Department of Zoology

Program Specific Outcome

- Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.
- Student will be able to conduct background research and apply fundamental zoological science principles to make informed decisions on socio-scientific issues.
- Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment.
- Students will be able to integrate and analyze information across levels of organization ranging from cells to ecosystems within the zoological sciences to formulate arguments and critically evaluate scientific claims.
- Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
- Understands the complex evolutionary processes and behaviour of animals.
- Correlates the physiological processes of animals and relationship of organ systems.
- Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species.
- Gain knowledge of Agro based Small Scale industries like sericulture, fish farming, butterfly farming and vermicompost preparation.
- Understands about various concepts of genetics and its importance in human health.
- Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.
- Apply the knowledge and understanding of Zoology to one's own life and work.
- Description of expression of genome revealing multiple levels of regulation and strategies to manipulate the same in the benefit of the mankind.\
- Development of an understanding of zoological science for its application in medical entomology, apiculture, aquaculture, agriculture and modern medicine.
- Develops empathy and love towards the animals

Course outcome of Zoology Department

Class	Course	Outcome
F.Y.B.Sc.	ZOO 101 : ANIMAL DIVERSITY I	1. To stuy the general characteristics of Kingdom protista
		2. Study general characteristics classification of phylum : Porifera, Cnidaria, Platiheminthes, Nematheminthes, Annelida, Arthropoda, Mollusca and Echinodermata
	ZOO 102 : ANIMAL DIVERSITY II	1. General features and Phylogeny of Protochordata
		2. General features and Classification of Agnatha, Pisces, Amphibia, Reptiles, Aves, Mammals
	ZOO201: COMPARATIVE ANATOMY OF VERTEBRATES	1. To study comparative anatomy of vertebrates
		2. To study the different systems of vertebrates
		3. To study the sense organs of Verterbrates
	ZOO 202 : DEVELOPMENTAL BIOLOGY OF VERTEBRATES	1. To Study the early and late development of embryo
		2. To study the control of deveoplement
	ZOO 203 : COMPARATIVE ANATOMY & DEVELOPMENTAL BIOLOGY OF VERTEBRATES	1. Study of bones
		2. Study of the different types of placenta.
S.Y.B.Sc.	ZOO 231: Non Chordates –II	1. To study the systematic position and characters of asterias
		2. To study different systems in Aterias
		3. To study the different types of Mouth parts in Insects
		4. To study the canal system in sponges
		5. To study the locomotion in protozoa
	ZOO 232: Medical Zoology	1. To understand the parasite and host relationship
		2. To study Introduction, Scope and branches of Medical Zoology
		3. To study the different diseases
	ZOO 241: Chordates-II	1. To study the systematic position and characters of *Columba livia domestica*
		2. To study different systems in *Columba livia domestica*
		3. To study accessory respiratory organs in fishes

	ZOO 242: Applied Zoology-II	1. To study the intorduction history and scope of Apiculture 2. To stuy the systematic position, morphology and anatomy of Bee 3. To study Bee keeping equipments and apiary management
T.Y.B.Sc.	ZOO 351: Non Chordates –III	1. Systemetic position and External characters of Leech 2. To study the digestive, exctertory and nervous system of leech 3. Systemetic position and External characters of Grasshopper 4 To study different systems in grasshopper
	ZOO 352: Cell and Molecular Biology	1. Introduction of cell biology and molecular biology 2. Understanding the difference between Prokaryotic and Eukaryotic cell 3. To study the cell organells and cell division 4.Tools and techniques used in molecular biology
	ZOO 353: mammalian histology and physiology I	1. To study types and Characteristics of tissue. 2. To understand the structure and function of skin and thermoregulation. 3. To study different system and process in human system
	ZOO 354: Biochemistry	1. Introduction, Objective, Scope and Importance of Biochemistry 2. Study the pH, Buffer and molecular internation 3.To study the classification and biological significance of biomolecules
	ZOO 355: Systematics, Evolution and Palaeontology	1. To understand the need of classification nomenclature and taxonomy 2. To study origin of life and different events in evolution 3 To study palaeontology
	ZOO 356: A Biotechnology	1. Introduction scope and importance of Biotechnology 2. To study animal cell and tissue culture 3. To study r-DNA technology and transgenic animals
	ZOO 356: B Pest Management	1. Introduction, scope and classification of pest management 2. To study the integrated pest management
M.Sc. I	ZOO 101:Structure and function of Invertebrates	1. Understand the Organization And Life: Homology and Analogy, Diversity of invertebrates, Phylogeny of invertebrates.

