination of relative humidity of the atmosphere using hygrometer 11. Study of animals in relation to adaptation (Aquatic and Desert)
October- 2025	12. Submission of report on fauna of college campus 13. Visit to Sanctuary/ National park / Seashore/ Freshwater ecosystem etc.

Dr. G. K. Sontakke

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Department of Zoology

Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Dr. T. C. Gaupale **Term: I**

Class: B.Sc. II Major (Theory) **Name of the Paper: Paper-VI, Ethology (MIN03ZOO32)**

Month	Module unit	Sub unit
July - 2025	UNIT- II	**Cardiovascular system** Composition of blood, Structure of Heart, Origin and conduction of heartbeat, Cardiac cycle, ECG
August - 2025	UNIT- II	**Nerve** Structure of a neuron, Neurotransmitter, Synapse-Electrical and chemical synapse, Origin of action potential and its propagation in nerve fibres
September-2025	UNIT- II	**Nerve** Origin of action potential and its propagation in nerve fibres
October- 2025	UNIT- II	**Muscle** Types of muscle, Ultra-structure of skeletal muscle, Mechanism of muscle contraction

Class: B.Sc. II (PR) **Practical -ZOOLOGY LAB (3): 2DSC03ZOO39 (Practical III)**

Month	Practical
July- 2025	13. Study of dialyzer unit 14. Study of permanent slides of duodenum, liver, pancreas, salivary gland 15. Study of permanent slides of spinal cord, lung, kidney, blood vessels (artery& vein) 16. Study of fossil evidences from plaster cast models and pictures
August- 2025	17. Study of homology and analogy from suitable specimens/ pictures 18. Study of Phylogeny of human evolution 19. Study of Phylogeny of horse 20. Study of Darwin's finches with diagrams/ cut-outs of beaks of different species
September-2025	21. Study of adaptive radiation in marsupial 22. Study of fossil animals- Peripatus, Dipnoi fish, Archaeopteryx 23. Selection of fruit fly in relation to diet
October- 2025	24. Example based on Hardy-Weinberg law 25. Submission of project report / posters 26. Visit to Pathology lab/ museum/natural history museum/ educational institutes

Class: B.Sc. III Minor Theory **SEMESTER-V ZOOLOGY MIN-IX MIN03ZOO51: PARASITOLOGY**

Month	Practical
June - 2025	Introduction and Concepts to Parasitology Definition: Parasitism, Parasite, Parasitoid, Host, Vector, Zoonosis. Types of Parasites with examples: Ectoparasites, Endoparasites, Facultative parasite Obligatory parasites.Types of Hosts with examples: Definitive host, Intermediate host
July- 2025	Host-Parasite relationship Host specificity, types of host specificity: structural specificity, physiological specificity, and ecological specificity. Effects of parasite on host, Factors affecting the host-parasite relationship. Parasitism, Symbiosis, Commensalisms, and Mutualism with suitable example.
August- 2025	Morphology, Life Cycle, Pathogenicity, Diagnosis, Prophylaxis and Treatment of- Parasitic Protists- *Plasmodium vivax, E. histolytica, Trypanosoma, giardia lambia* Parasitic helminth -*Taenia solium, Ascaris lumbricoides*
September-2025	Morphology, Life Cycle, pathogenicity and control measures of- Parasitic Arthropoda- Head louse, Rat fleas, Bed bugs
October- 2025	Parasitic Vertebrates - A brief account of parasitic vertebrates; Cookicutter Shark, Candiru, Hood Mockingbird, and Vampire bat

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

Month	Practical
June - 2025	1. Study of parasitic association with their example - a) Commensalism. b) Parasitism. 2. To study the life cycle, pathogenecity, diagnosis and treatment of Entamoeba histolytica through permanent slides or microphotographs. 3. To study the life cycle, pathogenecity, diagnosis and treatment of Plasmodium vivax through permanent slides or microphotographs
July- 2025	4. To study the life cycle, pathogenicity, diagnosis and treatment of Ascaris lumbricoides through specimens, permanent slides or microphotographs. 5. To study the life cycle, pathogenicity, diagnosis and treatment of Taenia solium through specimens, permanent slides or microphotographs. 6. Study of the following parasites with their role as vectors- Pediculus humanus, Xenopsylla cheopis and Cimex lectularius through permanent slides or photographs.
August- 2025	7.Study of effects of parasites on host body (ectoparasite and endoparasite) 8. Study of the pathogenicity and control measures of ticks (Any two). 9.Study of the pathogenicity and control measures of Mite
September-2025	10. Study of parasites from the gut of any invertebrate (Insect) 11. Study of parasites from the gut of any vertebrate (Fish) 12. Study of parasites of the earthworm
October- 2025	13. Study of parasitic vertebrates-Photographs 14. Collection and identification of parasites from cow dung 15. Collection & submission of various parasites/vectors (Any five parasites)

Class: B.Sc. I (PR) **Practical: ZOOLOGY LAB (1): 2DSC03ZOO19 (Practical I)**

Month	Practical
July- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Phylum Porifera to Phylum Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of Sycon b. T.S. of male and female Ascaris lumbricoides 3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules
August- 2025	5. Study of life history stages of Taenia solium 6. Study of life cycle of Ascaris lumbricoides 7. Preparation of *Paramoecium* culture 8. Temporary preparation of pedicellaria
September- 2025	9. Study of compound Microscope : Simple and Compound 10. Temporary preparation of mitotic cells from onion roots 11. Extraction of DNA from given sample 12. Stained squash preparation of salivary gland chromosomes
October- 2025	13. Study of Cell organelles (any three) by using microphotographs 14. Stained preparation of mitochondria from oral mucosa/ onion peels 15. Effect of tonicity of solutions on plasma membrane of RBCs

