

# **PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES**

DEPARTMENT OF ZOOLOGY  
Fazl Ali College: Mokokchung  
Nagaland

## **PROGRAMME OUTCOMES – ZOOLOGY**

- PO1- The curriculum helps to enhance the ability and thinking power of students.
- PO2- Acquire communication skill through debates, seminars and presentations.
- PO3- Encourages social interaction during field visits with locals.
- PO4- Work in multi-disciplinary environments and be responsive to the changing needs of the society.
- PO5- Understand the issues of environmental contexts and sustainable development.
- PO6- Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.
- PO7– Analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment.
- PO8– Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
- PO9– Understands the complex evolutionary processes and behaviour of animals.
- PO10– Correlates the physiological processes of animals and relationship of organ systems.
- PO11- Understands the complex molecular and biochemistry mechanisms to apply them in further research and studies.
- PO12- Gain knowledge on cancer biology and various other infections in humans to further enhance their research skills in higher studies.
- PO13– Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species.
- PO14– Gain knowledge on Agro based Small Scale industries like sericulture, aquaculture, apiculture, lac culture.
- PO15– Understands about various concepts of genetics and its importance in human health.
- PO16- Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.

PO17- Understands and apply the knowledge of data representation, calculation, tabulation and analysis in various other fields of research and work.

PO18– Develops empathy and love towards the animals

PO19- Students learn ethical approach, to conserve diversity of animal kingdom.

PO20- Engage in lifelong learning, apply the knowledge judiciously and remain continuously employable. Apply the knowledge and understanding of Zoology to one's own life and work

## **PROGRAMME SPECIFIC OUTCOMES FOR B.Sc. (ZOOLOGY)**

PSO1- To provide Knowledge of various animals from primitive to highly evolved forms.

PSO2- To understand potential of various branches of Zoology.

PSO3- To equip students with laboratory skills as well as field-based studies to become a successful entrepreneur and expert.

PSO4- To conduct basic and applied research which has societal and environmental value.

PSO5- Understand the nature and study the concepts of taxonomy, cell biology, biochemistry, molecular biology, animal behavior, evolutionary biology, osteology, anatomy, morphology, immunology, biostatistics, environmental management, biodiversity, conservation, genetics, physiology, developmental biology, biochemistry, ecology and applied Zoology.

PSO6- Analyze the relationships among animals, plants, microbes, environment and abiotic factors.

PSO7- Perform specific procedures in the areas of Taxonomy and classification, Physiology, Ecology and Biodiversity, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Sericulture, Biochemistry, Fish biology & Aquaculture, Apiculture, Animal biotechnology, Immunology, Forest science, Environmental science and Research methodology.

PSO8. Understand the applications of biological sciences in Apiculture, Sericulture, Aquaculture, Agriculture, Tissue culture, Forestry, Micropropagation and conservation.

PSO9. To highlight biodiversity and its need of conservation.

PSO10. To make aware about ways of conservation and sustainability.

PSO11. To inculcate knowledge and make successful career in zoology.

PSO12. To inculcate research attitude and aptitude among students.

PSO13. Gains knowledge about research methodologies, effective communication and skills of problem-solving methods.

PSO14. Contributes the knowledge for Nation building.

## **COURSE OUTCOME B.Sc (ZOOLOGY)**

### **CORE PAPER**

#### **ZOO CC-1 (T)**

##### **NON-CHORDATES I: PROTISTS TO PSEUDOCOELOMATES**

CO1: To study the characteristics, structure and classification of Protists, Porifera, Cnidaria, Ctenophora, Platyhelminthes and Nematelminthes

CO2: To study locomotion and mode of reproduction in protists.

CO3: Study of single celled organisms like *Euglena*, *Amoeba* and *Paramecium*

CO4: To study the life cycle and pathogenicity of some common organisms like *Plasmodium vivax*, *Entamoeba histolytica*, *Fasciola hepatica*, *Taenia solium*, *Ascaris lumbricoides* and *Wuchereria bancrofti*.

CO5: To study and understand the evolution of symmetry and segmentation in Metazoans

CO6: To study the Canal system structure and types of Spicules in Sponges

CO7: Study the Metagenesis in Obelia Polymorphism in Cnidaria Corals and coral reefs

CO8: To understand the evolutionary significance of Ctenophora

CO9: To understand the Parasitic adaptations in Helminthes

#### **ZOO CC-1 (P)**

CO1: To study different types of organisms including *Euglena*, *Amoeba*, *Paramecium*, *Sycon*, *Hyalonema*, *Euplectella*, *Spongilla*, *Obelia*, *Physalia*, *Millepora*, *Aurelia*, *Tubipora*, *Corallium*, *Alcyonium*, *Gorgonia*, *Metridium*, *Pennatula*, *Fungia*, *Meandrina*, *Madrepora* and Ctenophore through slides, micrographs and specimens.