	2. Understand the Organization of coelom and its types.
	3. Understand various processes like Digestion, Locomotion, Respiration, Excretion, Nervous system.
	4. Understand the larval forms of the invertebrates.
	5. Understand the colonial and social life in invertebrates.
ZOO 102:Cell and Developmental Biology	1. Understand the structure and function of the cell and its organelles.
	2. Understand the various processes like cell cycle and cell signalling.
	3. Understand the terms: Gametogenesis, Fertilization and early development.
	4. Understand the Morphogenesis and Organogenesis in animals.
	5. Understand the Aging, Apoptosis and Senescence.
ZOO 103:Quantitative Biology	1. Understand the Applications and uses of Statistics.
	2. Understand the Data Classification: Frequency, Relative frequency, class limits, class width, inclusive and exclusive method of classification.
	3. Understand the measures of central tendency and dispersion like Computation of arithmetic mean, mode and median.
	4. Understand the Computation of Variation.
	5. Understand the Correlation and Regression.
	6. Understand the testing of hypothesis.
	7. Understand the Statistical hypothesis, Null Hypothesis, Alternative hypothesis etc.
	8. Understan the t-test, F-test.
	9. Understand the analysis of variance, meaning of ANOVA. One way and two way classification.
ZOO 201:Structure and Function of Vertebrates	1. Understand the Organization of Protochords, Urochordata and Cephalochordata.
	2. Understand and study of the Origin and phylogeny of the vertebrates.
	3. Understand the classes of vertebrates: fishes, Amphibia, Reptilia, Aves and Mammals.
	4. Study of endoskeleton of human.
	5. Understand the comparative account of urogenital system of vertebrates.
	6. Understand the Receptor organs in vertebrates.
ZOO 202: Biochemistry and Enzymology	1. Understand the Basics of Biochemistry and Chemistry of biomolecules and their significance.
	2. Understand the Protein structure e. Primary, Secondary, Tertiary and Quaternary.
	3.Understand the chemistry of hormones.
	4. Understasnd the structure and properties of the enzymes as well as its activity.
	5. Understand the process of Immobilization.

	ZOO 203: Tools and Techniques for Biology	1. Understand the Principle, parts, and its application of Microscopic techniques. 2. Understand the principle of analytical instruments. 3. Understand the working principle of UV-Vis principle, Colorimeter, Fluorimeter. 4. Understand the term Electrophoresis, Radioactivity. 5. Understand the working principle of Centrifuge, Incubator, pH meter. 6. Understand the cell culture techniques and separation techniques in biology. 7. Understand the function of Biosensors.
	ZOO 204:Practical Sem II	1. Understand the classification of Urochordata up to order Doliolida and Cephalopodata up to order Amphioxiformes. 2. Understand the classification of Pisces. 3. Understand the classification of Amphibia, Reptilia, Aves, Mammals. 4. Understand the Axial skeleton of human. 5. Understand the urinogenital system of vertebrates. 6. Understand the Preparation of Buffer of known molarity and pH. 7. Determine the pKa value of Glycine. 8. Estimate the Cholesterol, Nucleic acid, DNA and RNA. 9. Determine the protein by using Lowery method. 10. Estimate the Vit "C" from suitable source.
M.Sc. II	ZOO 301 (A):Animal physiology sec-I	1. Understand the Importance of physiology and branches of it. 2. Understand the terms-Osmosis, diffusion, pH and Buffer. 3. Understand the Digestion and Excretion process, by studying the Organs of it.
	ZOO 301 (B):Animal physiology sec-II	1. Understand the process of Metabolism. 2. Understand the term Detoxification. 3. Understand the Circulatory system and Lymphatic system. 4. Study the nervous system.
	ZOO 302 (A):Freshwater Zoology	1. Understand the Aquatic environment like Lotic habitat and Lentic habitat. 2. Understand the Physical conditions of water: Depth, Viscosity, Density, Buoyancy. 3. Understand the chemical conditions of water: dissolved oxygen and carbon-di-oxide, hardness etc. 4. Understand the physiological and protective adaptations in: Protozoa, Rotifer, Crustaceans, Fishes. 5. Understand the respiratory and locomotory adaptations