Gaupale

Dr. T.C. Gaupale

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Department of Zoology

Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Dr. S. S. Desai **Term: I**

Class: B.Sc. I (Theory)

Name of the Paper: Paper I Animal Diversity I (2DSC03ZOO11)

Month	Module unit	Sub unit
June	Unit-I	Importance and scope of animal diversity
July- 2025	Unit-I	Kingdom Protista- General characters and classification up to classes; locomotion in Protozoa
August- 2025	Unit-I	Phylum Porifera- General characters and classification up to classes; Canal System in Sycon
September-2025	Unit-I	Phylum Cnidaria- General characters and classification up to classes; Polymorphism in Obelia
October- 2025	Unit-I	Phylum Platyhelminthes: General characters and classification up to classes; Life history of Taenia solium and its parasitic adaptations

Class: B. Sc. III (Theory) **Name of the Paper: Animal Biotechnology (DSC03ZOO52)**

Month	Module unit	Sub unit
June- 2025	Unit-I	Introduction to Animal Biotechnology- Concept and Scopes of Biotechnology, Restriction enzymes and other enzymes used in RDT: Nomenclature and its types, DNA modifying enzymes: Nucleases, Polymerases, Phosphatases and ligases, Ligation of adaptors, and linkers.
July- 2025	Unit-I	Vectors: Characteristics and types of vectors Recombinant DNA in medicines: Insulin production. Transformation techniques: Calcium chloride method, liposomal Mediated gene transfer, DNA microinjection and Electroporation.
August- 2025	Unit-I & II	Blotting techniques: Southern, northern and western blotting Polymerase chain reaction. DNA fingerprinting. Method of DNA sequencing: Sanger's method .
September-2025	Unit-II	Construction of genomic and cDNA libraries. Production of cloned animals- Nuclear Transplantation. Production of transgenic animals.
October- 2025	Unit-II	Gene therapy- Types and Applications. Application of biotechnology in animal husbandry, medicine and agriculture

Class: B.Sc. I (PR I) **Practical: ZOOLOGY LAB (1): 2DSC03ZOO19**

Month	Practical
July- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Phylum Porifera to Phylum Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of Sycon b. T.S. of male and female Ascaris lumbricoides 3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules
August- 2025	5. Study of life history stages of Taenia solium 6. Study of life cycle of Ascaris lumbricoides 7. Preparation of *Paramoecium* culture 8. Temporary preparation of pedicillaria
September-2025	9. Study of compound Microscope : Simple and Compound 10. Temporary preparation of mitotic cells from onion roots 11. Extraction of DNA from given sample
October- 2025	12. Stained squash preparation of salivary gland chromosomes

Class: B.Sc. II (PR III) **Practical: VSC03ZOO39**

Month	Practical
June 2025	1. Types of silk moths classification and description 2. Life cycle of silk Worm *Bombyx mori (L)*
July 2025	3. Life cycle of Non-Mulberry Silkworm 4. Difference between male and female silk moths of *Bombyx mori* 5. Sex separation in larva, pupa and adult of silkworm 6. General anatomy of silkworm (Photographs/Images/dissections) 7. Identification of egg, larva, pupa and moths of different non-mulberry silk moths (Photographs/Images).
August 2025	8. Dissection and display (Photographs/Images/ dissections): a. Digestive system of larva. b. Silk glands. c. Reproductive system of male and female moths. d. Mounting of larval mouth parts and spiracle. e. Nervous system of silkworm larva. 9. Silkworm rearing techniques and its maintenance 10. Mulberry cultivation and its maintenance
September 2025	11. Identification of different Mulberry Varieties / Species 12. Calculation of shell ratio and denier scale by using the formula 13.Identification of major Mulberry pests and diseases
October 2025	14. Identification of major silkworm pests & diseases and their disposal 15. Study of sericulture equipments.

Class: B.Sc. III (PR V) **Practical: DSC-PR-V: DSC03ZOO59**

Month	Practical
June - 2025	1. Handling, calibration, and applications of micropipettes 2. Demonstration of equipments used in molecular biology- 3. Electrophoresis, Gel documentation, Hot plate, Centrifuge, UV Transilluminator, Vortex mixer 4. Isolation of the genomic DNA from *E. coli* cells 5. Extraction of DNA from goat liver 6. Extraction of DNA from whole blood
July- 2025	7. Isolation of RNA from animal tissue 8. Spectrophotometric analysis of nucleotide 9. Separation of DNA by agarose gel electrophoresis 10. Demonstration of extraction of DNA from gel 11. Analysis of DNA fragment size (molecular weight) using DNA ladder 12. Separation of protein by SDS-PAGE
August- 2025	13. Study of DNA sequencing, PCR, and DNA fingerprinting through photographs 14. Visit molecular biology laboratory/institution (CCMB/IASC/NCL/Serum/NCCS etc.) 15. Sterilization technique 16. Preparation of microbial culture media 17. Preparation of Bacterial Culture
September-2025	18. Plasmid DNA isolation from bacteria 19. Estimation of RNA by Orcinol Method 20. Estimation of DNA by Diphenylamine method 21. Restriction digestion of plasmid DNA. 22. Construction of circular and linear restriction map from the data provided.
October- 2025	23. Demonstration of ligation of DNA strands 24. Preparation of competent cells in bacteria 25. Demonstration of bacterial transformation 26. Study of equipments used in Animal biotechnology 27. Study of blotting techniques with photographs- Southern, Northern and Western Blotting 28. Visit to stem cell/ tissue culture laboratory

