Course Learning Outcome

B.Sc.B.Ed– ZOOLOGY

SEM I BSEDZOO101

Diversity of Lower Non-Chordates

Course Objective: To discuss the basic concepts of the diversity of non-chordates. To remember the general characteristics and classification of lower non-chordates.

Learning Outcomes-

- The student will remember the hierarchy of phyla with emphasis on their phylogenetic position.
- Emphasis on one type of study from each phylum for in-depth analysis.
- Economic and ecological importance of animals are understood.
- Practical curriculum includes museum specimens of various non-chordate phyla.

Cell BiologySEM I BSEDZOO102

Course Objective:

The student remembers and understands the various cell organelles along with their function. An insight into cancer biology.

Learning Outcome-

- The student gets an insight into the chemical and physical environment of a cell.
- Understood the structure of cells and cell organelles about the functional aspects.
- Understood the structure and functions of chromosome
- Describe and apply the various cytological techniques.
- Develop a basic understanding of cancer cells and their types.

SEM-II BSEDZOO201

Diversity of Upper Non-Chordates

Course Objective: To discuss the basic concepts of the diversity of non-chordates. To remember the general characteristics and classification of upper non-chordates.

Learning Outcomes-

- The student will remember the hierarchy of phyla with emphasis on their phylogenetic position.
- Emphasis on one type of study from each phylum for in-depth analysis.
- Economic and ecological importance of animals are understood.

- Practical curriculum includes museum specimens of various non-chordate phyla.

Genetics and Molecular biology BSEDZOO202

Objectives:

The courses discuss the basis of heredity,along with the pattern of inheritance of various characters in animals. Application of genetics in livestock management. The course aims to introduce the basics of molecular biology.

Learning Outcomes-

- Detailed understanding of hereditary and deviation from mendelian ratio.
- Understanding sex determination and genetic basis of heritable traits.
- Understanding genetic concepts affecting society.
- Knowledge to execute and analyze the results of genetic experimentation.
- Understanding Foundation knowledge of molecular biology.

SEM III **BSEDZOO301**

Diversity of Lower Chordates

Course Objective: To discuss the basic concepts of the diversity of lower chordates. To remember the general characteristics and classification of lower chordates.

Learning Outcomes-

- Identified the taxonomic status of the entire chordates and discussed the evolutionary model of the group.
- Hierarchy of subphylum and superclasses with an emphasis on their diversity
- Emphasis on ecological, behavior patterns of vertebrates.
- To make students identify the diversification of species of the chordate world in their region.
- Practical curriculum includes museum specimens of various chordate phyla.

Animal Physiology **BSEDZOO302**

Objectives–The course discusses the functional aspects of various systems in an animal. It lays a foundation for understanding the various processes which govern the animal body.

Learning Outcome –

- Students will be able to explain the structure-function relationships of systems.
- Students will be able to explain the cellular basis of physiological functions in animals.
- Understand how the parts of the body are linked into a functioning whole.
- Understand the principle of homeostasis and the methods used by the body to maintain this.

SEM IV**BSEDZOO401**

Diversity of Higher Chordates

Course Objective: To discuss the basic concepts of the diversity of higher chordates. To remember the general characteristics and classification of higher chordates.

Learning Outcomes-

- Identified the taxonomic status of the higher chordates and discussed the evolutionary model of the various group.
- Hierarchy of classes with an emphasis on their diversity.
- Emphasis on ecological, behavior patterns of higher chordates.
- To make students identify the diversification of species of the higher chordate world in their region.
- Practical curriculum includes museum specimens of various classes.

Ecology and animal behavior**BSEDZOO402**

Objectives - The course discusses the basis of interrelationship with living and non-living factors of the environment. Emphasis is laid on the community and its dynamics. The foundation level of understanding of animal behavior, its types, and approaches is emphasized.

Learning outcome–

- Students identify the various physical factors influencing living organisms.
- Understand the dynamics of a community and the influence it has on organisms.
- Understood adaptation to various habitats and their evolutionary importance.

- To make students understand the concepts and diversity of animal behavior.
- **Ex**plore the social organization, biological patterns,and communication of different animals.
- Practical curriculum includes comprehensive water and soil analysis, and observation of behavior in animals.

SEM V**BSEDZOO501**

Comparative anatomy of Vertebrates

Objectives-

This course analyzes the comparison between the anatomy of body systems in a different group of vertebrates and derives evolutionary significance from it. It helps evaluate the evolutionary process of the body system from lower to higher vertebrates.

Learning outcomes –

- Students recognize vertebrate structural principles by studying all body systems of vertebrates from an evolutionary perspective.
- Compare and contrast the anatomical systems of different vertebrates and identify common traits across species and groups.
- Practical curriculum includes identifying the various anatomical structures with reasons and basic mounting techniques.

