PROGRAMME OUTCOMES

- Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms
- Analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
- Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
- Understands the complex evolutionary processes and behaviour of animals
- Correlates the physiological processes of animals and relationship of organ systems
- Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
- Understands about various concepts of genetics and its importance in human health
- Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties and Apply the knowledge and understanding of Zoology to one's own life and work
- Develops empathy and love towards the animal
- Developing research aptitude

PROGRAMME SPECIFIC OUTCOMES

- Used the evidences of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of life on earth. They are able to use specific examples to explicate how descent with modification has shaped animalmorphology, physiology, life history, and behavior.
- Explicated the ecological interconnectedness of life on earth by tracing energy and nutrients flow through the environment. They are able to relate the physical features of the environment to the structure of populations, communities, and ecosystems.
- Subjects such as invasive or endangered species, embryonic development in mammals and ageing in social insects. Lead to advances in medicine to prevent disease amongst both animals and human beings.
- Developed knowledge and understood of living organisms at several levels of Zoological and Biological organization from the molecular, through to

cells and whole organisms and ecosystems all organs of evolutionary perspectives.

- Understood how the chemistry and structure of the major biological macromolecules, including proteins and nucleic acids, determines their biological properties

COURSE OUTCOMES

Semester 1

ZL010101:ANIMAL DIVERSITY;PHYLOGENETIC AND TAXONOMIC APPROACHES¬ Understood the Classification and Phylogeny of Animals ¬ Described General characteristics, classification of invertebrates and vertebrates. ¬ Described General characteristics, classification and systematic portion of Minor phyla ¬ Described the general biology of few selected non-chordates and chordates which are useful to mankind. Enriched knowledge on ecology of some important fishes, amphibians, reptiles, birds and mammals

ZL010102: EVOLUTIONARY BIOLOGY AND ETHOLOGY¬ By biological evolution we could understand that many of the organisms that inhabit the Earth today are different from those that inhabited it in the past ¬ Understood that the four propositions underlying Darwin's theory of evolution through natural selection are: ¬ (1) more individuals are produced than can survive; ¬ (2) There is therefore, a struggle for existence ¬ (3) Individuals within a species show variation ¬ (4) Offspring tend to inherit their parental characters ¬ Explained adaptation, providing examples from several different fields of biology ¬ Explained how the molecular record provides evidence for evolution ¬ Understood the Human origin and evolution. -Expose students to the basics and advances in ethology and generate an interest in the subject inorder to understand the complexities of studying animal behavior on every level of biological hierarchy

ZL010103: BIOCHEMISTRY¬Identified the five classes of polymeric biomolecules and their monomeric building blocks. ¬ Explained the specificity of enzymes (biochemical catalysts), and the chemistry involved in enzyme action. ¬ Understood types, Structure, biochemical properties and functions of vitamins. ¬ Explained how the metabolism of organic compounds leads

ultimately to the generation of large quantities of ATP. ¬ Described the structure and classification of hormones.

ZL010104: BIOSTATISTICS AND RESEARCH METHODOLOGY¬Came to know the data collection, tabulation and presentation ¬ Described the mean, median, mode and SD. ¬ Understood the Analysis of Variance. ¬ Described Student 't' test and probability ¬ Understood the Correlation and Regression.-To equip learners to prepare research papers and project proposals- To sensitize students about ethics involved in research and enable them to come up with innovative research designs

Semester 2

ZL010201:FIELD ECOLOGY¬ Demonstrated an Understood of ecological relationships between organisms and their environment. ¬ Presented an overview of diversity of life forms in an ecosystem. ¬ Explained and identified the role of the organism in energy transfers ¬Described the Habitat ecology and Resource ecology ¬ Understood the Environmental Pollution and their management.

ZL010202:DEVELOPMENTAL BIOLOGY¬ Understood and mastered on the basic concepts of developmental biology. ¬ Understood how fertilization, cleavage and gastrulating occur. ¬ Understood the basic concepts of organogenesis. ¬ Understood about the basic concepts of growth, regeneration and ageing ¬ Described the test tube baby and placentation in mammals.

ZL010203:GENETICS AND BIOINFORMATICS¬ Described the fundamental molecular principles of genetics ¬ Understood the structure and function of DNA & RNA ¬ Understood about the transmission, distribution, arrangement, and alteration of genetic information and how it functions and is maintained in populations ¬ Described the basics of genetic mapping.To explore the emerging field of bioinformatics and to equip the students to take up bioinformatics studies.