Dr. S. S. Desai

Dr. G. K. Sontakke
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Department of Zoology
Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Mr. Ganesh H. Fadake **Term: I**

Class: B.Sc. I (Theory) **Name of the Paper: Paper II, Cell Biology (2DSC03ZOO12)**

Month	Module unit	Sub unit
June-2025	UNIT-I	1. Introduction-Cell as basic unit of life
July- 2025	UNIT-I	2. Importance of Cell Biology,
August- 2025	UNIT-I	3. Structure and function of Prokaryotic (E. coli) and Eukaryotic cell (Animal Cell)
September-2025	UNIT- I	4. Plasma Membrane: Structure, chemical composition and functions of plasma membrane, Fluid mosaic model.
October- 2025	UNIT- I	5. Ultrastructure and Functions: Mitochondria, Endoplasmic Reticulum, Golgi apparatus, Ribosomes.

Class: B. Sc. III (Theory) **Name of the Paper: Paper- X, Molecular Biology (DSC03ZOO51)**

Month	Module unit	Sub unit
June- 2025	UNIT-II	1) Nucleic acid as the genetic material 2) Watson and Cricks model of DNA structure 3) Replication of DNA: Types of DNA replication 4) DNA replication in prokaryotes and eukaryotes
July- 2025	UNIT-II	5) Transcription: Transcription in prokaryotes and eukaryotes 6) Post-Transcriptional Modifications -Capping of mRNA, Splicing, Polyadenylation 7) Genetic Code and Wobbel hypothesis
August- 2025	UNIT-II	8) Translation in prokaryotes and eukaryotes 9) Gene regulation- lac operon: structure, function, and regulation
September-2025	UNIT- II	10) DNA damage- Sources, mechanism and types 11) Consequences of DNA damage: Mutagenesis, cancer, aging, neurological disorders
October- 2025	UNIT- I	12) DNA repair mechanisms: Direct repair, nucleotide excision repair, base excision repair, a. mismatch repair, etc.

Class: B.Sc. I (PR I) **Practical: ZOOLOGY LAB (1): 2DSC03ZOO19**

Month	Practical
July- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Phylum Porifera to Phylum Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of Sycon b. T.S. of male and female Ascaris lumbricoides 3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules
August- 2025	5. Study of life history stages of Taenia solium 6. Study of life cycle of Ascaris lumbricoides 7. Preparation of *Paramoecium* culture 8. Temporary preparation of pedicillaria
September-2025	9. Study of compound Microscope : Simple and Compound 10. Temporary preparation of mitotic cells from onion roots 11. Extraction of DNA from given sample
October- 2025	12. Stained squash preparation of salivary gland chromosomes

Class: B.Sc. II (PR) **Name of the Paper: Paper-VI, Biostatistics(MIN03ZOO31)**

Month	Sub unit
July- 2025	1. Calculate the mean using given data (Any two examples) 2. Calculate the median using the given data (Any two examples) 3. Calculate the mode using the given data (Any two examples) 4. Calculate the standard deviation using the given data. 5. Draw a line/ Bar diagram using the given data.
Aug- 2025	6. Draw a Histogram by using given data (equal unequal distribution) 7. Draw a Polygon using given data. 8. Draw frequency curve/ Ogive curve using given data 9. Drawing graphs and tables on a computer using given data.
Sept-2025	10. Examples based on regression (Any two examples) 11. Examples based on correlation (Any two examples) 12. To study the locomotory behaviour in - a) Earthworm b) Garden snail 13. To study chemical communication in ant 14. To study simple reflex behaviour in Cockroach
October- 2025	15. To study the reaction of terrestrial woodlice to light and humidity 16. To study the aggression and courtship behaviour in crickets 17. To study the chemoreception in the adult fly 18. To study the courtship behaviour in fruit fly

