

# **B.Sc., ZOOLOGY**

## **SEMESTER – I**

### **CORE I (THEORY) - INVERTEBRATA – I**

**COURSE CODE: UZOT11**

#### **Objectives**

- To study the various forms of invertebrate animals present in the world.
- To help our students to distinguish various animals of invertebrates
- To discuss the classification, structural and functional aspects of invertebrates
- Students can able to understand the origin of life, diverse forms of invertebrate which belongs to which phyla

### **CORE II (THEORY) INVERTEBRATA – II**

**COURSE CODE: UZOT11**

#### **Objectives**

- To understand the systemic and morphological features of invertebrates animals
- Student can be able to identify simple features of invertebrates
- To understand the evolutionary sequence of invertebrates
- Student can acquire knowledge regarding the economic value, affinities of invertebrates

### **ALLIED I (THEORY) - BOTANY PAPER**

**COURSE CODE: UZOA11**

#### **Objectives**

- To understand the taxonomy aspects of plants
- To discuss the structure, reproduction & classification of lower plants
- To identify the plants as either monocotyledons or dicotyledons
- After studying this, students can apply the knowledge to better understand and manage the plant based system.

### **VALUE EDUCATION**

**COURSE CODE: UVAE11**

## **SEMESTER II**

### **CORE III (THEORY) – CHORDATA**

**COURSE CODE: UZOT21**

#### **Objectives**

- To understand the systemic and functional morphology of various forms of vertebrates
- To discuss the affinities and adaptations of chordates to different modes of life
- To understand the origin and evolutionary relationship in different subphylum of chordates
- Make the student to enlighten the concept of diversity, adaptations, organisation and taxonomic status of Chordates.

### **CORE I (PRACTICAL) - INVERTEBRATA AND CHORDATA**

**COURSE CODE: UZOP21**

#### **Objectives**

- To impart training on the techniques of mounting and identification of different cells and feathers
- To provide the knowledge to identify the poisonous animals like snake
- To train the students about the various types of animal cells and molecular structures with their characteristic features and detailed functions
- Acquire the knowledge of the technique of various systems present in the invertebrate and chordates.

### **ALLIED PRACTICAL I –BOTANY**

**COURSE CODE: UZOA21**

#### **Objectives**

- To train the techniques of permanent slide preparation
- To make the student able to identify the plant
- To understand the anatomical structure of plants and salient features of the families and construction of floral diagram.
- Make the student to understand the plant physiology

### **ENVIRONMENTAL STUDIES**

**COURSE CODE: UEVS21**

## **CORE-IV (THEORY) – ANATOMY**

**COURSE CODE: UZOT31**

### **Objectives**

- To explain the level of structural organization in the body
- To understand the structure and functions of various organs of the body
- To encourage the anatomy as a subject through research in solving problems in the students
- The students will be able to describe the roles of the immune system in both maintaining health and contributing to disease.

## **ALLIED II (THEORY) – CHEMISTRY**

**COURSE CODE: UZOA32**

### **Objectives**

- To understand the basic concepts of chemistry.
- To study the importance of pH and buffer action.
- To study the importance of pH and buffer action.
- To provide the knowledge about rusting and kinetics.
- Students can acquire the knowledge of all basics of chemistry.

## **ELECTIVE- I (THEORY)**

**COURSE CODE: UZOE31**

### **Objectives**

- To learn how to classify the insects by use of standard taxonomic keys.
- To learn the basic external morphology and the basic internal anatomy of insects
- To identify several beneficial insects and understand the economic importance of insects, interrelation of crops and insect pests.
- Students can able to identify the insects and can use these knowledge for pest control

## **ELECTIVE- I (THEORY) OPTION 1: BIOPHYSICS**

**COURSE CODE: UZOE31**

### **Objectives**

- To understand the basic principles and applications of thermodynamics law for biological system
- To learn the physics behind the function of sensory organ in biological systems.
- To learn the biophysics techniques for the study of structural biology

- Students can able to increase their knowledge of standard molecular and biophysical techniques and capable to select the methods and techniques to design experiments in a specific research area.

#### **NON MAJOR ELECTIVE-I (THEORY) – SERICULTURE**

**COURSE CODE: UZON31**

##### **Objectives**

- To enlighten the students about sericulture a profitable culture practice.
- To enhance the skills, competitiveness and employability of the students
- To gain the knowledge of silk production, disease management, quality of silk and marketability.
- Non major elective student can become entrepreneur.

#### **SKILL BASED ELECTIVE-I ECONOMIC ZOOLOGY**

**COURSE CODE: UZOS31**

##### **Objectives**

- To gain the knowledge in the field of animal culture and its product marketing.
- To learn the process of honey bee culture, honey production and pearl culture.
- To gain the knowledge of poultry science, edible fishes and milk pasteurization.
- Student can get self employment programme.