		in freshwater insects and their larvae.
		6. Understand the economical importance of molluscs.
	ZOO 302 (B): Scientific research Report writing	1. Understand the scope of Communication.
		2. Understand the techniques which improve the communication.
		3. Understand the terms listening, Conferencing, oral communication, presentation skill.
	ZOO 303(A): Medical physiology	1. Understand the Digestive System and disorders of Liver, Pancreas, Stomach.
		2. Understand the Excretory System-Renal function test, Nephrotoxicity, Nephritic syndrome.
		3. Understand the Circulation and Respiratory System, Blood clotting, Clotting factors and like all this.
		4. Understand the disorders like asthma, bronchitis, swine flu, emphysema.
		5. Understand the Nervous system and its disorders like Alziemer, Parkinson‟s.
		6. Understand the Process of reproduction and endocrinology.
	ZOO 303 (B):Animal Biotechnology	1. Understand the animal cell and tissue, Introduction of animal tissue culture and terminologies used in animal biotech.
		2. Principle and merits and demerits of Animal cell/tissue culture.
		3. Understand the Equipments and media for cell culture.
		4. Understand the cell culture I-Measurement of Viability and cytotoxicity of cell.
		5. Understand the process of scaling up of Animal cell culture.
		6. Understand the cell transformation, risks and safety in the animal cell culture.
		7 Understand the applications of animal biotechnology, Application of Recombinant DNA.
	ZOO 401 (A): Animal physiology -II	1. Understand the water relation and ionic regulation as well as Adaptation To freshwater habitat; Adaptation to terrestrial habitat; Adaptation to brackish water habitat.
		2. Understand the support and location means their properties. Also study the skeleton joints.
		3. Understand the physiology of movements.
		4. Understand the respiratory system and Respiratory pigments.
		5. Understand the process of Temperature regulation.
	ZOO 401 (B):Animal physiology II	1. Understand the reproductive system.
		2. Understand the Endocrine system and Mechanism of hormone action.

		3. Understand the Integumentary system e. Structure of skin.
		4. Understand the Sensory physiology e.sensory coding, chemoreception, Mechano reception, Mechano transduction, mechanoreceptors.
	ZOO 402(A): Systematic and evolutionary biology	1. Understand the principles and methods of taxonomy.
		2. Understand the Levels of structural organization.
		3. Understand the Outline classification of Animals :Classification of animals.
		4 . Able to understand the Natural history of Indian subcontinent.
		5. Understand the Common parasites and pathogens of humans, domestic animals, Host-Parasite relationship,
	ZOO 402(B): Advanced methods in Biology	1.Understand the process of microbial fermentation and production of Useful Macromolecules.
		2. Understand the Application of immunological principles e. Transgenic animals, molecular approaches to diagnosis and strain identification.
		3. Understand the terms, Genomics and Proteomics.
		4 To know the Biodiversity, Breeding in animals.
		5 Understand the Bioremediation and Biosensors as well as Epigenetics.
	ZOO 403(A):Fundamental Processes and Tools in Biology	1. Understand the Various Microscopic techniques.
		2. Know the terms Photometry and Fluorimetry.
		3. Understand the Electrophoresis and Radioactivity technique.
		4. To know the working principles of various instruments like Centrifuge, Incubator, pH meter.
	ZOO 403(B):Forensic Biology	1. Understand the term Forensic Science: Def, History and Development.
		2. Know the Various Forensic laboratories in India.
		3. Understand the various steps includes in the investigation in crime cases.
		4. Unerstand and know the Various Biological fluids and its analysis.
		5. Understand the Forensic Entemology.