Class: B.Sc. III (PR V) **Practical: DSC-PR-V: DSC03ZOO59**

Month	Practical
June - 2025	1. Handling, calibration, and applications of micropipettes 2. Demonstration of equipments used in molecular biology- 3. Electrophoresis, Gel documentation, Hot plate, Centrifuge, UV Transilluminator, Vortex mixer 4. Isolation of the genomic DNA from *E. coli* cells 5. Extraction of DNA from goat liver 6. Extraction of DNA from whole blood
July- 2025	7. Isolation of RNA from animal tissue 8. Spectrophotometric analysis of nucleotide 9. Separation of DNA by agarose gel electrophoresis 10. Demonstration of extraction of DNA from gel 11. Analysis of DNA fragment size (molecular weight) using DNA ladder 12. Separation of protein by SDS-PAGE
August- 2025	13. Study of DNA sequencing, PCR, and DNA fingerprinting through photographs 14. Visit molecular biology laboratory/institution (CCMB/IASC/NCL/Serum/NCCS etc.) 15. Sterilization technique 16. Preparation of microbial culture media 17. Preparation of Bacterial Culture
September-2025	18. Plasmid DNA isolation from bacteria 19. Estimation of RNA by Orcinol Method 20. Estimation of DNA by Diphenylamine method 21. Restriction digestion of plasmid DNA. 22. Construction of circular and linear restriction map from the data provided.
October- 2025	23. Demonstration of ligation of DNA strands 24. Preparation of competent cells in bacteria 25. Demonstration of bacterial transformation 26. Study of equipments used in Animal biotechnology 27. Study of blotting techniques with photographs- Southern, Northern and Western Blotting 28. Visit to stem cell/ tissue culture laboratory

Fadake

Mr. Ganesh H. Fadake

Dr. G. K. Sontakke

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Department of Zoology
Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Ms. N. A. Patel **Term: I**
Class: B.Sc. I (Theory)
Name of the Paper: Paper II, Cell Biology (2DSC03ZOO12)

Month	Module unit	Sub unit
June- 2025	Unit-II	Giant chromosome- Polytene chromosome
July- 2025	Unit-II	Lampbrush chromosome, Overview of cell cycle
August- 2025	Unit -II	Phases and significance of mitosis and meiosis
September-2025	Unit - II	Structure and organization of microtubules, microfilaments
October- 2025	Unit - II	Structure and organization of intermediate filaments

Class: B. Sc. III (Theory) Name of the Paper: Biometry And Bioinformatics (DSE-I: DSE03ZOO51)

Month	Module unit	Sub unit
June- 2025	Unit -I	Biostatistics: Biostatics as a tool in research, Scope of Biostatistics, Measures of central tendency: Concept of mean, mode, median 15hrs.
July- 2025	Unit -I	Frequency distribution: Principles of frequency distribution, Graphical presentation of data (Line diagram, Bar diagram; Pie chart, Histogram- equal and unequal classes, Polygon and frequency curve, Ogive curve), Tabulation – Definition requirement of a good table, Part of the table, Type of tabulation, and its application.
August- 2025	Unit –I & II	Methods of sampling data: Random sampling, Stratified sampling, Systematic sampling, Tools of biostatistics in life sciences & research: Correlation: Types and methods of Correlation, Measure of dispersion (standard deviation), mean deviation, Student t-test, Chi-Square test, ANOVA. Introduction to Bioinformatics: Definition, Basic concepts in bioinformatics, importance and role of bioinformatics in life sciences
September-2025	Unit - II	Elementary knowledge of computer: Organization of computer, input and output devices, elementary idea of software, hardware Information Resources: Introduction, aim and objectives, National Centre for Biotechnology Information(NCBI), National Library of Medicine (NLM), and National Institute

		of Health (NIH), EBI, Sequence retrieval system(SRS): Entrez, DBGet.
October- 2025	Unit - II	Genomics and Genome databases: Introduction, Databases, Data, Nucleic acid sequence database, Gene Bank, EMBL, DDBJ, Human Genome Project (HGP), Goal and applications of Genomics Gene Expression Analysis: Microarray data analysis

Class: B.Sc. I (PR) **Practical: ZOOLOGY LAB (1): 2DSC03ZOO19 (Practical I)**

Month	Practical
July- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Phylum Porifera to Phylum Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of Sycon b. T.S. of male and female Ascaris lumbricoides 3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules
August- 2025	5. Study of life history stages of Taenia solium 6. Study of life cycle of Ascaris lumbricoides 7. Preparation of *Paramoecium* culture 8. Temporary preparation of pedicillaria
September-2025	9. Study of compound Microscope : Simple and Compound 10. Temporary preparation of mitotic cells from onion roots 11. Extraction of DNA from given sample
October- 2025	12 Stained squash preparation of salivary gland chromosomes

Class: B.Sc. II (Major) (PR) **Practical: Practicals based on Animal Physiology (2DSC03ZOO31) and Evolution (2DSC03ZOO32)**

Month	Practical
July- 2024	1. To prepare hemin crystals from a given blood sample/own blood 2. To detect ABO blood groups in human blood. 3. To determine the bleeding time of own blood 4. To determine the clotting time of own blood.
August- 2024	5. To determine Erythrocyte Sedimentary Rate (E.S.R) 6. To Estimate of Hb by Sahli's haemometer 7. To Count the total RBCs of own blood 8. To Count the total WBCs of own blood
September-2024	9. 9. To study Differential WBCs of own blood 10. To Measure human blood pressure 11. To Interpret the ECG. 12. Measurement of lung capacity

October- 2024	13. Study of dialyzer unit

Class: B.Sc. III (PR) **Practical: Practicals Based on Paper Biometry & Bioinformatics (DSE03ZOO51)**

Month	Practical
June - 2024	1. Calculate the mean, mode and median using given data (Any three examples) 2. Calculate the standard deviation using the given data.
July- 2024	3. Draw a line/ Bar/ Pie diagram using the given data. 4. Example based on student t-test & ANOVA. 5. Example based on Chi-square test 6. Draw a Histogram by using given data (equal unequal distribution)
August- 2024	7. Examples based on correlation (Any two examples) 8. Introduction to PUBMED Central database using the ENTREZ search engine. 9. Retrieval of nucleotide and protein sequence from Genebank 10. Similarity sequence search using BLAST
September-2024	11. Accessing Structural database and download protein sequence. 12. Multiple sequence alignment and phylogenetic tree construction. 13. Molecular visualization and measuring of bond length in protein using RASMOL.
October- 2024	14. Construction and interpretation of phylogenetic tree using PHYLIP