### **SEMESTER IV**

#### **CORE V (THEORY) – MICROBIOLOGY**

**COURSE CODE: UZOT41**

##### **Objectives**

- To provide the knowledge with the latest information in scientific microbiological methods.
- To learn the microbial culture and maintenance techniques
- To gain the knowledge of economical importance of microbes
- The students can get skills of microbial culture and application of this knowledge to well being of human health and environmental health.

#### **CORE PRACTICAL II SERICULTURE, MICROBIOLOGY & CLINICAL BIOLOGY**

**COURSE CODE: UZOP42**

##### **Objectives**

- To provide the knowledge with the latest information in scientific microbiological methods.
- To learn the microbial culture and maintenance techniques
- To gain the knowledge of economical importance of microbes
- The students can get skills of microbial culture and application of this knowledge to well being of human health and environmental health.

#### **CORE PRACTICAL II SERICULTURE, MICROBIOLOGY & CLINICAL BIOLOGY**

**COURSE CODE: UZOP42**

##### **Objectives**

- To obtain the basic laboratory skills such as microscopy, spectrophotometry, measuring, etc
- To train the students about the sericulture and bacterial cells and culture techniques
- To learn the important clinical techniques
- Student can classify the microorganism and can do better sericulture as entrepreneur.

#### **ALLIED II (PRACTICAL) - LAB IN CHEMISTRY**

**COURSE CODE: UZOA42**

##### **Objectives**

- To learn how to use of graduated cylinders, graduated pipettes and volumetric pipettes for measurements.
- To impart the training for the preparation of various strength solution for analysis
- To understand the concept of indicators and standardization
- Acids and bases indicators
- pH adjustments- Acid, Base, Neutral
- Buffer preparation
- Molarity and Normality
- Titration between a strong acid against NaOH
- Titration between sodium hydroxide against oxalic acid.
- Titration between KMnO<sub>4</sub> against ferrous sulfate
- Titration between sodium thiosulfate and potassium dichromate

#### **ELECTIVE II (THEORY)**

**COURSE CODE: UZOE42**

##### **Objectives**

- To learn the proper procedure for the collection, safe handling and analysis of biological specimens.

- To discuss about the medical diagnostics methods used for analysis of Blood.
- To know the urine test, blood test and important human diseases.
- By this paper student can enlighten the skills of basic medical techniques.

### **ELECTIVE II (THEORY)**

**COURSE CODE: UZOE42**

#### **Objectives**

- To learn animal behaviour and understanding of insect reproduction and host plant protection, leading to the discovery of non-toxic pheromones for insect pest control.
- To know about the natural behaviour of various animals (foraging, reproductive, migratory, home ra
- To understand the reproductive behaviour studies may lead to improved captive breeding methods of near-extinct species
- Student can acquire the knowledge about various animal behaviour and biological rhythms

### **NON MAJOR ELECTIVE II (THEORY) – APICULTURE**

**COURSE CODE: UZON42**

#### **Objectives**

- To make clear to the students about the honey bees, its life style and social behaviour.
- To learn apiculture, and recognize the list of honey bees
- To provide the knowledge of economic importance of bee products
- Students will be able to understand biological features of honey bee and economic importance thereby they can get self employment.

### **SKILL BASED STUDIES II – VERMICULTURE**

**COURSE CODE: UZOS42**

#### **Objectives**

- To learn the skill to produce vermicompost
- Student can obtain the skills for the production of organic manure for sustainable agriculture.

## **SEMESTER V**

### **CORE VI (THEORY) – IMMUNOLOGY**

**COURSE CODE: UZOT51**

### Objectives

- To learn about function of immune system and lymphoid organs
- To enlighten the structure and function of immunoglobulin
- To provide the knowledge of auto immune diseases
- Acquire the knowledge to understand the science of immunology for the new invention of vaccine for some deadly diseases.

### CORE VII (THEORY) - DEVELOPMENTAL BIOLOGY

**COURSE CODE: UZOT52**

### Objectives

- To know the various stages involved in the embryo development
- To learn the gametogenesis process and understand the importance of meiosis cell division
- To study the process of fertilization and its development like organogenesis
- Student can enlighten about the embryo formation and development

### CORE VIII (THEORY) - ANIMAL PHYSIOLOGY

**COURSE CODE: UZOT53**

### Objectives

- To learn the digestion and circulation system
- To study the structure and function of internal organs
- To know the excretion system and its significance
- Student can get thorough knowledge about the physiology of human body

