**DEPARTMENT OF ZOOLOGY**

 (**SESSION: 2022-2023)**

 **PROGRAMME OUTCOMES**

After completing B.Sc. Zoology (general) Programme students will be able to:

**PO1**: Demonstrate and apply the fundamental knowledge of the basic principles of major fields of Zoology.

**PO2**: Apply knowledge to solve the issues related to animal sciences.

**PO3**: Take appropriate steps towards conservation of endemic and endangered animal species.

**PO4**: To foster curiosity in the students for Zoology.

**PO5**: To create awareness amongst students for the basic and applied areas of Zoology.

**PO6**: To orient students about the importance of abiotic and biotic factors of environment and their conservation.

**PO7**: To provide an insight to the aspects of animal diversity.

**PO8**: To inculcate good laboratory practices in students and to train them about

Proper handling of lab instruments.

**PO9**: Demonstrate knowledge and understanding of Zoology and management

Principles and apply these to one’s own work, as a member and leader in a team.

**PO10**: Recognize the need for, and have the preparation and ability to engage in

Independent and life-long learning in the broadest context of technological change

**PO112**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

 **PROGRAMME SPECIFIC OUTCOMES**

The syllabus for Zoology (general) at undergraduate level using the Choice based credit system has been framed in compliance with model syllabus given by UGC. The main objective of framing this new syllabus is to give the students a holistic understanding of the subject giving substantial weightage to both the core contents and techniques used in Zoology. Keeping in mind and in tune with the changing nature of the subject, adequate emphasis has been given on new techniques and understanding of the subject.

 **COURSE OUTCOME**

 ***SEMESTER I***

* **COURSE(CC1) : ANIMAL DIVERSITY (credits-6)**

After successfully completing this course, the students will be able to:

CO1: To understand the Animal diversity around us.

CO2: To understand the underlying principles of classification of animals.

CO3: To understand the terminology needed in classification.

CO4: To understand the differences and similarities in the various aspects of classification.

CO5: To classify invertebrates and to be able to understand the possible group of the invertebrate observed in nature.

  ***SEMESTER II***

* **COURSE(CCll) *:* COMPARATIVE ANATOMY & DEVELOPMENT BIOLOGY OF VERTEBRATES. (Credits -6)**

CO1: The student will understand in detail about the Integumentary system, skeletal system, digestive system, respiratory system, circulatory system, nervous system and Sensory system.

CO2: They will be able to compare and differentiate the above mentioned systems in different vertebrate group.

CO3: The student will understand how multicellular organisms are formed from single cell, molecular mechanism and cell-cell interactions of such complex and integrated development.

CO4: This course also describes the developmental process of Early embryonic and late embryonic.

CO5: This course also imparts knowledge about fascinating field of regeneration, in vitro fertilization, etc.

 ***SEMESTER III***

* **COURSE (CCIII) : PHYSIOLOGY AND BIOCHEMISTRY**

 **(credits-6)**

CO1:The students will be introduced to the terminologies and working mechanism relating to various organs systems in animal physiology- tissue, bone and cartilage, reproductive system, nervous system, muscular system, cardiovascular system and endocrine system .

CO2: The students will learn about the chemical foundation of biology pH. pK, acid and base, buffer and free energy.

CO3: Students will understand the basis and fundamental biochemistry of carbohydrate, lipids, protein and nucleic acids.

CO4: They will also be able to understand the nature and mechanism and kinetics of enzyme action.

* **SEC-1**: **APICULTURE** **(Credits-2)**

CO1: The learner understands the basics about beekeeping tools, equipment, and managing beehives.

CO2: To understand the basic life cycle of the honeybees, beekeeping tools and equipment.

CO3: To learner for managing beehives for honey production and pollination.

CO4: The course is useful for providing self-employment to student.

 CO5: The bee keeping is useful in pollination of the flora.

CO6: Learner will understand the marketing of various bee products.