Ms. N. A. Patel

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Vivekanand College, Kolhapur
(An Empowered Autonomous Institute)
Department of Zoology
Academic year: 2025-26

Annual teaching plan

Name of the Teacher: Dr. Tejashri C. Patil **Term: I**

Class: B.Sc. II **Name of the Paper: Animal Physiology (2DSC03ZOO31) and Evolution (2DSC03ZOO32)**

Month	Module unit	Sub unit
July-2025	UNIT-I	**Digestion** Brief account of the alimentary canal and digestive glands, Physiology of digestion and absorption of carbohydrates, proteins, and lipids **Respiration** Brief account of the respiratory system, Pulmonary ventilation, Respiratory volumes and capacities,
August-2025	UNIT-I	Transport of oxygen and carbon dioxide in the blood, Haldane effect, Bohr's effect, Chloride shift **Cardiovascular system** Composition of blood, Structure of Heart, Origin and conduction of heartbeat, Cardiac cycle, ECG
September-2025	UNIT-II	**Evidences of Evolution** Fossils, Types of fossils, Process of fossilization, dating of fossils, comparative anatomy, vestigial Structures **Species concept** Biological species concept (Advantages and limitations); Isolating mechanisms, Modes of speciation (Allopatric, Sympatric, Peripatric and Parapatric)
October-2025	UNIT-II	**Extinction** Mass extinction (Causes, Names of five major extinctions, K-T extinction in detail), Role of extinction in evolution

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

Month	Practical
July-2025	1. Study of the following specimens with respect to classification and morphological peculiarities a. Amoeba, Paramecium. Sycon, Euplectella c. Obelia, Physalia d. *Taenia solium*, e. Male and female *Ascaris lumbricoides*, f. Aphrodite, Hirudinaria g. Limulus, Periplaneta, h. Pila, Octopus, i. Star fish, Antedon 2. Study of the following permanent slides: a. T.S. or L.S. of Sycon b. T.S. of male and female Ascaris lumbricoides 3. Study of mouth parts in insects 4. Temporary Preparation of spicules and sponging fibres
August-2025	5. Study of life history stages of *Taenia solium* 6. Study of life cycle of *Ascaris lumbricoides* 7. Preparation of paramecium culture 8. Temporary Preparation of Pedicellaria 9. Temporary Preparation of tube feet
September-2025	Cell Biology (At least 7 experiments) 1. Study of microscope: simple and compound 2. Temporary Preparation of mitotic cell from onion roots 3. Temporary Preparation of nucleus from W.B. Cs 4. Extraction of DNA from Given sample
October-2025	5. Stained squash preparation salivary gland chromosome 6. Study of cell organelles 7. Stained preparation of mitochondria from oral mucosa 8. effect of tonicity of solution on plasma membrane of RBCs 9. Field visit-Museum, National Park, Sea shore

Class: B.Sc. I Batch O8 Practical: Based on: Dairy Production and Technology (2OEC03LFS12)

Month	Practical
July-2025	1. Study of nutrients of milk 2. Total fat analysis of milk 3. Testing of milk adulteration 4. Preservation of milk sample for Chemical analysis 5. sampling of milk and milk products for microbial and chemical analysis
August-2025	6. Determination of specific gravity of milk 7. determination of titratable acidity of milk 8. Study of transport and chilling and storage of milk at farm level 9. Preparation of dahi 10.Preparation of Lassi
September-2025	11. Preparation of Butter milk 12. Preparation of Butter 13. Preparation of Ghee 14. Preparation of peda 15. Preparation of Kheer
October-2025	16. Preparation of paneer 17. Determination of moisture content, acidity, fat content of paneer 18. Visit dairy or milk product industry

Class: B.Sc. II Batch Z1 Practical: Based on: Animal Physiology (DSC03ZOO31) and Evolution (DSC03ZOO32)

Month	Practical
July-2025	1. To prepare hemin crystals from a given blood sample/own blood 2. To detect ABO blood groups in human blood. 3. To determine the bleeding time of own blood 4. To determine the clotting time of own blood.
August-2025	5. To determine Erythrocyte Sedimentary Rate (E.S.R) 6. To Estimate of Hb by Sahli's haemometer 7. To Count the total RBCs of own blood 8. To Count the total WBCs of own blood
September-2025	9. To study Differential WBCs of own blood 10. To Measure human blood pressure 11. To Interpret the ECG.
October-2025	12. Measurement of lung capacity 13. Study of dialyzer unit

Class: B.Sc. III Batch Z1 Practical: Based on: VSC-PR-IV: VSC03ZOO59: Pearl Culture