### CORE IX (THEORY) - GENETICS

**COURSE CODE: UZOT53**

### Objectives

- To study the basic concept of gene interaction
- To know the chromosomal maps
- To learn sex chromosome, syndromes and gene transformation
- Student can acquire the thorough knowledge of genetics and gene transformation

### CORE X (THEORY) - ENVIRONMENTAL BIOLOGY AND EVOLUTION –

**COURSE CODE: UZOT55**

### Objectives

- To study the factors involved in the environment
- To understand the relationship occurs between the organism
- To know the population, community ecology and function of ecosystems
- Student can able to get the knowledge about ecology and can understand the evolution of organisms

### **ELECTIVE III (THEORY) Option I: BIostatistics**

**COURSE CODE: UZOE53**

#### **Objectives**

- To know the biological data collection, tabulation and sampling methods
- To know the statistical tool for biological data presentation
- To study the Hardy –weinberg law
- Student can acquire the knowledge of biological data collection and can use suitable statistical tool for excellent presentation

### **CANCER BIOLOGY**

#### **Objectives**

- To study the normal cell and cancer cells properties
- To learn the available cancer diagnosis techniques
- To learn the cancer diagnosis test
- Student can get clearcut idea about cancer cells and this knowledge can use to discover new drug

### **SKILL BASED STUDIES III - ORNAMENTAL FISH CULTURE**

**COURSE CODE: UZOS53**

#### **Objectives**

- To know about the design, construction and maintenance of home aquaria.
- To study the taxonomy of fishes, identification of freshwater and marine aquarium fishes suitable for home aquarium.
- To understand the nutritional requirement of fishes
- Student can able to become entrepreneur

### **SEMESTER VI**

**COURSE CODE: UZOT61**

#### **Objectives**

- To understand the basic structure and functioning of the genetic materials - DNA.

- To learn about molecular mechanism of DNA replication, repair, transcription, protein synthesis and gene regulation in various organisms.
- To recognize the students cancer cells to mutational changes in gene function
- Enlighten the student about the deep knowledge of molecular techniques

#### **CORE XII (THEORY) BIOTECHNOLOGY AND GENETIC ENGINEERING**

**COURSE CODE: UZOT62**

##### **Objectives**

- To understand the basic concept in genetic engineering and rDNA technology
- To get basic knowledge about generating transgenic plants, animals and microbes for solving the problems
- To know the current application of genetic engineering
- After this course student can enable to make new traits organism for societal needs.

#### **CORE XIII (THEORY) - CELL BIOLOGY**

**COURSE CODE: UZOT63**

##### **Objectives**

- To understand the structure of prokaryotic and eukaryotic cells, macromolecules, and membranes
- To know how these cellular components are used to generate and utilize energy in cells and cell division
- To study the structure and function of cell organelles
- Students can able to know the structure and function of cell organelles, changes of cell function and physiological changes and alterations of cell function brought about by mutation.

#### **CORE PRACTICAL III**

**CELL BIOLOGY, DEVELOPMENTAL BIOLOGY, IMMUNOLOGY, ANIMAL**

**PHYSIOLOGY & GENETICS**

**COURSE CODE: UZOP63**

##### **Objectives**

- To understand the various stages involved in cell division
- To learn the immunological techniques and blood grouping, and antigen antibody reaction.
- To train the nucleic acid isolation

- Student can get training about the techniques of cell biology, embryo techniques, immunotechniques

#### **CORE IV (PRACTICAL)**

#### **ENVIRONMENTAL BIOLOGY, EVOLUTION, BIOTECHNOLOGY & GENETIC ENGINEERING, BIOCHEMISTRY**

**COURSE CODE: UZOP64**

##### **Objectives**

- To understand the physical chemical parameter in water sample.
- To understand the adaptation of animals by experiment
- To know the biochemical techniques
- After this, student can determine the water quality and biochemical test of macromolecules

#### **ELECTIVE IV (THEORY) -Option 1: BIOCHEMISTRY**

**COURSE CODE: UZOE64**

##### **Objectives**

- To know the concept of pH and buffer solution
- To study the structure and function of macromolecules
- To study the enzyme chemistry and vitamins

#### **Option 2: BIOINFORMATICS**

##### **Objectives**

- To gain the knowledge about the computer arithmetic and computer logic
- To learn the basic concept of bioinformatics and its application in various fields
- To understand the sequencing methods database searching tools and phylogenetic constructing tools
- Student can learn the bioinformatic tool for the application of biological research

#### **SKILL BASED STUDIES IV POULTRY SCIENCE**

**COURSE CODE: UZOS64**

##### **Objectives**

- To study the poultry nutrition and physiology
- To learn the nutritive value of egg
- To understand the poultry health and management
- Student can able to do the poultry culture thereby they can become entrepreneur