ZL010204:MICROBIOLOGY AND BIOTECHNOLOGY¬ Understood animal cell structure, scope of biotechnology. ¬ Described the Gene cloning and gene transfer methods. ¬ Came to know the concept of PCR, Screening of recombinant clones – nucleic acid hybridization, DNA sequencing, DNA fingerprinting. ¬ Described the Animal tissue culture techniques. ¬ Understood

Embryo transfer & transgenic animal technology. ¬ Understood the microbial diversity, ultra structure, culture techniques of microbes. ¬ Came to Came to knowing about the various pathogenic fungi and viruses and beneficial microbes.

Semester 3

ZL010301:ANIMAL PHYSIOLOGY¬ An integrated Understanding of physiological mechanisms ¬ Described the physiology of digestive and respiratory system of human beings. ¬ Understood the blood composition, types, groups and circulatory system. ¬ Described the physiology of excretory system and nervous system of human beings. ¬ Came to know the physiology of sense organs, muscles and reproductive system.

ZL010302:CELL AND MOLECULAR BIOLOGY¬ Described the ultra-structure and functions of cell organelles. ¬ Understood DNA replication, RNA and protein synthesis and came to know protein synthesis can be controlled at the level of transcription and translation. ¬ Understood cell signaling and cellular communication. ¬ Described the oncogenes ¬Understood the types and applications of stem cells.

ZL010303:BIOPHYSICS INSTRUMENTATION AND BIOLOGICAL TECHNIQUES- To understand the biological systems and processes based on physical principles- To provide an insight on the tools and techniques of various instruments available for biochemical and biophysical studies-To train the learner the operational skills of different instruments required in zoology.

ZL010304: IMMUNOLOGY¬ Outline the key components of the innate and adaptive immune responses. ¬ Described about cell types and organs which are involved in an immune response ¬ Described the Infectious diseases, hypersensitivity, autoimmune disorders, immunodeficiency diseases.

Semester 4

ZL810401:ENVIRONMENTAL SCIENCE: CONCEPS AND APPROACHES- To provide a broad and deep understanding on environment and influence of man on environment.-To equip the students to use various tools and techniques for the study of environment.- To take up further studies and research in the field.

ZL810402:ENVIRONMENTAL POLLUTION AND TOXICOLOGY- To provide the students a deep understanding about various kinds of pollution- Understood the principles of waste management strategies _ To understood the principles of toxicology and various toxic chemicals in the environment-0 To equip the students with various toxicity assessing methods.

ZL810403:ENVIROMENTAL MANAGEMENT AND DEVELOPMENT – A thorough understanding of the principles of environment management- A deep understanding about environmental impact assessment-To create awareness about the principles of remote sensing- Understood the importance of sustainable development.

PRACTICALS

Semester 1

ZL010105: ANIMAL DIVERSITY : EVOLUTIONARY ETHOLOGICAL AND BIOCHEMICAL METHODS AND APPROACHES- To understanding and identify vertebrates and invertebrates- To get in depth knowledge about larval form- To study behavioural patterns of various organisms- To perform estimation method for various biomolecules.

Semester 2

ZL010205:DIVERSITY OF LIFE:ECOLOGICAL EMBRYOLOGICAL HEREDITARY AND MICROBIAL METHODS AND APPROACHES- To perform various testing methods for common ecological parameters. Performed an experiment to culture Drosophila, Identifications of sex &mutants.To understanding the structure of various biomolecules using bioinformatics tools. Performed to know the various embryonic stages of animals. ¬ Learnt that the mounting of chick blastoderm.- Learnt about the microbial culture methods.

Semester 3

ZL010305: MOLECULAR PHYSIOLOGICAL AND IMMUNOLOGICAL METHODS AND APPROACHES IN BIOSCIENCES -¬ Described the fine structure and functions of cell organelles. ¬ Performed a variety of molecular and cellular biology techniques. To use various biophysical instruments. Biological

chemistry and its importance in physiology by testing. ¬ To get indepth knowledge about enzyme action.familiarizewith ABO blood grouping and various test in immunology

Semester 4

ZL810404:ENVIRONMENTAL SCIENCE-To perform various testing methods with common environmental parameters and histopathological studies