Month	Practical
June-2025	1. Study of common species of fresh water pearl mussel used for pearl culture 2. Study of morphology and anatomy of fresh water pearl mussel
July-2025	3. Study of life cycle of fresh water pearl mussel 4. Study of construction of fresh water pearl culture unit
August-2025	5. Maintenance of fresh water pearl culture unit 6. Embedding beads in suitable mussel for pearl culture 7. Isolation and processing of pearl
September-2025	8. Study of diseases and predators of fresh water pearl mussel 9. Study of pearl formation and it's chemical composition 10. Study of types of pearls – (Natural pearl and Cultured pearl)
October-2025	11. Testing of natural and artificial pearl 12. Economic importance and marketing of pearl 13. Visit to any pearl culture unit

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Department of Zoology
Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Ms. P. S. Shetfalkar **Term: I**

Class: B.Sc. II Minor (Theory) **Name of the Paper: Paper-VI, Ethology (MIN03ZOO32)**

Month	Module unit	Sub unit
July - 2025	UNIT- II	Social Behaviour: Introduction, aggression, aggregations- schooling in fishes,
August - 2025	UNIT- II	flocking in birds; herding in mammals, group selection, kin selection
September- 2025	UNIT- II	Social organisation in insects and primates: Reproductive Behaviour: Introduction, mating systems, courtship, sexual selection
October- 2025	UNIT- II	Biological rhythms: Introduction, Circadian and Circannual rhythms, Orientations and navigation, Migration of fishes and birds

Class: B.Sc. II (PR) **Practical -ZOOLOGY LAB (3): 2DSC03ZOO39 (Practical III)**

Month	Practical
July- 2025	13. Study of dialyzer unit 14. Study of permanent slides of duodenum, liver, pancreas, salivary gland 15. Study of permanent slides of spinal cord, lung, kidney, blood vessels (artery& vein) 16. Study of fossil evidences from plaster cast models and pictures
August- 2025	17. Study of homology and analogy from suitable specimens/ pictures 18. Study of Phylogeny of human evolution 19. Study of Phylogeny of horse 20. Study of Darwin's finches with diagrams/ cut-outs of beaks of different species
September- 2025	21. Study of adaptive radiation in marsupial 22. Study of fossil animals- Peripatus, Dipnoi fish, Archaeopteryx 23. Selection of fruit fly in relation to diet
October- 2025	24. Example based on Hardy-Weinberg law 25. Submission of project report / posters 26. Visit to Pathology lab/ museum/natural history museum/ educational institutes

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

Month	Practical
June - 2025	1. Study of parasitic association with their example - a) Commensalism. b) Parasitism. 2. To study the life cycle, pathogenecity, diagnosis and treatment of

	Entamoeba histolytica through permanent slides or microphotographs. 3. To study the life cycle, pathogenecity, diagnosis and treatment of Plasmodium vivax through permanent slides or microphotographs
July- 2025	4. To study the life cycle, pathogenicity, diagnosis and treatment of Ascaris lumbricoides through specimens, permanent slides or microphotographs. 5. To study the life cycle, pathogenicity, diagnosis and treatment of Taenia solium through specimens, permanent slides or microphotographs. 6. Study of the following parasites with their role as vectors- Pediculus humanus, Xenopsylla cheopis and Cimex lectularius through permanent slides or photographs.
August- 2025	7.Study of effects of parasites on host body (ectoparasite and endoparasite) 8. Study of the pathogenicity and control measures of ticks (Any two). 9.Study of the pathogenicity and control measures of Mite
September- 2025	10. Study of parasites from the gut of any invertebrate (Insect) 11. Study of parasites from the gut of any vertebrate (Fish) 12. Study of parasites of the earthworm
October- 2025	13. Study of parasitic vertebrates-Photographs 14. Collection and identification of parasites from cow dung 15. Collection & submission of various parasites/vectors (Any five parasites)

Ms. P. S. Shetfalkar

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Department of Zoology

Academic year: 2025-2026

Annual Teaching Plan

Name of the Teacher: Miss. Namrata Ajit Jadhav **Term: I- Theory**

Class: B. Sc. I Sem.-I **Name of the Paper: Paper-I, Animal Diversity-I, (2DSC03ZOO11)**

Month	Module Unit	Sub-Unit
June- 2025	UNIT-II	Phylum Nemathelminthes- General characters and classification up to classes
July- 2025	UNIT-II	Life history of *Ascaris lumbricoides* and its parasitic adaptations Phylum Annelida- General characters and classification up to classes
August- 2025	UNIT-II	Metamerism in Annelida Phylum Arthropoda- General characters and classification up to classes
September-2025	UNIT- II	Metamorphosis in insects Phylum Mollusca- General characters and classification up to classes, Sense organ in Mollusca
October- 2025	UNIT- II	Phylum Echinodermata- General characters and classification up to classes, Water-vascular system in star fish

Class: B. Sc. II Sem.- III (Major)

Name of the Paper: Paper-VI, Evolution (DSC03ZOO32)

Month	Module Unit	Sub-Unit
June- 2025	UNIT-I	Origin of Life and evidences of evolution: Life's beginnings: Chemogeny, RNA World
July- 2025	UNIT-I	Biogeny, the origin of photosynthesis, Evolution of eukaryotes, Geological time Scale
August- 2025	UNIT-I	Introduction to evolutionary theories Lamarckism, Weismann's theory of germplasm, Darwinism, Mutation theory
September-2025	UNIT- I	Neo-Darwinism, Processes of Evolutionary Change: Natural selection (Example: Industrial melanism); Types of natural selection (Directional, Stabilizing, Disruptive)

