

## **M.Sc Zoology (CBCSS PG 2019)**

### **PROGRAMME OUTCOME**

- To have a deep learning experience in various areas of zoological disciplines.
- To develop research temper among students.
- To give better exposure to recent advances in zoological disciplines.
- To inculcate interest in exploring nature and living forms and their conservation.
- To make the students familiar with tools and techniques used in contemporary scientific research.
- To give awareness about natural resources and their importance in sustainable development.
- To study different ecological sites for animals in their natural habitats by field study.
- To become masters in doing experiments, familiarizing equipments and biological specimens.
- To undertake scientific projects which help to develop research aptitude in students.
- To attain interdisciplinary approach to understand the application of the subject in daily life.
- To become a specialist in a particular subject (Entomology) with expertise and employability.
- Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

### **Programme specific outcome**

- Have deep learning experience about biomolecules and their interactions
- Get adequate knowledge in about living cells and their functioning
- Learn applications of principles of physics, chemistry and statistics in biological systems.
- Acquire a good idea about ecological and behavioral aspects involving various living groups.
- Have a deep knowledge and understanding about the functioning of human body.
- Learn how earth was formed and how life started and evolved on the planet through process of organic evolution.
- Develop technical skills in biotechnology, bioinformatics and biostatistics.
- Delve into the wonderful world of insects, their success on the planet and their diversity
- Acquire knowledge on harmful and beneficial insects, their adaptations for life and control measures

- Perform laboratory procedures as per standard protocols in the areas of animal diversity, systematics, Biostatistics cell biology, genetics, biochemistry, molecular biology, microbiology, physiology, immunology, developmental biology, environmental biology, ethology, evolution and Entomology
- Documentation and report writing on experimental protocols, results and conclusions, study tours and field visits etc.

## **Course outcomes**

### **Semester-I**

#### **ZOL1C01- Biochemistry and Cytogenetics**

- Develop an idea on structure and functioning of biologically important molecules
- Generate an interest in the subject and help students explore the new developments in Biochemistry.
- Learning the Properties, Classification, Mechanism of action and Inhibition of Enzymes
- Learning different theories of Thermodynamics and their implications in living systems.
- Have detailed knowledge about various Bio-chemical processes taking place in living systems.
- Interpret different models of cell membrane structure and function
- Understand structural organization and function of intracellular organelles, chromosomes and genes
- Acquire Deep knowledge in Cellular communication system and Apoptosis
- Understand the chemical nature of life and life process

#### **ZOL1C02- Biophysics and Biostatistics**

- Learn the biophysical properties and functioning of life processes
- Acquire skills in tools and techniques available for studying biochemical and biophysical nature of life
- Equip the learner to use the tools and techniques for project work/ research in biology

- Learn the application of radiations in Medical treatments.
- Interpret different physical concepts applicable in biological systems like Colloidal System, Transport of molecules, PH, Bioacoustics etc.
- Familiarize various Biophysical methods used in research and analysis of biological concepts.
- Learn the principles of various Electrophysiological methods and Separation Techniques
- Have an understanding of Nanotechnology
- Impart concepts, generate enthusiasm and make awareness about the tools/gadgets and accessories of biological research
- Equip the learner to carry out original research in biology
- Inculcate analytical and critical thinking skills through problem solving
- Acquire hands on training in the use of various tools and techniques suggested in the course.
- Develop skills to solve scientific problems with statistical formulas, Probability distributions Correlation and Regression
- Acquire ability to conduct Ecological data analysis

### **ZOL1C03- Ecology and Ethology**

- Understand the basic theories and principles of ecology
- Get acquainted with various disciplines in ecology
- Learn current environmental issues based on ecological principles
- Gain critical understanding of human influence on environment
- Acquire skills to solve environmental issues.
- Understand the environmental laws and try to apply them in current issues. Equip the learners to critically evaluate the debates and take a stand based on science and reason
- Get exposed to the basics and advances in ethology.

## **Semester-II**

### **ZOL2C04- Physiology**

- Get acquainted with various organ systems of human body
- Learn more about human physiology, disorders and the preventive measures.
- Create awareness about physiological corrective measures in society.
- Understand the basic levels of various factors for proper functioning of body.

### **ZOL2C05- Molecular Biology**

- Learn the structural and functional details of the basic unit of life at the molecular level
- Motivate the learner to refresh and delve into the basics of Molecular biology
- To introduce the new developments in molecular biology and its implications in human welfare
- Provide a thorough knowledge on types and properties of Cancer and how normal cells become cancerous.
- Learn new strategies in cancer treatments.

### **ZOL2C06- Systematics and Evolution**

- Acquire a thorough understanding of the principles and practices of systematics
- Provide an in-depth knowledge on the diversity and relationships in animal world
- Develop a holistic appreciation on the phylogeny and adaptations in animals
- Understand the taxonomic procedures to identify a species.
- Acquire the skills of nomenclature of species and sub species.
- Understand the process and theories in evolutionary biology
- Develop an interest in the debates and discussions taking place in the field of evolutionary biology
- Equip the learners to critically evaluate the debates and take a stand based on science and reason

## **Semester-III**

### **ZOL3C07-Immunology**

- Provide an intensive and in-depth knowledge to the students in immunology
- Understand the role of immunology in human health and well-being
- Familiarize the students the new developments in immunology
- Learn the way body fights foreign bodies.
- Understand the risks in transplantation of organs

### **ZOL3C08- Developmental Biology and Endocrinology**

- Learn the concepts and process in developmental biology
- Understand and appreciate the genetic mechanisms and the unfolding of the same during development
- Create awareness on new developments in embryology and its relevance to Man
- Acquire knowledge on teratogenesis and generate awareness in society.
- Understand the causes of infertility and can take preventive measures

### **ZOL3E09- Entomology 1: Morphology and Taxonomy**

- Understand the insect diversity and its significance
- Practice to identify and describe various taxa of insects
- Practice to prepare keys for identification of insects
- Have good understanding about form and structure of insect body parts
- Create skills for scientific study of insects in various aspects

## **Semester-IV**

### **ZOL4C10- Biotechnology and Microbiology**

- Provide an over view of the microbial world, its structure and function
- Familiarize the learner with the applied aspects of microbiology
- Give students an intensive and in-depth learning in the field of biotechnology
- Understand the modern biotechnology practices and approaches with an emphasis in technology application, medical, industrial, environmental and agricultural areas
- Learn the students with public policy, biosafety, and intellectual property rights issues related to biotechnology

### **ZOL4E11- Entomology II: Anatomy and Physiology**

- Understand the general organization of internal structure of insect body
- Learn why and how the insects have become successful.
- Know the different physiological systems of insect body.
- Understand the differentiated functions of each system in terms of adaptations .
- Learn the varied kinds of developments in insects

### **ZOL4L06- Entomology III**

- Learn how insects become pests.
- Learn the economic and medical importance of insects
- Learn about the pests of crops and vectors of diseases and their control measures
- Acquaint with the common pests of our crops and the damage caused.
- Learn various methods to control the pests.
- Acquire skills to manage the pest outbreak.
- Familiarise with the insecticide appliances.
- Learn the importance of insects in medical, Forensic and veterinary fields