DEPARTMENT OF ZOOLOGY

Programme: B.Sc., Zoology

PO No.	Programme Outcomes Upon completion of the B.Sc. Degree Programme the graduate will be able to
PO-1	emerge with competency in the subject of Zoology and apply knowledge to cater to the needs of Society / Employer / Institution / Own Business Enterprise
PO-2	imbibe analytical/critical/logical/innovative thinking skills in the fields of Animal Diversity and Evolution, Molecular Biology, Embryology, Environmental Biology, Human Genetics and Applied Zoology
PO-3	acquire distinct traits and ethics with high professionalism to gain a broader insight into the domain concerned for nation building
PO-4	adopt scientific temper and give a positive correlation to live with scientific values and to acquire skills in biological/ analytical/ culture techniques
PO-5	prepare them as flexible and versatile person in the work place, possess the capacity to embrace the emerging technologies, leadership and team work opportunities

PSO No.	Programme Specific Outcomes Upon completion of these courses the student would
PSO-1	experience a broad understanding of classification, diversity and anatomical features of major group of organisms and appreciate their evolutionary relationships and environmental interactions
PSO-2	develop an in depth knowledge on core concepts of developmental phenomena of animals, patterns of inheritance, functions of cellular organelles, biomolecules and the integrated biological system
PSO-3	perform procedures as per laboratory standards, explicate the scientific principles and interpret the findings
PSO-4	get acquainted with the recent advancements both in core and applied fields of Zoology for the higher studies and career opportunities
PSO-5	inculcate appropriate biological techniques and experimental skills required for scientific investigations leading to a basic research

Course Title	INVERTEBRATA- I	
CODE	**18ZOUC101**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To learn and recollect the organizational, anatomical and functional aspects of Invertebrates.	K1
CO-2	To understand the physiological processes those are significant to each phylum.	K2
CO-3	To analyze anatomical and functional modifications that exists in different forms of Invertebrates.	K2
CO-4	To compare and evaluate the Invertebrate organization with reference to their life history and development.	K2, K3
CO-5	To discuss and interpret the economic importance of Invertebrate animals based on their habit and habitats.	K3

Course Title	INVERTEBRATA- II	
CODE	**18ZOUC102**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To learn and recollect the organizational, anatomical and functional aspects of Invertebrates.	K1
CO-2	To understand the physiological processes those are significant to each phyla.	K2
CO-3	To analyze anatomical and functional modifications that exists in different forms of Invertebrates.	K2
CO-4	To compare and evaluate the Invertebrate organization with reference to their life history and development.	K2,K3
CO-5	To discuss and interpret the economic importance of Invertebrate animals based on their habit and habitats.	K3

Course Title	CORE PRACTICAL I	
CODE	**18ZOUCP01**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To understand and analyze the different systems of Invertebrates and Chordates through live and virtual dissections.	K2
CO-2	To design methodology for culturing organisms. To compare and contrast the systematic position, biological significance, structure and function of organisms.	K2
CO-3	To access and analyze the beak and feet modifications in birds. To sequence the stages of lifecycle of selected animals. To categorize and identify the insects based on their salient features, habit and habitats. To analyze and distinguish morphometics of different species of fishes.	K3

Course Title	INVERTEBRATA AND CHORDATA	
CODE	**18ZOUA101**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To learn and recollect the fundamentals such as systematic position, morphology, structural modification in various groups of Invertebrates & Chordates.	K1
CO-2	To understand the structural and physiological processes occurring in various organisms and are distinctive to each Phylum and Class.	K2
CO-3	To analyze the physiology of the organisms from Invertebrates to Chordates with special emphasis on their life history and development.	K2
CO-4	To analyze and correlate the affinities and adaptations of animals to different modes of life.	K2, K3
CO-5	To develop a general familiarity with all major groups of animals and to discuss the diversity of both Invertebrate and Vertebrate animal life and their fascinating adaptations in all conceivable ecological niches.	K3

Course Title	ALLIED ZOOLOGY PRACTICAL	
CODE	**18ZOUAP01**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To identify and recognize the different systems of Invertebrate and Chordates through live virtual dissection.	K2
CO-2	To analyze and interpret the clinical significance of haematological experiments. To classify, compare and distinguish the importance of specimens, models and equipments.	K2
CO-3	To execute the practical skillsin culturing economically important organisms.	K3

Course Title	CHORDATA	
CODE	**18ZOUC203**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To identify with the systematics of phylum Chordata and its classes up to order level with morphological, anatomical and functional modifications in Vertebrates.	K1
CO-2	To assess the general and specific characteristics in different classes of Chordates.	K2
CO-3	To analyze and compare the adaptive changes that have occurred in different groups of Vertebrates based on their habitat.	K2
CO-4	To envision and analyze the modifications in analogy and homology that occurred in various classes of Chordates.	K3
CO-5	To interpret the evolutionary concepts and relationship of animals in the biological history.	K3

