



Palus Shikshan Prasarak Mandal's
Arts, Commerce & Science College, Palus

Tal. Palus, Dist. Sangli, (Maharashtra) 416310 ☎: (02346) 226226.

(Affiliated to Shivaji University, Kolhapur)

DBT STAR College Scheme Assisted, NAAC Reaccredited with CGPA-2.67(B+)

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B.A., B.Com, B.Sc., B.B.A., B.C.A., B.C.S., M.A., M.Com., M.Sc., PGDCA.

Principal, **Dr. R. S. Salunkhe** M.A., M.Com., M.Phil., Ph.D., SET, M.B.A., D.Litt.

Outward No.: Mahavi/ /F- /

Department of Zoology

Programme Outcomes:

- PO1 - Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms
- PO2 – Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
- PO3 – Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
- PO4 – Understands the complex evolutionary processes and behavior of animals
- PO5 – Correlates the physiological processes of animals and relationship of organ systems
- PO6 – Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
- PO7 – Gain knowledge of Agro based Small Scale industries like sericulture, fish farming, butterfly farming and vermicomposting preparation.
- PO8 – Understands about various concepts of genetics and its importance in human health
- PO9 - Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties
- PO10 – Apply the knowledge and understanding of Zoology to one's own life and work
- PO11 – Develops empathy and love towards the animals.

Programme Specific Outcome:

PSO1. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology.

PSO2. Analyze the relationships among animals, plants and microbes

PSO3. Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology

PSO4. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine

PSO5. Gains knowledge about research methodologies, effective communication and skills of problem solving methods

PSO6. Contributes the knowledge for Nation building.

Course Outcome (CO):

B.Sc. Part – I Semester I

Animal Diversity – I [P-I]

CO1. Describe general taxonomic rules on animal classification

CO2. Classify Protista up to phylum using examples from parasitic adaptation

CO3. Classify Phylum Poripheral to Echinodermata with taxonomic keys

CO4. Describe Phylum Nematoda and give examples of pathogenic Nematodes

CO5. Distribution of fauna in different realms interaction

CO6. Understand Animal behavior and response of animals to different instincts

CO7. Interaction of biota abiota

CO8. Various kinds of Animal adaptations

CO9. Imparts conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment

B.Sc. Part – I Semester I

Cell Biology & Evolutionary Biology [P-II]

CO10. Structural and functional aspects of basic unit of life i.e. cell concepts

CO11. Inculcate knowledge on working principles of microscopes, cell fractionation, staining and identification of cell types.

CO12. Students will understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles

CO13. Students will understand how these cellular components are used to generate and utilize energy in cells

CO14. Students will understand the cellular components underlying mitotic cell division.

CO15. Students will apply their knowledge of cell biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes, or alterations of cell function brought about by mutation.

CO16. Students will understand Theories of Evolution.

CO17. Knowledge of eras and evolution of species.

CO18. Understand the evidence that living species share descent from common ancestry and how this fact explains the traits of living species

B.Sc. Part – I Semester II

Animal Diversity & Insect Vector [P-III]

CO19. Classify phylum Protochordates to Mammalia

CO20. Complex Vertebrate interactions

CO21. Describe the basic biology (life cycle, reproduction, host-seeking behavior) of major insect vectors and pests.

CO22. Describe the major diseases caused by vector borne pathogens.

CO23. Explain major concepts in vector biology including vector competence, extrinsic/intrinsic incubation period, entomological inoculation rate and vectorial capacity.

CO24. Explain the transmission cycles of pathogens vectored by major arthropod vectors including mosquitoes and ticks.

CO25. Explain the role of ecology and environmental factors (including climate change) on vector borne disease transmission.

CO26. Explain and discuss the main findings and implications from scientific publications in the field of public health entomology.

CO27. Infer probable effects of vector control methods on vector borne disease transmission rates.

B.Sc. Part – I Semester II

Genetics [P-IV]

CO28. Students will learn the basic principles of inheritance at the molecular, cellular and organismal levels.

CO29. Students will understand causal relationships between molecule/cell level phenomena (“modern” genetics) and organism-level patterns of heredity (“classical” genetics)

CO30. Students will test and deepen their mastery of genetics by applying this knowledge in a variety of problem-solving situations.