October- 2025	UNIT- I	Artificial selection, Adaptive radiation- Darwin's finches

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

Practical: ZOOLOGY LAB (1): DSC03ZOO19 (Practical I),

Practicals based on Animal diversity I (DSC03ZOO11) and Cell biology (DSC03ZOO12)

Month	Practical
July- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Kingdom- Protista to Phylum-Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of *Sycon* b. T.S. of male and female *Ascaris lumbricoides* 3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules
August- 2025	5. Study of life history stages of *Taenia solium* 6. Study of life cycle of *Ascaris lumbricoides* 7. Preparation of *Paramoecium* culture 8. Temporary preparation of pedicillaria
September- 2025	9. Study of compound Microscope : Simple and Compound 10. Temporary preparation of mitotic cells from onion roots 11. Extraction of DNA from given sample 12. Stained squash preparation of salivary gland chromosomes
October- 2025	13. Study of Cell organelles (any three) by using microphotographs 14. Stained preparation of mitochondria from oral mucosa/ onion peels 15. Effect of tonicity of solutions on plasma membrane of RBCs

Class: B.Sc. II Sem.- III (PR) (OE, Batch- O15)

OEC LFS-PR-III: 2OEC03LFS32: OEC Zoology Lab-III

Practicals Based on Bee Keeping and Honey processing

Month	Practical
July- 2025	1. Study of different species of honeybees 2. Identification of different castes of honeybees 3. Study of different stages of life cycle of honeybees 4. Identification of Queen cells, Drone cells & Brood cells
August- 2025	5. Study of honey and pollen storage structures in hive 6. Methods of multiplication of Bee colonies 7. Steps for strengthening of colonies- Requeening technique 8. Identification and study of beekeeping tools and equipments

September-2025	9. Extraction of Honey using Honey extractor 10. Demonstration of processing, filtration and bottling of honey 11. Determination of moisture content and quality testing of honey 12. Identification and management of bee diseases and pest
October- 2025	13. Methods and measures to transport bee colonies 14. Propagation of floral calendar 15. Visit to apiculture unit and report submission

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

VSC-PR-IV: VSC03ZOO59: PEARL CULTURE

Month	Practical
June- 2025	1. Study of common species of fresh water pearl mussel used for pearl culture 2. Study of morphology and anatomy of fresh water pearl mussel
July- 2025	3. Study of life cycle of fresh water pearl mussel 4. Study of construction of fresh water pearl culture unit
August- 2025	5. Maintenance of fresh water pearl culture unit 6. Embedding beads in suitable mussel for pearl culture 7. Isolation and processing of pearl
September-2025	8. Study of diseases and predators of fresh water pearl mussel 9. Study of pearl formation and it's chemical composition 10. Study of types of pearls – (Natural pearl and Cultured pearl)
October- 2025	11. Testing of natural and artificial pearl 12. Economic importance and marketing of pearl 13. Visit to any pearl culture unit

Miss. Namrata Ajit Jadhav

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Department of Zoology
Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Ms. P. R. Gaikwad **Term: I**
Class: B. Sc. II, Sem- III Minor (Theory)
Name of the Paper: Biostatistics (MIN03ZOO31)

Month	Module unit	Sub unit
June- 2025	UNIT-I	**Introduction to Biostatistics** Biostatistics Definition, Classification of Data, Types and methods of data collection procedure,
July- 2025	UNIT- I	Different types of scales- nominal, ordinal, ratio and interval, Scope & Importance **Frequency distribution** Principles of frequency distribution, Graphical presentation of data (Line diagram, Bar diagram; Pie chart)
August- 2025	UNIT-II	(Histogram- equal and unequal classes Polygon and frequency curve, Ogive curve) **Tabulation** Definition, Requirements of a good table, Parts of the table; Types of tabulation and its applications
September-2025	UNIT-II	**Measures of central tendency** Mean, Median, Mode, Measures of dispersion - Range, Standard deviation, Mean deviation
October- 2025	UNIT-II	**Correlation** Types of correlation, Regression, similarities and dissimilarities of 8 correlation and regression.

Class: B.Sc. I (PR) (Batch: B8)
Practical: 2DSC03ZOO19 (Practical I)
Practicals based on Animal diversity I (DSC03ZOO11) and Cell biology (DSC03ZOO12)

Month	Practical
July- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Phylum Porifera to Phylum Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of *Sycon* b. T.S. of male and female *Ascaris lumbricoides* 3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules

August- 2025	5. Study of life history stages of *Taenia solium* 6. Study of life cycle of *Ascaris lumbricoides* 7. Preparation of *Paramoecium* culture 8. Temporary preparation of pedicellaria 9. Temporary preparation of tube feet
September-2025	10. Study of compound Microscope: Simple and Compound 11. Temporary preparation of mitotic cells from onion roots 12. Extraction of DNA from given sample 13. Stained squash preparation of salivary gland chromosomes
October- 2025	14. Study of Cell organelles (any three) by using microphotographs 15. Stained preparation of mitochondria from oral mucosa/ onion peels 16. Effect of tonicity of solutions on plasma membrane of RBCs 17. Field Visit-Museum, National Park, Sea shore