 ***SEMESTER IV***

* **COURSE(CCIV)*:* GENETICS AND EVOLUTIONARY BIOLOGY**

 **(Credits-6)**

CO1: This course describes different types of inheritance Such as incomplete dominance, co-dominance, Sex-linked, Sex-influenced etc., enabling students to critically analyses the mode of inheritance.

CO2: This course also inculcates knowledge among the students about the chromosomal mapping, Cause of mutation.

CO3: Students also learn how recombination and transfer of genetic Element took Place in bacteria.

CO4: Among the students this course inculcates the knowledge how Life is originated and progressed from simple molecules to unicellular and then to complex multicellular organisms.

CO5: Students also able to understand the various laws and principles of evolution.

* **SEC-2: (MEDICAL DIAGNOSIS) (Credits -2)**

CO1: The objective of this paper Is to give Students a Unique opportunity to learn how doctors and clinicians make decisions about disease prognosis, Prevention, diagnosis. Students will gain knowledge about various infectious, noninfectious and lifestyle diseases, tumors and their diagnosis.

CO2: After completing this Course, the students should be able to learn scientific approaches/techniques Used in the clinical laboratories to Investigate Various diseases

CO3: This paper will also help to gain knowledge about common imaging technologies and their utility in the clinic diagnose a specific disease.

 ***SEMESTER V***

* **COURSE(DSE-1)**: **APPLIED ZOOLOGY**  **(credits -6)**

After successfully completing this course, students will be able to:

CO1-Understands processes of fisheries, sericulture, along with crop pest management techniques.

CO2-Students gain knowledge about various disease related vectors and their impact on human.

CO3- Understands concepts of apiculture, poultry and dairy.

 **OR**

* **COURSE(DSE-1): AQUATIC BIOLOGY. (Credits -6)**

CO1: Recognize scope and significance of aquatic Biology and introduce the limnology, Marine biology and oceanography.

CO2: Create awareness about the properties of freshwater and seawater, the elixir of life.

CO3: Understand and study different geomorphic formations of water bodies.

CO4: Give an insight to aquatic flora and fauna

CO5: Critically evaluate the pollution, its sources and eco-restoration of aquatic systems.

* **SEC-3: (SERICULTURE). (Credits -2)**

CO1: Students will learn about the history and present status of mulberry and nonmulberry sericulture.

CO2: They will also be able learn about the life cycles, rearing, pest management entrepreneurship nonmulberry sericulture.

 ***SEMESTER VI***

* **COURSE(DSE-2): IMMUNOLOGY (Credits -4)**

CO1: Students will learn an overall perspective of innate and adaptive immunity, antigenicity and immunogenicity, hybridoma technology, properties and functions of cytokines and complement system and vaccines.

CO2: To understand the evolution of immune mechanisms.

CO3: Students will also learn the different lymphoid organs, spleen, thymus, TC, DC of WBC, ELISA method.

CO4: To analyze and inculcate the fundamental knowledge on immune system and immunological responses to antigens.

CO5: Understand the immune mechanisms in disease control, vaccination, process of immune interactions.

 **OR**

* **COURSE(DSE-2): INSECTS, VECTORS AND DISEASES**

 **(Credits -4)**

Knowledge gained

CO1: Development of knowledge about major insect pests of crops, forests, stored grains etc.

CO2: To develop concept about insect pest status, pest control methods.

CO3: Development of depth knowledge about insect vector biology, disease transmission, pathogenicity, endemicity of disease and about different control measures.

CO4: Identification of major insect pests and vectors responsible for disease transmission.

CO5: Knowing the physiology, life history in efficacious management of insect pests and vectors.

**SEC-4:(COMMUNITY NUTRITION AND HEALTH STATISTICS)**

 **(Credits -2)**

At the end of this course the students will be able to-

CO1: Describe the public health aspects of malnutrition.

CO2: Identify the cause of malnutrition and its preventive measures.

CO3: Know the health care services by Government, health programs in India.

CO4: Understand the role of international and national organizations in public health various disease.

CO5: Apply the various statistical methods and interpretation of the results.