CO31. To enable the students, understand Mendelian inheritance.

CO32. To learn the concepts of Linkage.

CO33. To know the significance of organelle inheritance.

CO34. To understand the concept of sex determination and sex linked inheritance.

B.Sc. Part – II Semester III

Animal Diversity – II [P-V] (NEP-2020)

CO35 Classify Hemichordates up to phylum using examples.

CO36. Classify Phylum Protochordates with taxonomic keys

CO37. Describe Phylum Agnatha and give examples.

CO35 Classify Pisces up to phylum using examples.

CO36. Classify Phylum Amphibia with taxonomic keys.

CO36. Classify Phylum Reptiles with taxonomic keys.

CO36. Classify Phylum Aves with taxonomic keys.

CO37. Explain the physiological systems in frog.

B.Sc. Part – II Semester III

Biochemistry (NEP-2020) [P-VI]

CO38. Understand the structure and biological significance of carbohydrates, amino acids, proteins, lipids and nucleic acids.

CO 39. Understand the structure and function of immunoglobulins.

CO40. Understand the concept of enzyme, its mechanism of action and regulation.

CO41. Learn measurement of enzyme activity and its kinetics.

CO42. Learn the preparation of models of peptides and nucleotides.

CO43. Learn biochemical tests for amino acids, carbohydrates, proteins and nucleic acids.

B.Sc. Part – II Semester III

Reproductive Biology (NEP-2020) [P-VII]

CO44. Observe clean sexual habits thereby warding off sexually transmitted diseases.

CO45. Understand the importance of good health.

CO46. Identify structures and function of reproductive anatomy in the male and female

CO47. Identify hormones, their production site, physiology impacts and how to manipulate specific hormones to control reproduction either positively or negatively.

CO48. Summarize critical components of reproductive technologies involved in breeding, semen collection, gamete biology and embryonic development.

CO49. Communicate via oral, written, podcast, and website modalities.

CO50. Recognize how differences based on cultural and ethnicity impact individuals.

B.Sc. Part – II Semester IV

Applied Zoology-I (NEP 2020) [P-VIII]

CO51. Students feel confident in teaching Medical Entomology as well as executing research project

CO52. Gives knowledge of silk worm rearing, mulberry cultivation, pests and diseases associated with silk worm, mulberry and various process involved in silk production.

CO53. It is an agro based cottage industry in India that enables them to get self-employment

CO54. Sericulture is a comprehensive subject that gives in depth knowledge of the study of silkworms both physiological as well as commercial purposes including the various processes involved in the formation of silk.

CO55. Students gain knowledge about various systems study of silkworms and cocoons, other defective cocoons

CO56. Reeling and significant diseases seen in the silkworms

CO57. Students feel confident in teaching Sericulture as well as executing research projects

CO58. It gives insight into various cell/tissues culture techniques

CO59. Understanding of in vitro culturing of organisms and production of transgenic animals.

CO60. Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms.

CO61. Gains skills in medical, environmental biotechnology, bio pesticides, Biotechnology of aquaculture and use of animals as bioreactors.

B.Sc. Part – III Semester V

Comparative Anatomy of Vertebrates [P-IX]

CO62. Develop an understanding of the characters used to classify besides being able to differentiate the organisms belonging to different taxa.

CO63. Acquire knowledge of the coordinated functioning of complex human body machine.

CO64. Have hands on experience of materials demonstrating the diversity of protists and non- chordates.

CO65. Understand the relative position of individual organs and associated structures through dissection of the invertebrate representatives.

CO65. Realize that very similar physiological mechanisms are used in very diverse organisms.

CO67. Get a flavor of research by working on project besides improving their writing skills. It will further enable the students to think and interpret individually.

B.Sc. Part – III Semester V

Molecular Cell Biology & Animal Biotechnology [P-X]

CO68. Understand how DNA encodes genetic information and the function of mRNA and tRNA

CO69. Understand the cause and effect of alterations in chromosome number and structure.

CO70. Relate the conventional and molecular methods for gene manipulation in other biological systems.

CO71. Discuss and analyze the epigenetic modifications and imprinting and its role in diseases.

CO72. Get new avenues of joining research in related areas such as genetic engineering of cells, cloning, genetic disorders, human fertility programme, genotoxicity, etc.