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

Practical: OEC LFS-PR-I: 2OEC03LFS12

Practicals based on Dairy Production and Technology

Month	Practical
July- 2025	1. Study of nutrients of milk 2. Total fat analysis of milk 3. Testing of milk for adulteration 4. Preservation of milk samples for chemical analysis
August- 2025	5. Sampling of milk and milk products for microbiological and chemical analysis 6. Determination of specific gravity of milk by lactometer 7. Determination of titratable acidity of milk 8. Study of transport and chilling and storage of milk at farm level
September-2025	9. Preparation of Dahi 10. Preparation of Lassi 11. Preparation of Butter milk 12. Preparation of Butter 13. Preparation of Ghee
October- 2025	14. Preparation of Peda 15. Preparation of kheer 16. Preparation of paneer 17. Determination of moisture content, acidity, fat content of paneer

Class: B.Sc. II (Minor Batch: ZM1)

Practical: MIN03ZOO39 (Practical III)

Practicals based on Biostatistics (MIN03ZOO31) and Ethology (MIN03ZOO32)

Month	Practical
July- 2025	1. Calculate the mean using given data (Any two examples) 2. Calculate the median using the given data (Any two examples) 3. Calculate the mode using the given data (Any two examples) 4. Calculate the standard deviation using the given data.

	5. Draw a line/ Bar diagram using the given data.
August- 2025	6. Draw a Histogram by using given data (equal unequal distribution) 7. Draw a Polygon using given data. 8. Draw frequency curve/ Ogive curve using given data 9. Drawing graphs and tables on a computer using given data. 10. Examples based on regression (Any two examples)
September-2025	11. Examples based on correlation (Any two examples) 12. To study the locomotory behaviour in - a) Earthworm b) Garden snail 13. To study chemical communication in ant 14. To study simple reflex behaviour in Cockroach 15. To study the reaction of terrestrial woodlice to light and humidity
October- 2025	16. To study the aggression and courtship behaviour in crickets 17. To study the chemoreception in the adult fly 18. To study the courtship behaviour in fruit fly

Pgaikwad

Ms. P. R. Gaikwad

Dr. G. K. Sontakke

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Department of Zoology
Academic year: 2025-2026

Annual teaching plan

Name of the Teacher: Ms. M. L. Patil **Term: I**

Class: B.Sc. II Minor (Theory) **Name of the Paper: Paper-VI, Ethology (MIN03ZOO32)**

Month	Module unit	Sub unit
August - 2025	UNIT- I	Animal Behaviour concept and classification: Introduction, Ethology as a branch of biology, Animal psychology, classification of behavioral patterns, Analysis of behaviour, Innate behaviour
September-2025	UNIT- I	Communication: Introduction, chemical, visual, audio, olfactory, electric, touch; Species specificity of songs; Communication in bees and ants
October- 2025	UNIT- I	Ecological Aspects of Behaviour: Introduction, habitat selection, food selection, optimal forage theory, anti-predation defenses, aggression, homing, territoriality

Class: B.Sc. I (PR) **Practical: ZOOLOGY LAB (1): 2DSC03ZOO19 (Practical I)**

Month	Practical
August- 2025	1. Study of the specimens with respect to classification and morphological peculiarities: Phylum Porifera to Phylum Echinodermata 2. Study of the following permanent slides: a. T.S. or L.S. of Sycon b. T.S. of male and female Ascaris lumbricoides
September-2025	3. Mounting of mouth part in cockroach/honey bee/ any insect 4. Mounting of sponging fibres and spicules 5. Study of life history stages of Taenia solium 6. Study of life cycle of Ascaris lumbricoides 7. Preparation of *Paramoecium* culture 8. Temporary preparation of pedicellaria
October- 2025	9. Study of compound Microscope : Simple and Compound 10. Temporary preparation of mitotic cells from onion roots 11. Extraction of DNA from given sample 12. Stained squash preparation of salivary gland chromosomes 13. Study of Cell organelles (any three) by using microphotographs 14. Stained preparation of mitochondria from oral mucosa/ onion peels 15. Effect of tonicity of solutions on plasma membrane of RBCs

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

Month	Practical
August- 2025	1. Study of parasitic association with their example - a) Commensalism. b) Parasitism. 2. To study the life cycle, pathogenecity, diagnosis and treatment of Entamoeba histolytica through permanent slides or microphotographs. 3. To study the life cycle, pathogenecity, diagnosis and treatment of Plasmodium vivax through permanent slides or microphotographs
September- 2025	4. To study the life cycle, pathogenicity, diagnosis and treatment of Ascaris lumbricoides through specimens, permanent slides or microphotographs. 5. To study the life cycle, pathogenicity, diagnosis and treatment of Taenia solium through specimens, permanent slides or microphotographs. 6. Study of the following parasites with their role as vectors- Pediculus humanus, Xenopsylla cheopis and Cimex lectularius through permanent slides or photographs. 7.Study of effects of parasites on host body (ectoparasite and endoparasite) 8. Study of the pathogenicity and control measures of ticks (Any two). 9.Study of the pathogenicity and control measures of Mite
October- 2025	10. Study of parasites from the gut of any invertebrate (Insect) 11. Study of parasites from the gut of any vertebrate (Fish) 12. Study of parasites of the earthworm 13. Study of parasitic vertebrates-Photographs 14. Collection and identification of parasites from cow dung 15. Collection & submission of various parasites/vectors (Any five parasites)

Ms. M. L. Patil

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