

**Course Outcomes**  
**Zoology**

### **SEM 1: Paper 01: ANIMAL DIVERSITY - NONCHORDATES**

- CO1. Know the General characters and classification of Invertebrate phyla and Hemichordates
- CO2. Understand the type studies of Elphidium, Sycon, Obelia, Fasciola, Leech and Prawn.
- CO3. Explain the canal system in Sponges, corals and coral reef formation, Polymorphisms in Coelenterates.
- CO4. Understand the Vermicompost, Pearl formation, and water vascular system of starfish.
- CO5. Gain knowledge to identify various larval stages in invertebrate groups.

### **SEM 2: Paper 02: ANIMAL DIVERSITY - CHORDATES**

- CO1. Classify phylum Protochordates, Cyclostomes, Fishes, Amphibia, Reptalia, Aves and Mammalia.
- CO2. Describe the morphology, habit and habitat, systematic position and various systems in vertebrates from fishes to mammals
- CO3. Understand the types of scales in fishes, Migration of fishes, Flight adaptations and migration in Birds, Dentition in Mammals.
- CO4. Compare the Prototherians, Metatherians and Eutherians

### **SEM 3: Paper 03: CYTOLOGY, GENETICS AND EVOLUTION**

- CO1. The learner will understand the importance of cell as a structural and functional unit of life
- CO2. The learner understands and compares between the prokaryotic and eukaryotic system and virus, viroids, Mycoplasma.
- CO2. Understand the structures, positions and functions of plasma membrane and all cellular organelles in details.
- CO3. Mendelian and non-mendelian inheritance, Lethal alleles, Epistasis, Pleiotropy
- CO4. Sex Determination, Sex Linked inheritance, Linkage and crossing over, extrachromosomal inheritance, Human Karyotyping.
- CO5. Imparts knowledge regarding the various theories of evolution, evolutionary process such as variation, speciation, and natural selection.

#### **SEM IV: Paper 04: EMBRYOLOGY, PHYSIOLOGY AND ECOLOGY**

**CO1.** Gains knowledge about gametogenesis, cleavage patterns, gastrulation, fetal membranes and Placentation in Mammals.

**CO2.** Students are taught the detailed concepts of digestion respiration excretion the functioning of nerves and muscles. Students gain fundamental knowledge of animal physiology.

**CO3.** Understanding of Neural physiology and endocrine mechanisms will allow them to control their stress and emotions there by diverting their energy towards the positive nation building activities

**CO4.** Seeks to understand the mechanisms that work to keep the human body alive and functioning

**CO5.** Understand the concepts like scope of Ecology, Biotic and Abiotic Factors, Pond Ecosystem, Food chain, Energy flow, Bio-geochemical cycles, Ecological Succession, Community Interactions.

**CO6.** Population characteristics and dynamics, Growth curves, Pyramids, sigmoid curve, J curve and hyperbola; logistic equation and concepts relating to growth

**CO7.** Distribution of fauna in different realms interaction

#### **SEM V: Paper 05: ANIMAL BIOTECHNOLOGY**

**CO1.** Tools of Recombinant DNA technology

**CO2.** Knowledge of animal cells in culture, growth of cell lines Techniques of Recombinant DNA technology

**CO3.** Imparts the knowledge to culture animal cells in artificial media. Animal Cell Technology

**CO4.** Reproductive Technologies & Transgenic Animals

**CO5.** Use in recombinant DNA technology, genetic manipulations and in a variety of industrial processes. Application of DNA technology and molecular biology for research. Different types of Fermentation, Downstream processing - Filtration, centrifugation, extraction, chromatography, spray drying and lyophilization.

#### **SEM V: Paper 06: ANIMAL HUSBANDRY**

**CO1.** Apply knowledge of animal husbandry, behavior and handling techniques to effectively interact with animals in a safe and humane manner

**CO2.** Understand concepts of poultry and dairy farming.

**CO3.** Understands Management of chicks, growers, layers and Broilers.

**CO4.** Able to apply concepts of breeding, nutrition, health, economics and management into practical and profitable animal production programs.

**CO5.** Students gain knowledge about Selection, care and handling of hatching eggs and various disease related to poultry.

**CO6.** Classification of Indian Cattle breeds, exotic breeds and Indian buffalo breeds. Systems of inbreeding and crossbreeding, Housing, Cleaning and sanitation of dairy farm.

**CO7.** Understand the processes of Weaning of calf, Castration and dehorning, deworming and Vaccination programme, Records of dairy farm.

**CO8.** Compares the Care and management of calf, heifer, milk animal, dry and pregnant animal, bulls and bullocks.

### **SEM VI: Paper 07: IMMUNOLOGY**

**CO1.** Provides basics knowledge about immune system and allows the student to create insight as how to improve their immune system and good health.

**CO2.** Types of immunity, antigens-antibodies and their properties

**CO3.** Complement system, MHC's and immune responses

**CO4.** Understanding the types of hypersensitivity reactions, vaccination and process of immune interactions.

### **SEM VI: Paper 08 B1: PRINCIPLES OF AQUACULTURE**

**CO1.** The student understand the Significance, History, present scenario of Aquaculture in Indian and global context.

**CO2.** The student will be able to identify, freshwater, marine water fishes. Types of aquaculture systems and criteria for selecting species for culture and practices.

**CO3.** Criteria for the selection of site, Design and construction of fish and shrimp farms, Seed resources and Procurement for stocking, Nutritional requirements of cultivable fish and shellfish.

**CO4.** Understand the management of nursery, rearing and stocking ponds of cultivable fishes and Culture of *Macrobrachiumrosenbergii*.

**CO5.** Provides knowledge of ornamental fish breeding, Seaweeds that is highly professional and attractive avenue for youth.

## **SEM VI: Paper 08 B2: AQUACULTURE MANAGEMENT**

**CO1.** Gain knowledge to explain the tools and techniques used in aquaculture practice.

**CO2.** Understand the Design, development, operation of carp hatchery including Hypophysation.

**CO3.** Understand the water quality and soil parameters in fish and shrimp cultures

**CO4.** Types of food and feeding strategies in finfishes and shellfishes. Live Feeds and their role in shrimp larval nutrition.

**CO5.** Principles of disease diagnosis and health management

**CO6.** Principles of aquaculture economics, Fisheries Training and Education in India.

## **SEM VI: Paper 08B3: POST HARVEST TECHNOLOGY**

**CO1.** Understand the Handling, Storage and Transport of fresh fish, post mortem changes, and spoilage in marine and freshwater fish.

**CO2.** Knowledge on various preservation techniques

**CO3.** Different types of fish and seaweed products and their uses

**CO4.** Understand the Sanitation, Environmental and Personal hygiene in processing plants.

**CO5.** Importance of quality assurance in seafood industry like HACCP