CO2: Examination and study of pond water collected from different places for diversity in Protista

CO3: Study of adult *Fasciola hepatica*, *Taenia solium*, *Ascaris lumbricoides* and their life cycles through Slides/microphotographs.

CO4: Identification and taxonomic classification of representative invertebrates

## **ZOO CC-2 (T)**

### **PRINCIPLES OF ECOLOGY**

CO1: To study the History of Ecology, the interaction between individual species with their environment and interactions among two or more species or a population with their environment., CO2: To understand the Levels of organization in an ecology and learn about different types of Laws acting as limiting factors and physical factors

CO3: To understand the importance of Ecology in Wildlife Conservation and Management

CO4: To study the different types of populations including unique and group attributes of population including different types of curves and tables

CO5: To understand the Exponential and logistic growth, equation, patterns and strategies

CO6: To study different factors which acts as a regulator of a population and the interactions in a population

CO7: To learn about Gause's Principle, Lotka-Volterra equation for competition and predation, functional and numerical responses in a certain population.

CO8: To learn and study about the characteristics of a Community

CO9: To study and understand ecological succession and climax community

CO10: To study about different types of ecosystems with detailed example.

CO11: To learn and study about food chains, food web, energy flow through the ecosystem, ecological pyramids and ecological efficiencies

CO12: To study the Nutrient and biogeochemical cycle as well as Human modified ecosystem

## **ZOO CC-2 (P)**

CO1: Study of life tables and plotting of survivorship curves of different types from the hypothetical/real data

CO2: Determination of population density in a natural/hypothetical community by quadrature method and calculation of Shannon-Weiner diversity index for the same community

CO3: Study of an aquatic ecosystem: phytoplankton and zooplankton; measurement of area, temperature, turbidity/penetration of light, determination of pH, and dissolved oxygen content (Winkler's method), chemical oxygen demand and free CO<sub>2</sub>

CO4: To write a report on a visit to National Park/Biodiversity Park/Wild life sanctuary

## GENERAL PAPER

### ZOO GE-1b (T)

#### ANIMAL DIVERSITY

CO1: To study the general characters of Protozoa, Porifera, Cnidarians, Helminthes, Nemathelminthes, Annelida, Arthropoda, Mollusca, Echinodermata, Protochordates and Amphibia

CO2: To study the life cycle of *Plasmodium vivax* and *Taenia solium*

CO3: To study the canal system in poriferans and polymorphism in Cnidarians.

CO4: To study the various types of parasitic adaptations in Nemathelminthes

CO5: To study and understand the process of metamerism in Annelids

CO6: To study the social life and division of order in insect kingdom

CO7: To learn about the process of pearl formation in Mollusca

CO8: To study the water vascular system in starfish.

CO9: To learn and study about the process of osmoregulation and migration of fishes

CO10: To learn the adaptations in amphibians for terrestrial life and their parental care

CO11: To study the Origin of reptiles and birds

CO12: To study the terrestrial adaptations in reptiles and flight adaptations in birds

CO13: To study the evolutionary process of mammals and primates

CO14: To learn the structure and types of dentition in mammals.

### ZOO.GE-1 b (P)

CO1: To study different specimens from both Non-chordates and chordates which includes *Euglena*, *Noctiluca*, *Paramecium*, *Sycon*, *Physalia*, *Tubipora*, *Metridium*, *Taenia*, *Ascaris*, *Nereis*, *Aphrodite*, *Leech*, *Peripatus*, *Limulus*, Hermit crab, *Daphnia*, Millipede, Centipede, Beetle, *Chiton*, *Dentalium*, Octopus, *Asterias*, *Antedon*, *Balanoglossus*, *Amphioxus*, *Petromyzon*, *Pristis*, *Hippocampus*, *Labeo*, *Ichthyophis/Uraeotyphlus*, Salamander, *Rhacophorus Draco*, *Uromastix*, *Naja*, Viper, model of *Archaeopteryx*, Crow, duck, Owl, Squirrel and Bat.

CO2: To study various permanent slides including *Sycon*, Sea anemone, *Ascaris*, Earthworm, Bipinnaria and Pluteus larva passing through different T.S and L.S sections of the body

CO3: To learn and understand the techniques of temporary mounting through tissues extracted from earthworm and scales of fishes.

CO4: To learn the techniques of dissections and to display the different types of organ and tissue system by using Cockroach and Rat as a model.