

Program: M.Sc. Zoology

Programme Specific Outcome

- PSO1. The aim of the course to developing deeper understanding of key concepts of biology at biochemical, molecular and cellular level, physiology and reproduction at organism level, and ecological impact on animal behavior.
- PSO2. Elucidation of animal-animal, animal-plant, animal-microbe interactions and their consequences to animals, humans and the environment.
- PSO3. Strengthening of genetics and cytogenetics principle in light of advancements in understanding human genome and genomes of other model organisms.
- PSO4. Description of expression of genome revealing multiple levels of regulation and strategies to manipulate the same in the benefit of the mankind.
- PSO5. Learning handling DNA sequence data and its analysis which equip students to get employed in R&D in the industry involved in DNA sequencing services, diagnostics, and microbiome analysis.
- PSO6. Understanding relationships of variations in phenotypic expression of genomes and their genome wide interaction with other organisms.
- PSO7. Development of an understanding of zoological science for its application in medical entomology, apiculture, aquaculture, agriculture and modern medicine.
- PSO8. Development of theoretical and practical knowledge in handling the animals and using them as model organism
- PSO9. Maintenance of high standards of learning in animal sciences

Semester-I

Course: Biosystematics and Taxonomy

- CO1. Student are able to understand the fundamental principles of systematic in which the animals are how to classify according to their characters and what are the theories which have to followed for classification is studied.
- CO2. To understand International rules of nomenclature and classification is studied.

Course: Molecular Biology

- CO1. To demonstrate genome organization in higher organisms.
- CO2. To compare kinetic classes of DNA and Gene families.
- CO3. To understand the steps involved in recombinant DNA technology.
- CO4. To determine the construction of DNA & c DNA library and their applications.
- CO5. To analyze the insight in Primary and Secondary organs of Immune system.

Course: Evolutionary Biology

- CO1. The course will demonstrate the theoretical basis behind how the forces governing evolution (e.g. mutation, natural selection) work to cause heritable change in natural populations

- CO2. The aim of the course to examine principles and techniques needed to infer phylogenetic relationships among populations and species
- CO3. To determine and classify the processes of speciation and extinction work to create patterns of biodiversity over space and time

Course: Developmental Biology

- CO1. The aim of the course to demonstrate and classify the Principles of Developmental Biology
- CO2. To determine the environmental Regulation of Animal Development
- CO3. The aim of the course to analyze Cell-Cell Communication in Development
- CO4. To distinguish and determine the Developmental Mechanisms of Evolutionary change

Course: Insect and Environment

- CO1. This course aims to examine the knowledge about various Beneficial and Harmful Insects.
- CO2. This course gives a basic understanding to Introduction, categorize and classify insects, their various relationships with humans, other animals, and plants. The general nature of this course makes it beneficial to all students regardless of specialty.
- CO3. This will help students in examining and recognizing exploration of diversity and roles of insects as Manageable resources, Biological control agent, pollution indicator, pollinators, etc. Students will also know the role of insects in Pharmacy, forensic investigation, etc.
- CO4. Students will be able to generalize the determination of phylogeny and rate of speciation and consequences.

Course: Microbiology

- CO1. This will help student to determine and relate the cellular, biochemical, and physiological aspects of microorganisms and recognize the similarities and differences between microbial groups (bacteria, archaea, fungi, protozoa, viruses, viroids, and prions).
- CO2. Determination and differentiate the cellular and biochemical processes involved in pathogenesis (human-pathogen interactions).
- CO3. To examine the Identify microorganisms and their role in various environments.
- CO4. To demonstrate and predict cultural use of microorganisms in food production, medicine, fuel production, and waste treatment.

Semester-II

Course: Cytogenetics and population genetics

- CO1. The purpose of the course is to demonstrate the working knowledge of cytogenetics.

CO2.The aim of the course to analyze and demonstrate importance of chromosomal variations in structure and number in such fields as plant and animal breeding, population genetics, evolutionary genetics, taxonomy, and the medical sciences.

Course: General Physiology

CO1. Recognize and define a variety of terms specific to the human body and human health.

CO2. Analyze and describe the structures and functions of human anatomy and physiology from a regional perspective for the following regions: head and neck, thoracic, abdominopelvic, and upper and lower extremities.

CO3. Discuss in depth the physiology of the nervous, musculoskeletal, respiratory, and cardiovascular systems from a regional perspective.

Course: Biochemistry

CO1. This course classifies the biomolecules including: Amino acids, Enzymes, Lipids, Carbohydrates, Nucleic acids and Proteins.

CO2. The course is categorized into units that focus on structure, function, classification, physical as well as chemical properties and forces stabilizing shape of the biomolecules.

CO3. This course also determines basic knowledge about biological importance and types of enzymes as well as nucleic acid.

CO4. To demonstrate the metabolism of carbohydrates has been discussed to review the basic concept, how they are broken down into simpler compounds in living organisms for utilization of energy.

Course: Bioinformatics and Biotechnology

CO1. To compare about the Interaction of Computer and Biology.