Course Title	APPLIED ZOOLOGY	
CODE	**18ZOUA202**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To gain knowledge on the significance of Aquaculture, Sericulture, Vermiculture, Apiculture and Haematology	K1
CO-2	To identify the important species and culture methods available for rearing Silkworm, Earthworm, Fishes and Honeybees. To acquire technical skills in Haematology	K2
CO-3	To analyze and interpret the production of economically valuable products with interrelated species and to interpret the Hematological results	K3
CO-4	To become skill-based experts in the applied and technical fields of Zoology	K3
CO-5	To acquire the entrepreneurship skills and professionalism for the economic upliftment.	K3

Course Title	DEVELOPMENTAL BIOLOGY AND EVOLUTION	
CODE	**18ZOUC304**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To understand the basis of embryonic development, the formation of functional multicellular organisms and the theories and concepts of evolution	K1
CO-2	To describe different phases of development of an organism and identify the mechanism by which the evolution occurs	K2
CO-3	To compare the morphogenetic movements with organogenesis and to comprehend the evolutionary changes happened from origin of life to evolution of man	K2
CO-4	To analyze the role of hormones in reproduction, infertility problems and treatment To develop an idea on the distribution of fauna and their adaptive radiation with geological time scale	K3
CO-5	To interpret the potentiality of undifferentiated cells in organogenesis with the application of stem cells in treatment of diseases To investigate the major transition in evolution from the origin of life to hominid evolution	K3

Course Title	ENVIRONMENTAL BIOLOGY AND ANIMAL BEHAVIOUR	
CODE	**18ZOUC405**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To understand and identify distinguishing attributes in various types of fauna present in different habitats	K_1
CO-2	To describe the specific characteristics, adaptations, organization and inter-specific relationship among the species	K_2
CO-3	To analyze and compare the animal behaviour and their response to different instincts	K_2
CO-4	To envision the behavioural manipulations and habitat requirements of various species in the ecological hierarchy	K_3
CO-5	To interpret the affinities of animals and their relationships with respect to structural ecosystem in conservation practices	K_3

Course Title	CORE PRACTICAL II	
CODE	**18ZOUCP02**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	To observe and identify the ecological instruments, different stages of development of frog embryo, planktons and fossils	**K_2**
CO-2	To estimate the physiochemical parameters of water samples and to assess the their quality To examine and distinguish faunal adaptations to various ecological conditions	**K_3**
CO-3	To categorize local Avian fauna with their salient features and the adaptation of animals with the evolutionary significance	**K_3**

Course Title	CELL AND MOLECULAR BIOLOGY	
CODE	**18ZOUC506**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand the fundamental Principles of Cell Biology, Ultra structure of cellular organelles and Cytological techniques	K_1
CO-2	Explain the organization of genes, Principles of membrane transport and functions of cell organelles in diverse cellular processes	K_2
CO-3	Comprehend the process of cell division, Protein synthesis, Cell signaling and their role in cellular function	K_2
CO-4	Analyze and interpret the importance of regulation of gene expression, cell communication and defects in the functioning of cell organelle	K_3
CO-5	Apply the basic research methods in Molecular Biology and develop Science based solution	K_3

Course Title	MICROBIOLOGY AND IMMUNOLOGY	
CODE	**18ZOUC507**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand the salient features and Biology and the significance of microbes Define central immunological principles and concept outlines	K_1
CO-2	Describe the vital role of microorganism in various fields important to human well beingState the role of immune system in defense mechanism of the body	K_2
CO-3	Elucidate how microbes are used as a model system for biotechnology researchCompare and contrast innate versus adaptive immune system and its application in the field of medicine	K_2
CO-4	Analyze and Interpret the results of various microbiological methodsDistinguish various cell types involved in immune response and elucidate the genetic basis for immunological diversity	K_3
CO-5	Demonstrate the knowledge of Microbiological and Immunological processes at cellular and molecular level	K_3

Course Title	BIOSTATISTICS, BIOINFORMATICS AND COMPUTER APPLICATIONS	
CODE	**18ZOUC508**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Get introduced to Data collection, Statistical methods for data analysis, Classification of Biological sequences, Importance of Bioinformatics and basic concepts of Internet of Things	K_1
CO-2	Describe the statistical methods for biological research, Properties and significance of biological sequences, Bioinformatic search tools, Data bases and Computational methods in Biology	K_2
CO-3	Identify and Comprehend appropriate mathematical methods and Computational technology for problem solving and enrich biological perspectives	K_2
CO-4	Demonstrate and communicate the results of statistical analysis, Phylogenetic studies and biological software accurately and effectively	K_3
CO-5	Explicate the appropriate statistical methods and Bioinformatic databases for exploratory data analysis and decision making process	K_3

Course Title	GENETICS	
CODE	**18ZOUC509**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	State the laws of Inheritance, Gene structure and function and fundamentals of Population genetics	K_1
CO-2	Elaborate Linkage, Crossing over, Chromosomal mapping, Sex determination, Sex linked inheritance, Genetic disorders and mutation	K_2
CO-3	Analyze the mechanism of gene exchange, gene frequencies of population and mutation and its contribution to evolution	K_2
CO-4	Predict the patterns of inheritance, genetic disorders and apply Genetic Counseling to real life situations	K_3
CO-5	Employ the concept and strategies of Genetics along with allied branches to solve the problems of human heredity	K_3

