

## **M. SC. ZOOLOGY PROGRAMME**

### **Programme outcome:**

Candidates after completing the course can enter any field of Zoological and biomedical research. · They can become researchers, teachers and can be trained in any fields of Zoology within a short duration. If their past learning outcome is excellent they are fit for doing any job in the field of Animal Science. · They have also job scopes in the media or the environmental and ecosystem management sector · They have also scopes of career in the environmental consulting firms in public or private sector.

### **Programme Specific Outcome:**

To produce Post graduates of Zoology with in-depth knowledge of basic and advanced areas in the subject. · That inculcates the deep knowledge of the Zoology and related fields · To develop the scientific temperament and problem solving attitude. · To promote the attitude to serve the society · To promote learning and research aptitude.

### **Course outcomes**

#### **Semester I**

#### **ZL010101- Animal Diversity : Phylogenetic and Taxonomic approaches**

The student should:

- Develop a thorough understanding in the principles and practice of systematics·
- Acquire an in-depth knowledge on the diversity and relationships in animal world ·
- Develop an holistic appreciation on the phylogeny and adaptations in animals
- Know the latest trend in animal taxonomy and phylogenetic systematics.
- Be able to develop and construct various types of taxonomic keys and its proper application.

#### **ZL010102- Evolutionary Biology and Ethology**

The student should:

- Have an understanding on the process and theories in evolutionary biology ·
- Develop an interest in the debates and discussion taking place in the field of evolutionary biology ·
- Be equipped to critically evaluate the debates and take a stand based on science and reason ·
- Be exposed to the basics and advances in ethology, and generate an interest in the subject in order to understand the complexities of both animal and human behaviour
- Be able to apply the acquired knowledge to new information and data as well as the capacity to effectively communicate the principles of evolution and its application to human biology.

### **ZL010103-Biochemistry**

The student should:

- Understand the chemical nature of life and life process
- Have an idea on structure and functioning of biologically important molecules
- Develop an interest in the subject and help students explore the new developments in biochemistry
- Understand the abnormal metabolism of biomolecules and the resultant diseases.
- Understand the importance of metabolism of bio macromolecules in normal physiology of a man.

### **ZL010104-Biostatistics and Research methodology**

The student should:

- Develop concepts, generate enthusiasm and make awareness about the tools/gadgets and accessories of biological research
- Be able to carry out original research in biology
- Improve analytical and critical thinking skills through problem solving
- Learn various tools and techniques suggested in the course
- Be sensitized about the ethics involved in research and enable them to come up with innovative research designs.

## **Semester II**

### **ZL010201- Field Ecology**

The student should:

- Develop understanding on the basic theories and principles of ecology
- Explore various disciplines in ecology
- Learn current environmental issues based on ecological principles
- Gain critical understanding on human influence on environment.
- Learn the different aspects of population and its interaction.

### **ZL010202- Developmental Biology**

The student should:

- Develop concepts and process in developmental biology
- Understand and appreciate the genetic mechanisms and the unfolding of the same during development
- Be exposed to the new developments in embryology and its relevance to Man
- Develop knowledge and attitude on ethics in Developmental biology research and how to use it for human welfare.

- Understand the developmental patterns and influence of genes in the ontogeny of vertebrates and invertebrates.

### **ZL010203- Genetics and Bioinformatics**

The student should:

- Develop in-depth understanding on the principles and mechanisms of inheritance ·
- Study the fine structure and molecular aspects of genetic material ·
- Be provided with an opportunity to learn the importance of inheritance in Man ·
- Be exposed to the emerging field of bioinformatics and equip them to take up bioinformatics studies.
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### **ZL010204- Microbiology and Biotechnology**

The student should:

- Be provided with an over view of the microbial world, its structure and function ·
- Be familiarized with the applied aspects of microbiology ·
- Have 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 ·
- Be familiarized with public policy, biosafety, and intellectual property rights issues related to biotechnology

## **Semester III**

### **ZL010301- Animal Physiology**

The student should:

- Study and compare the functioning of organ systems across the animal world ·
- Be given an over view of the comparative functioning of different systems in animals
- Learn more about human physiology
- Understand regulation of homeostasis in human body
- Have an understanding on the reproductive function of human body

### **ZL010302- Cell and Molecular Biology**

The student should:

- Study the structural and functional details of the basic unit of life at the molecular level ·
- Be motivated to refresh and delve into the basics of cell biology ·

- Be introduced the new developments in molecular biology and its implications in human welfare
- Understand the basic properties, types and therapies in cancer
- Able to understand gene expression prokaryotes and eukaryotes

### **ZL010303- Biophysics, Instrumentation and Biological Techniques**

The student should:

- Learn the biophysical properties and functioning of life processes ·
- Be introduced the tools and techniques available for studying biochemical and biophysical nature of life ·
- Be equipped to use the tools and techniques for project work/ research in biology
- Have theoretical knowledge about the functioning of major research equipment in life science
- Be prepared to handle tissue for histological studies

### **ZL010304 –Immunology**

The student should:

- Be provided an intensive and in depth knowledge to the students in immunology ·
- Understand the role of immunology in human health and well-being
- Be familiarised with the students the new developments in immunology
- Be able to identify gap areas in existing knowledge base
- Develop curiosity for selecting fundamental and applied research in the field of immunology

## **Semester IV**

### **ZL810401 -Environmental Science: Concepts and Approaches**

The student should:

- Be provided a broad and deep understanding on environment and influence of man on environment ·
- Be equipped to use various tools and techniques for the study of environment ·
- Understand, think and evolve strategies for management and conservation of environment for sustaining life on earth ·
- Take up further studies and research in the field.
- Gain in depth knowledge in meteorology

### **ZL810402- Environmental Pollution and Toxicology**

The student should:

- Be provided a broad and deep understanding on environment and influence of man on environment ·
- Be equipped to use various tools and techniques for the study of environment
- Acquire an indepth knowledge on various kinds of environmental pollution, quality standards and mitigation
- Develop an attitude on Waste reduction and recycle.
- Acquire an indepth knowledge on various bio monitoring of toxic chemical in the environment

### **ZL810403-Environmental Management and Development**

The student should:

- Understand, think and evolve strategies for management and conservation of environment for sustaining life on earth ·
- Take up further studies and research in the field.
- Be able to understand, and derive solutions for various disasters
- Acquire knowledge about various developmental goals and strategies for a sustainable globe
- Able to apply the basic principles of GIS and GPS in environmental management