CO2. To understand and demonstrate the Knowledge about Protein and Genome Databases.

CO3. To understand and evaluate about the Data Retrieval tools and its Utilization.

CO4. The courses demonstrate the Applications of Bioinformatics in drug designing and Drug Discovery.

CO5. To demonstrate the structure of nucleic acid, types of Nucleic acid and its Forms.

CO6. To recognize the genome organization in Prokaryotes and Eukaryotes.

CO7. The course will demonstrate the Nucleic acids Replication, Recombination and its Repair Mechanisms.

Course: General Immunology

CO1. This course demonstrates the Study of immune system, types of immunity: active, passive innate, adaptive, cell mediated and humeral immunity that helps us to protect our body from antigens along with a brief description about antigen.

CO2. The course examines a detailed understanding about Immunoglobulin's, Immunotechniques and Cells as well as Organs involved in immune system.

CO3. This course also demonstrates about types and mechanism of hypersensitivity and autoimmunity.

CO4. Apart from this gives learning about AIDS, Major Histocompatibility, Vaccines, Immunosuppression, Immunomodulation, Immunopotiation and Hybridoma Technology with its applications.

Course: Concepts of Ecology

CO1. This course demonstrates and examines the study of Population attributes, interaction and survivorship curves.

CO2. The main aim of the course to understand and classify the marine and fresh water ecosystem.

CO3. To understand the estimate and impacts of invasive species

CO4. To understand and predict the ecology of space travel and Exobiology.

Semester-III

Course: Animal Behaviour

CO1. To demonstrate the behavioral patterns like analysis of behavior

CO2. The aim of this course to understand the classification of communication in animals like audio, visual and chemical.

CO3. To understand and classify the different types of learning and reproductive behavior of animals

Course: General Endocrinology

CO1. The students will be able to examine and demonstrate the structure and function of mammalian endocrine tissues

CO2. The aim of the course demonstrates and evaluates the regulatory control and actions of individual endocrine tissues are integrated to maintain appropriate physiological and metabolic responses to changes in the internal and external environment.

CO3. To analyze and recognize the Hormone-receptor interactions and signalling mechanisms

CO4. Methods used to detect and quantify hormone levels

CO5. Endocrine control systems and response to environmental change

Course: Fish and Fisheries

CO1. This course aims to demonstrate the students the necessary basic information about fishery and aquaculture, biochemical composition of fish and their nutritional values.

CO2. To classify and identify endangered species and the importance of conserving biodiversity of fishery resources.

CO3. To analyze the biology of fishes, identify and monitoring/studying their physiology, ecology and population.

- CO5. To understand the examine the fish preservation.Principles and applications: Phase contrast microscope, Fluorescence microscope Scanning electron microscopy (SEM) and transmission electron microscopy (TEM).
- CO6. Principles of biophysical methods for structural analysis of biopolymers: UV, fluorescence and circular dichroism (CD) spectroscopy, NMR, ESR and atomic absorption spectroscopy.

Course: Integrative organismal biology

- CO1. The aim of the course to compare the different types of Aquaculture: definition and impending food crisis, Prawn culture, Pearl culture.
- CO2. To distinguish and examine the development and maintenance of meat animals and meat industry.
- CO3. To differentiate and distinguish Exotic and indigenous breeds of sheep, goat, pig

Semester-IV

Course:WILD LIFE AND ITS MANAGEMENT

- CO1. The main aim of the course mainly analyze the wild life and wild life management Principles:Food,Cover, Predators and diseases.
- CO2. To determine and evaluate the Conflict between man and wild life, Wild life conservation projects of India
- CO3. Uses and values of Modern practices in wild life conservation.

Course:Zoogeography and Evolution

- CO1. To discriminate and differentiate the Zoogeography, Zoogeographical realm, Origin of major group of animals
- CO2. To demonstrate and classify the Principles, types and theories of distribution of animals
- CO3. This main aim of the course to determine and evaluate the complexity of interactions between population and environment
- CO4. Illustration and outline the reaction of organism to environmental complexity

Course:LIMNOLOGY

- CO1. To study classification and nature of fresh water ecosystems: Standing water – lakes, ponds, wetlands. Flowing waters- Rivers, streams and riparian habitats.
- CO2. The aim of the course to analyze and contrast the animal communities and biotic interactions:Population dynamics Competition and predation in freshwater communities. Movement, migration and colonization.

Course:INSECT PEST CONTROL AND TOXICOLOGY

- CO1.The students will able to determine the basic principal of insect pest control and IPM.
- CO2.To understands the classification of biological pest controls methods

CO3. To analyze and estimate the Mode of action of various insecticides

CO4. Demonstration and outline brief idea about antidotes and routes sites of toxicity.

Course: Agricultural and Medical Entomology

CO1. This course will help for the demonstration and outline the insect pest control.

CO2. To understand Mode of transmission, control of vectors and epidemiology of
Malaria, Filariasis, Dengue and Plague.

CO3. Outline the process of Arthropods as vectors of human diseases.