Course Title	MEDICAL LABORATORY TECHNOLOGY- Paper I	
CODE	18ZOUE501	
CO No.	Course Outcomes	Knowledge Level
CO-1	Recall the basic requirement for organizing a Medical laboratory, Safety precautions, Role of laboratory technicians and Fundamental aspects of clinical tests	K_1
CO-2	Explain and perform the basic laboratory procedures for the diagnosis of human health issues	K_2
CO-3	Demonstrate technology skills by operating laboratory equipments adhering to standard safety practices in a laboratory environment	K_2
CO-4	Interpret laboratory results in accordance to laboratory protocol	K_3
CO-5	Employ the testing principles and accurate methodology for reporting data in an appropriate format	K_3

Course Title	BIOPHYSICS, BIOCHEMISTRY AND BIOINSTRUMENTATION	
CODE	18ZOUC610	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the fundamentals of membrane physics, biomolecules and importance of radioactive compounds	K_1
CO-2	Acquire knowledge on the working principle of bioinstruments, enzyme action and metabolic activities of water and minerals	K_2
CO-3	Apply the gained knowledge on biomolecules, bioinstruments and various separation techniques for analytical practices	K_2
CO-4	Interpret the role of biomolecules and minerals in various biological activities	K_3
CO-5	Analyze the applications of instruments in biomedical and Research laboratories	K_3

Course Title	PHYSIOLOGY AND ENDOCRINOLOGY	
CODE	**18ZOUC611**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Recall the basic physiological principles and the activities of different organs and their interaction with the environment	K_1
CO-2	Identify and Summarize various life processes in chemical terms, more complex physiological functions, inter relationships and their regulatory mechanism	K_2
CO-3	Discern the functional similarities and differences between the physiological processes taking place in human biological system	K_2
CO-4	Appreciate and Evaluate how these separate systems interact to yield integrated physiological responses to challenges	K_3
CO-5	Conceptualize the changes caused by disease in various organs and organism as a whole, synthesize ideas to make connection between knowledge of physiology and real world situations	K_3

Course Title	BIOTECHNOLOGY	
CODE	**18ZOUC612**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Recall the basic concepts of cellular events and bioprocesses of living organisms and broad understanding of core concepts of Genetic engineering	K_1
CO-2	Describe Gene manipulation, Gene transfer technology, Cell culture and applications of Recombinant technology in research and industrial enterprises	K_2
CO-3	Identify appropriate tools and molecular techniques for skill development in various emerging areas of academic and industrial relevance	K_2
CO-4	Analyze the advantages and problems both in technical and ethical issues and able to express the concern over it	K_3
CO-5	Apply and develop biotechnology processes and participate in multidisciplinary research projects to generate new knowledge	K_3

Course Title	MEDICAL LABORATORY TECHNOLOGY - Paper - II	
CODE	**18ZOUE602**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand with the principles of Microbiology, functional tests of vital organs and body fluids	K_1
CO-2	Explain the principles of Biochemical examination and perform the test to identify the health problems	K_2
CO-3	Recognize the role of clinical technician and apply knowledge on safety regulations and standards	K_2
CO-4	Evaluate and interpret laboratory results and relating data to various disease status	K_3
CO-5	Exhibit essential employability qualities by demonstrating lab safety, analyzing lab results and preparing accurate reports	K_3

Course Title	CORE PRACTICAL - III	
CODE	**18ZOUCP03**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Identify and describe the slides, specimen, instruments and models pertaining to the course Prepare mountings, smears, Bacterial cultures, lymphocyte culture and report the findings	K3
CO-2	Demonstrate Soil tests, Milk tests, Bioinformatics techniques and able to interpret the results	K3
CO-3	Apply theoretical knowledge to identify Mutant forms of Drosophila, Genetic disorders in Human, Nucleotide sequence and Statistical tools for data analysis and infer the findings	K3

Course Title	CORE PRACTICAL - IV	
CODE	**18ZOUCP04**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Identify, explain and distinguish different types of Tissues, Organs, Endocrine glands, Instruments, Chemicals and Biotechnology products	K_3
CO-2	Apply theoretical knowledge to perform various qualitative and quantitative analysis in Biochemistry, Physiology and Biotechnology and interpret the findings	K_3
CO-3	Analyze biological samples using advanced Biological Instruments and evaluate laboratory test outcomes Demonstrate experiments and apply skills acquired from the Research laboratories/Institutions through educational visits	K_3

Course Title	ELECTIVE PRACTICAL	
CODE	**18ZOUEP01**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Perform the laboratory procedures by employing proper techniques	K_3
CO-2	Discuss and present laboratory results and findings in a clear and timely manner	K_3
CO-3	Draw appropriate conclusions based on the results and present an accurate report	K_3