Advanced Zoology and Bio-technology

Programme Outcome

PO 1: Understand the nature , basic concepts of cell biology, Biochemistry, Taxonomy and ecology and acquire knowledge and skill about the basics of animal sciences. Students learn to identify, classify and name the organism according to international code of zoological nomenclature.

PO 2: Understand the internal structure and functions of cell, its metabolism. Perform procedures as per laboratory standards in the areas of Biochemistry, Bioinformatics, Taxonomy, Economic Zoology and Ecology.

PO 3: Realize the complex evolutionary processes and behavior of animals. analyses the distribution animals and their relationship with the environment .

PO 4: Understand the physiological processes of animals and role of organ systems.

PO 5: Play integral role in environmental conservation and protection of endangered species.

PO 6: Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine and apply the knowledge gained in sericulture, fish farming and vermicomposting preparation.

PO 7: Understands the concepts of genetics and its importance in human health.

PO 8: Apply ethical principles and commit to professional ethics

Programme specific outcome

PSO 1: Understand the nature and basic concepts of cell biology, Biochemistry, Taxonomy and ecology, major geological events on the earth and appreciate the divergence of life..

PSO 2: Gain knowledge about research methodologies, bioethics, effective communication and skills of problem-solving methods.

PSO 3: Analyse the relationships among animals and comprehend the organization of invertebrates, chordates and microbes.

PSO 4: Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell Biology, Genetics,Immunology, Economic Zoology, Biochemistry and Biotechnology.

PSO 5: Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine.

PSO 6: Develops an appreciation for the biodiversity of invertebrates and to impart knowledge about co-existence of different forms of living organisms ranging from acelluar to multicellular animals.

Course Outcome

Course outcome No.	Subject code	Title of the paper	Outcome
CO1	**1MZ01a**	**Invertebrata I**	Understand the origin of metazoa from protozoa together with symmetry, metamerism and coelom formation leading to the origin, diversity and evolution of chordates with their characteristic features and affinities with nonchordates
CO2	**1MZ02a**	**Invertebrata II**	
CO3	**2MZ03a**	**Chordata I**	Accquaint the students about the structure and function of protochordates and chordates and to make the student understand the basic characters, advancements and adaptations of different types of vertebrates
CO4	**2MZ04a**	**ChordataII**	
CO5	**2MZP1**	**Practical I (Invertebrate and chodartes**	Understand the anatomy and structural modifications in invertebrates and to develop dissection skill.
CO6	**3MZ05b**	**Developmental Biology**	Understanding the field of developmental biology and help them to understand the mechanisms involved in the process of development of a single fertilized zygote into a complete organism. Understand the development of all the vertebrates from an egg to the embryo. Helps in learning the role of genetics and environment on development.
CO7	**3MZ06b**	**Environmental Biology and Biotechnology**	Provides a method for assessing biotic factors, abiotic factors and the organisms in the environment.
CO8	**4MZ07a**	**Cell and Molecular Biology**	Understand the activities of the cell at the genetic and in the molecular level and it helps the students to do maintenance and alteration of the cellular activitieand learn various aspects of cell, structure and functions at research level.
CO9	**4MZ08**	**Biotechnology and Bioethics**	Students familiarize with the basics of biotechnology and the application. Invitro fertilization and embryo transfer technology and their applications.
CO10	**4MZ09a**	**Economic Zoology**	Enables students to understand the culture techniques,economic importance of insects and insect pest management and its industrial importance.
CO11	**4MZP2**	**Practical 2**	Ability to observe chromosomal arrangements during cell division. Ability to

		(Developmental, Environmental, Cell Biology & Economic Zoology)	perform routine blood analysis.
CO12	**5MZ10a**	**Animal Physiology**	Brings to light knowledge of basic functions of life viz., nutrition, respiration, excretion, reproduction etc. Realize the the functions of organ systems in animals and man towards homoeostasis
CO13	**5MZ11a**	**Immunology and Immuno-technology**	Understanding the importance of immune system in protecting the body. Provides basic understanding of antigen-antibody interactions and cellular assays and focuses on the use of antibodies in biotechnical applications such as ELISA, RIA and western blot with a special emphasis on technologies for production of antibodies and isolation/purifying with protein.
CO14	**5MZ12a**	**Genetics**	Learn various aspects of heriditary, basic principles of Mendelian inheritance, cell division & chromosome segregation, multifactorial inheritance, the chromosome structure, chromatin organization and variation, Linkage concept of sex determination and sex linked inheritance and the organellar inheritance.
CO15	**5MZ13**	**Microbiology**	Microbes are playing significant role in understanding medical science and industries so study of microbes from basic to advance level, with understanding of biochemistry, microbial cell structure and applications
CO16	**5MZ14**	**Evolution**	Gain knowledge on origin of different vertebrates and ancesters of some vertebrates, evolution of genetic material, its functional aspects and changes in the environment that brings about evolution and the importance of Palaeontology.
CO17	**5EZ01**	**Elective 1- Aquaculture**	Basics of morphology and biology of fishes, general farm management measures, different aquaculture systems, culture of commercially important fishes and shell fishes, their hatchery production techniques, live and artificial feeding, disease management measures, ornamental fisheries etc. offers skill generation for working in aquaculture sector as well as for entrepreneurship.
CO18	**6MZ15b**	**r DNA Technology**	Understand principles of kinetic classes of DNA and Gene families, the steps involved in rDNA technology which explain the construction of DNA & cDNA library, animal culture, media preparationand aplications.
CO19	**6MZ16**	**Endocrinology**	Acquaint the students with the functions of various endocrine glands and their secretions i.e. hormones. Realize the the functions of organ systems in man