Human Physiology and Biochemistry**BSEDZOO502**

Objectives–The major aims of this course are to provide students with a basic understanding of the processes and mechanisms that serve and control the various functions of the human body. the course of biochemistry aims to provide a fundamental understanding of enzymes and major biomolecules.

Learning Outcomes –

- Students would understand and analyze the gross morphology, structure, and function of the selected physiological system of humans.

- Students would remember and understand the structures and classification of various biomolecules.
- Described the enzymes, mechanism of enzyme action, and factors affecting the enzyme activity.
- Students would comprehend central dogma and protein synthesis.
- Students would learn about the various experimental techniques related to physiology and biochemistry.

SEM VI **BSEDZOO601**

Applied genetics and Evolution

Objectives – The major aims of this course are to provide students with an understanding of the genetic processes that serve and control the aspects of an organism as axis formation, crossing over, cancer genetics, etc. the course includes biostatistics which aims to provide a fundamental understanding of analyzing data and applying statistical methods. The evolution component of the course deals with understanding the types, mechanisms, and patterns of evolution.

Learning Outcomes-

- Students would understand the concepts of linkage, and crossing over and apply them to solve point cross problems.
- Students would comprehend the basis of axis formation and segmentation in Drosophila.
- Emphasize the molecular basis of cancer and carcinogenesis.
- Students will learn the fundamental understanding of analyzing data and apply it to statistical problems.
- Understanding and application of the hardy Weinberg concept.
- understanding types, mechanisms, and patterns of evolution with various supportive theories and examples.

Fundamentals of Biotechnology**BSEDZOO602**

Objectives – The course aims at describing the fundamental aspects of Biotechnology and the various techniques used to study the same.

Learning Outcomes –

- Attained knowledge of the history, branches, and scope of biotechnology and gene transfer technique
- Understood the recombinant technology, gene integration into the vector
- Attained knowledge about in-vitro fertilization and embryo transfer
- Understood the principle and applications of biotechnology techniques – DNA fingerprinting, plotting technique microarray
- Described the applications of stem cells and gene therapy and biotechnology devices

Sem VII**BSEDZOO701**

Developmental biology

Objective- The course aims at describing the process leading from fertilization to embryonic development. It aims to underline the key cellular organizational process as regeneration, aging, and stem cell.

Learning Outcome-

- Understood the process of development of animals beginning from gametogenesis to fertilization.
- Enumerate the various stages involved in the embryonic development of the chick.
- Understood the development of extra-embryonic membranes and the nature and physiology of the placenta.
- Came to know the inducer and inductor role in embryogenesis and knowledge about metamorphosis and the process of regeneration.
- Describe the various concepts of aging, regeneration, and types of stem cells and their applications.
- Practical curriculum includes skills in preparing chick embryo mounts of various stages.

Endocrinology**BSEDZOO702**

Objectives – The course aims at understanding endocrine organs as well as the role of hormones in regulating viable functions in humans such as development and growth,

production and maintenance of energy, maintenance of homeostasis, sexual development, and reproduction**.**

Learning Outcome-

- Students will learn to classify the hormones based on their origin, properties, and the target site.
- Clear understanding of the regulation of synthesis of selected hormones.
- Students would describe and analyze the functions of each hormone in maintaining homeostasis.
- Comprehend to correlate the basic bodily functions with endocrine hormones.
- Learning the disorders associated with Hyper and Hypo secretion of hormones in humans.
- Practical curriculum includes identification and preparation of material for studying histology of endocrine glands.

SEM VIII**BSEDZOO801**

Environmental Biology and Toxicology

Objectives **–**The course aims at understanding the types and distribution of natural resources in India. Focus is also shed on dynamics of population, wildlife census, and conservation. A foundation for toxicology including its history, branches, and aspects in air, water, and food is emphasized.

Learning Outcome –

- Clear understanding of various types of natural resources and their distribution
- Students remember the various dynamics of population biology.
- Describe the role, importance, types, and techniques involved in wildlife conservation.
- Clear understanding of history, branches, and scope of toxicology
- Describe the toxicology of pesticides, air water, and food.

Application of animal Biotechnology**BSEDZOO802**

Objectives-The course aims at understanding the various facets of Biotechnology for Human and livestock improvement. Its emphasis is on making students learn the techniques involved in cell culture, vaccine production, and antibodies to name a few.

Learning Outcome –

- Students learn the various cell culturing method leading to the production of Vaccines, monoclonal antibodies, etc.
- Understand the application of Biotechnology in improving livestock, Seri culture, and fisheries.
- Practical curriculum includes the application of various lab-based techniques supplementing Theoretical knowledge.