CO73. Understand the concept of enzyme, its mechanism of action and regulation.

CO74. Understand the process of DNA replication, transcription and translation.

CO75. Learn the preparation of models of peptides and nucleotides.

B.Sc. Part – III Semester V

Biotechnology & Biostatistics [P-XI]

CO76. Get well versed in recombinant DNA technology which holds application in biomedical & genomic science, agriculture, environment management, etc. Therefore, a fundamental understanding of Molecular Biology will help in career building in all these fields.

CO77. Understand the purpose of the technique, its proper use and possible modifications/ improvement.

CO78. Learn the theoretical basis of technique, its principle of working and its correct application.

CO79. Learn the construction repair and adjustment of any equipment required for a technique.

CO80. Learn the accuracy of technique.

CO81. Learn the maintenance laboratory equipment's / tools, safety hazards and precautions.

CO82. Understand the technique of cell and tissue culture. Learn the preparation of solution of given percentage and molarity.

CO83. Understand the process of preparation of buffer. Learn the techniques of separation of amino acids, proteins and nucleic acids.

CO84. Know basic concepts of probability and statistics.

CO85. Describe statistical methods and probability distributions relevant for molecular biology data.

CO86. Know the applications and limitations of different bioinformatics and statistical methods.

CO87. Perform and interpret bioinformatics and statistical analyses with real molecular biology data.

B.Sc. Part – III Semester V

Aquatic Biology [P-XII]

CO88. Employ scientific methodologies such as experimentation and data analysis in the area of aquatic biology

CO89. Critically analyze, interpret and evaluate information relevant to aquatic biology

CO90. Appreciate the multidisciplinary nature of the study of aquatic biology and engage positively with people and ideas beyond their own discipline.

CO91. Explore some of the unique environmental problems dealing with aquatic environments.

CO92. Develop employable skills in freshwater biological water quality analysis.

B.Sc. Part – III Semester VI

Developmental Biology of Vertebrates [P-XIII]

CO93. Develop critical understanding how a single-celled fertilized egg becomes an embryo and then a fully formed adult by going through three important processes of cell division, cell differentiation and morphogenesis.

CO94. Understand how developmental processes and gene functions within a particular tissue or organism can provide insight into functions of other tissues and organisms.

CO95. Realize that very similar mechanisms are used in very diverse organisms; and development is controlled through molecular changes resulting in variation in the expression and function of gene networks.

CO96. Understand how the field of developmental biology has changed since the beginning of the 19th century with different phases of developmental research predominating at different times.

CO97. Examine the evolutionary history of the taxa based on developmental affinities.

CO98. Understand the relevance of developmental biology in medicine or its role in development of diseases.

B.Sc. Part – III Semester VI

Immunology [P- XIV]

CO99 Know how resistance development and resistance transfer occur.

CO100. Identify the major cellular and tissue components which comprise the innate and adaptive immune system.

CO101. Understand how are immune responses by CD4 and CD8 T cells, and B cells, initiated and regulated.

CO102. Understand how the immune system distinguishes self from non-self.

CO103. Gain experience at reading and evaluating the scientific literature in the area.

CO104. Types of immunity, antigens-antibodies and their properties

CO105. Complement system, MHC's and immune responses

B.Sc. Part – III Semester VI

Applied Zoology- II [P- XV]

CO106. Understand the culture techniques of prawn, pearl and fish.

CO107. Understand silkworms rearing and their products.

CO108. Understand the Bee keeping equipment's and apiary management.

CO109. Understand dairy animals' management, the breeds and diseases of goats and learn the testing of egg and milk quality.

CO110. Learn various concepts of lac cultivation.

CO111. Be aware of a broad array of career options and activities in human medicine, biomedical research and allied health professions

B.Sc. Part – III Semester VI

Insect Vectors & Histology [P-XVI]

CO112. Develop awareness about the causative agents and control measures of many commonly occurring diseases.

CO113. Develop understanding about the favorable breeding conditions for the vectors.

CO114. Devise strategies to manage the vectors population below threshold levels, public health importance.

CO115. Undertake measures or start awareness programs for maintenance of hygienic conditions, avoidance of contact from vector, destruction of breeding spots in the vicinity of houses