			towards homoeostasis.
CO20	**6MZ17a**	**Biochemistry**	Students be able to demonstrate an understanding of fundamental biochemical principles, such as the structure/function of biomolecules, metabolic pathways, and the regulation of biological/biochemical processes.
CO21	**6EZ02**	**Elective 2 Poultry Keeping**	Exposure on poultry production including breeding, nutrition, health, welfare and product quality. Evaluate the quality of poultry meat and eggs and use the knowledge of significant diseases in poultry production
CO22	**6EZ03**	**Elective 3 Bio-Diversity Conservation**	Knowledge in the concept of biodiversity and its key component, concepts of taxonomy, ecology, genetics, geography, and evolution. Acquire knowledge on environmental conservation and management through a comprehensive understanding of the components of ecosystem, biological cycles, habitat ecology, resource ecology, pollution and its management
CO23	**6MZP3**	**Practical 3 Genetics, Animal Physiology & Elective**	Ability to Estimate the oxygen consumptio, digestive enzyme activity in animals and man.
CO24	**6MZP4**	**Practical 4 Biotechnology, Microbiolog, Biochemistry and Elective**	Familiarise knowledge of conventional biotechnological procedures Learn clinical procedures for blood & urine analysis
CO25	**1AZC1a**	**Allied Zoology I**	Accquaint the students about the structure and function of protochordates and chordates and to make the student understand the basic characters, advancements and adaptations of different types of vertebrates,
CO26	**2AZC2a**	**Allied Zoology II**	Understand the activities of the cell in the genetic and in the molecular level and it helps the students in understanding the maintenance and alteration of the cellular activities. Learn various aspects of cell, structure and functions
CO27	**2AZPa**	**Allied Zoology Practical**	Understand the anatomy and structural modifications in invertebrates and to develop dissection skill.
CO28	**OBI**	**Bio Instrumentation**	Students familiarize with various laboratory techniques undertaken before medical intervention and the instruments utilized in common laboratories
CO29	**1OB1**	**Basic Biology I**	Understand the basics of Botany helps in gardening and knowledge on medicinal plants.
CO30	**2OB2**	**Basic Biology II**	

			Basics of Zoology makes to realize genetic disorders, endocrine glands and functions in man towards homoeostasis, preventing of diseases.
CO31	**OHG1**	**Public Health and Hygiene I**	Realise the factors affecting Health, apply the knowledge to lead a healthy lifestyle. Familiar with various lifestyle diseases, redress problems associated with health and sex thereby promoting fitness and wellbeing
CO32	**OHG2**	**Public Health and Hygiene II**	
CO33	**OVE**	**Value education**	Development of students personality in mental, emotional , spiritual aspects, good manners , spirit of patriotism, national integration, responsible and cooperative citizenship. Developing respect for the dignity of individual and society ,democratic way of thinking and living.
CO34	**EVS**	**Environmental studies**	Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.
CO35	**OQCC**	**Quality control circles (Theory and Pratical)**	Improves quality, productivity, safety and to use their wisdom and creativity, encourage team spirit, cohesive culture among different levels.
CO36	**SAR**	**Analytical reasoning Level I, II & III**	Provides the students with a good attitude and acceptance of the practice to improve analytical thinking skills. It helps the students learn and to analyze and integrate different knowledge to the same content practice in analytical thinking skills to develop students understanding of the content they learned deeply and encourages the students to apply knowledge meaningfully such as using knowledge to make decisions, solve problems and analyze systems. Further it helps the students with creativity, promote self discipline and patience in various skills training.
CO37	**GK**	General Knowledge	Provides insights in to the current issues and events and update knowledge and preparation for competitive exams. The learners accustomed to multiple-choice pattern, and scope for self improvement.