



**M.Sc. Zoology
PROGRAMME OUTCOME**



Department of Zoology
KAKATIYA UNIVERSITY
Vidyaranyaपुरi, Warangal-506009 TS, India

Preamble:

Kakatiya University (KU) started B.Sc and M.Sc. programmes in different subjects from year 1977. Zoology Department participates in the undergraduate core program (B.Sc) and runs M.Sc and Ph.D Programmes in Zoology.

It is mentioned that:

1. The structure, courses and syllabus are designed after the detail study of syllabus and course structure of different universities (Including BHU, DU, HCU, BRAOU, U.G.C CSIR NET Syllabus).
2. These courses will be helpful for further research of students in the area of his/her choice. This pattern fulfills the requirement of learning, teaching and research.
3. A well-equipped laboratory was established in Kakatiya University campus. The university organizes workshops in its own campus for practical support to the faculty of affiliated colleges of Zoology.
4. The syllabus is designed on the bases on CBCS as per UGC recommendation and it will help for the students to get the CSIR NET.

M.Sc. Zoology

Programme Objectives:

- To provide an opportunity for science education to the door steps of aspirants and for skill development to enhance employability or entrepreneurship

Programme Outcome

- Understand the biological diversity and grades of complexity of various animal forms through their systematic classification and comparative structural studies.
- Understand the applications of Biological techniques to various fields of biology.
- Understand the concepts and principles of biochemistry, immunology, physiology, ethology, endocrinology, developmental biology, cell biology, genetics, molecular biology and microbiology.
- Distinguish between the Structure, Function, Behaviour and evolution of different animals.
- Apply the wide range of subject based skills to various fields that provide a base for future career in disciplines such as Fisheries and Aquaculture, Environmental Management, Biotechnology, Publishing, Teaching and Research.
- Develop technical skills in animal biotechnology, bioinformatics and biostatistics.
- Perform, Assess and implement practical techniques and procedure to solve biological problems and analyse and quantify data collected during any project.
- Perform laboratory procedures as per standard protocols in the areas of animal diversity, systematics, cell biology, genetics, biochemistry, molecular biology, microbiology, physiology, ethology, immunology, developmental biology, environmental biology, evolution and endocrinology.

Course Outcomes

Sl.No	Course Name	Course Outcomes
1	Biosystematics, Structure & Function Of Invertebrates	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon the structure and organization of invertebrate animals. ➤ Explain modifications in various functions of animals during transition from invertebrates to vertebrates. ➤ Discuss the evolutionary significance of larval forms of invertebrates. ➤ Identify invertebrates and homology, analogy and modifications of mouthparts in relation to feeding habits.
2	Tools and Techniques in Biology	<ul style="list-style-type: none"> ➤ Learn the biophysical properties and functioning of life processes. ➤ Both these theory and practical papers touch upon 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. ➤ Get skills in Histological & biochemical techniques. ➤ Learn the application of radiations in Medical treatments.
3	Animal Physiology and Ethology	<ul style="list-style-type: none"> ➤ The students would have learned the structures and functions of various organs and their organized systems to help a living organism thrive in its environment. ➤ Understand all physiological processes of vertebrates & analyse the biochemically. ➤ Correlate the comparative physiology of the systems and understand their regulation & control. ➤ Both these theory and practical papers touch upon Compare the structure,

		functions and regulation of the receptor organs of vertebrates.
4	Genetics and Evolution	<ul style="list-style-type: none"> ➤ Get an in-depth understanding on the principles and mechanisms of inheritance ➤ Understand the fine structure and molecular aspects of genetic material. ➤ Learn the importance of inheritance in Man. ➤ Understand the process of Sex determination and details of Human chromosomes & Human chromosome project. ➤ Understand the gradual development and evolutionary history of different kinds of living organisms from earlier forms over several generations.
5	Structure and Function of Vertebrates	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon the understand all physiological processes of vertebrates & analyse them biochemically. ➤ Correlate the comparative physiology of the systems and understand their regulation & control. ➤ Knowledge of Evolution of heart , lungs and urino-genital organs of vertebrates ➤ Knowledge of comparative anatomy of all systems of vertebrates.
6	Environmental Biology	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon the understand the basic theories and principles of ecology and environment. ➤ 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.

7	Biochemistry	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch deeper upon the chemical nature of life and life process. ➤ 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. ➤ Create curiosity in antioxidants and their role in cure of diseases. ➤ Inculcate an interest for further research.
8	Biostatistics and Computer Applications	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon 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
9	Molecular Biology	<ul style="list-style-type: none"> ➤ To explain Biomaterial, Nanoparticles and their importance. ➤ Both these theory and practical papers touch upon to understand biological reactions, structure of protein, carbohydrates fats, nucleic acids and their metabolism. ➤ To develop a knowledge of enzymes and mechanism of their action in various biological reactions. ➤ To understand the process of gene expression & protein synthesis. ➤ To introduce the new developments in molecular biology and its implications in human welfare

10	Immunology	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon an intensive and in-depth knowledge to the students in immunology. ➤ Outline the key components of the innate and adaptive immune responses ➤ 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.
11	Parasitology	<ul style="list-style-type: none"> ➤ To help students gain a fundamental understanding and basic level of familiarity with the diversity of animal parasites, interactions with hosts, life history, physiology, and evolution. ➤ To assist students with incorporating knowledge of parasites into other branches of biology including community ecology, behavioral ecology, and conservation. ➤ To help students distinguish between parasites and disease and recognize the conditions that result in disease as well as appropriate and efficient preventative measures and management responses. ➤ To provide students realistic preparation for field and laboratory disease investigations through hands on experiences
12	Endocrinology & Reproductive Physiology	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon the understood how fertilization, cleavage and gastrulating occur. ➤ Understood the basic concepts of organogenesis. ➤ Understood about the basic concepts of growth, regeneration and ageing. ➤ Described the test tube baby and placentation in mammals.

		<ul style="list-style-type: none"> ➤ Compare the structure, functions and regulation of the receptor organs of vertebrates. ➤ Understand the structure, function and regulation of endocrine & neuroendocrine glands
13	Cell Biology	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon structural and functional details of the basic unit of life at the molecular Level. ➤ Explain Biomembranes and the processes of Cell-cell signalling and cell-cell adhesion. ➤ Motivate the learner to refresh and delve into the basics of cell biology. ➤ Provide a thorough knowledge on types and properties of Cancer and how normal cells become cancerous.
14	Developmental Biology	<ul style="list-style-type: none"> ➤ 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. ➤ Understand the process of differentiation of eggs and sperms before fertilization.
15	Fisheries And Aquaculture	<ul style="list-style-type: none"> ➤ Both these theory and practical papers touch upon the general classification of fishes, economically important marine and freshwater fishes, migration and fishery products. ➤ Described recent concepts in fisheries management, endangered species management. ➤ Came to know the various aquaculture systems.

		<ul style="list-style-type: none"> ➤ Understood the type of hatchery, brood stock, larval production, feed management water quality and disease management in cultivable species, live feed production. ➤ Described the feed and disease management.
16	Animal Biotechnology	<ul style="list-style-type: none"> ➤ 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. ➤ Both these theory and practical papers Came to know the concept of PCR, Screening of recombinant clones – nucleic acid hybridization, DNA sequencing, DNA fingerprinting.