UNDERGRADUATE PROGRAMME COURSE OUTCOME

Name of the Programme: B.Sc. Zoology

Name of the Class	Course Code	Course Title	Course Outcomes	
SEMESTER I				
F.Y.B.Sc.	ZO-111	Animal Diversity I	CO1	The student will be able to understand classify and identify the diversity of animals.
			CO2	The student understands the importance of classification of animals and classifies them effectively using the six levels of classification.
			CO3	The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.
F.Y.B.Sc.	ZO-112	Animal Ecology	CO1	The learners will be able to Identify and critically evaluate their own beliefs, values and actions in relation to professional and societal standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.
			CO2	To understand anticipate, analyse and evaluate natural resource issues and act on a lifestyle that conserves nature.
			CO3	The Learner understands and appreciates the diversity of ecosystems and applies beyond the syllabi to understand the local lifestyle and problems of the community.
			CO4	The learner will be able to link the intricacies of food chains, food webs and link it with human life for its betterment and for non-exploitation of the biotic and abiotic components.
			CO5	The working in nature to save environment will help development of leadership skills to promote betterment of environment.
F.Y.B.Sc	ZO113	Zoology Practical	CO1	The student will be able to understand

		Paper		classification and identification of the diversity of animals.
			CO2	The student understands the significance of taxonomy of animals
			CO3	The learners understand the terminology required in system of classification.
			CO4	Ability to love and understand the fascinating world of invertebrates.
			CO5	Get a concrete idea of the evolution, hierarchy and classification of invertebrate phyla
			CO6	Understand the basics of systematics by learning the diagnostic and general characters of various groups
			CO7	Getting an overview of typical examples in each phyla.
			CO8	The learners will be able to critically assess their own beliefs, values and actions in accordance to professional and social standards of ethics and its impact on ecosystem and biosphere due to the dynamics in population.
			CO9	Understand antedate, analyse and evaluate natural resource issues and act on a way of life that preserves natural resources.
			CO10	The students understand kinds of the ecosystem and applies beyond the syllabi to understand the local lifestyle and difficulties of the community.
			CO11	The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.
			CO12	Ability to Estimate of dissolved oxygen and CO2 & O2.
			CO13	Ability to construct food web.
SEMESTER II				
F.Y.B.Sc.	ZO-121	Animal Diversity II	CO1	The student will be able to understand classify and identify the diversity of animals.
			CO2	The student understands the importance of classification of animals and classifies them effectively using the six levels of classification.
			CO3	The student knows his role in nature as a protector, preserver and promoter of life which he has achieved by learning, observing and understanding life.

F.Y.B.Sc.	ZO-122	Cell biology	CO1	The learner will understand the importance of cell as a structural and functional unit of life.
			CO2	The learner understands and compares between the prokaryotic and eukaryotic system and extrapolates the life to the aspect of development.
			CO3	The dynamism of bio membranes indicates the dynamism of life. Its working mechanism and precision are responsible for our performance in life.
			CO4	The cellular mechanisms and its functioning depends on endo-membranes and structures. They are best studied with microscopy.
F.Y.B.Sc.	ZO123	Zoology Practical Paper	CO1	The students will be able to understand the Animal diversity around us.
			CO2	The students will be able to classify animals correctly by using the six levels of classification.
			CO3	The students will be able to understand the dissimilarities and similarities in the many aspects of classification.
			CO4	Learn the evolution, hierarchy and classification of different classes of chordates
			CO5	Get an overview of the morphology and physiology of typical examples.
			CO6	The learner will be able to recognise the possible group of the invertebrate and vertebrates observed in surroundings and understand our role as a caretaker and promoter of life.
			CO7	The learner will understand the significance of cell as a structural and functional unit of life.
			CO8	The students will be able to understand application of cytological techniques in the field of cell biology
			CO9	The student will be able to understand cell cycle and cell division with the help of microscopy.
SEMESTERIII				
S.Y.B.Sc.	ZO-231	Animal Diversity III	CO1	The students will be able to understand, classify and identify the diversity of higher vertebrates.
			CO2	The students will able to understand the complexity of higher vertebrates
			CO3	The students will be able to understand different life functions of higher

				vertebrates.
			CO4	The students will be able to understand the linkage among different groups of higher vertebrates.
			CO5	The student will become aware regarding his role and responsibility towards nature as a protector, to understand his role as a trustee and conservator of life which he has achieved by learning, observing and understanding life.
S.Y.B.Sc.	ZO-232	Applied Zoology I	CO1	The learner understands the biology, varieties of silkworms and the basic techniques of silk production.
			CO2	The learner understands the types of agricultural pests, Major insect pests of agricultural importance and Pest control practices.
S.Y.B.Sc.	ZO-233	Zoology Practical Paper	CO1	The students will be able to identify and classify the lower vertebrate animal group
			CO2	The students will be able to explain structure of different types of scales and tails in fishes.
			CO3	The students will be able to demonstrate the architecture of digestive system and brain of local fishes.
			CO4	The students will be able to know the keys of identification of local fishes.
			CO5	The students will be able to learn the technique of temporary slide preparation of fish scale.
			CO6	The students will be able to make field visit report on diversity of pond ecosystem on the basis of their real experience.
			CO7	The students will be able to understand the biology of honeybees and application of various tools/equipment in management of Apiary
			CO8	The students will be able to understand the biology of Silk moth and application of various tools/equipment used in sericulture.
			CO9	The students will be able to explain the marks of identification, nature of damage, economic importance and control measures of various agricultural, stored grain and non-insect pests.
			CO10	The students will be able to understand the structure and functioning of pest control

				appliances
			CO11	The students will be able to make field visit report on Sericulture/Agricultural farm on the basis of their real experience.
SEMESTER IV				
S.Y.B.Sc.	ZO-241	Animal Diversity IV	CO1	The students will be able to understand, classify and identify the diversity of higher vertebrates.
			CO2	The students will able to understand the complexity of higher vertebrates
			CO3	The students will be able to understand different life functions of higher vertebrates.
			CO4	The students will be able to understand the linkage among different groups of higher vertebrates.
S.Y.B.Sc.	ZO-242	Applied Zoology II	CO1	The learner understands the basics about beekeeping tools, equipment, and managing beehives.
			CO2	The learner understands the basic information about fishery, cultural and harvesting methods of fishes and fish preservation techniques.
S.Y.B.Sc.	ZO-243	Zoology Practical Paper	CO1	The students will be able to identify and classify the higher vertebrate animal group
			CO2	The students will be able to distinguish between poisonous and non-poisonous snakes on the basis of structural differences.
			CO3	The students will be able to understand the evolutionary basis of beak and feet modification in birds.
			CO4	The students will be able to explain the structure of Digestive System, Heart and Brain of Rat.
			CO5	The students will be able to document the Avian and Reptilian diversity around their vicinity.
			CO6	The students will be able to document a report on their own experience of an animal biodiversity spot.
			CO7	The students will be able to explain the biology of honeybee, tools and techniques of beekeeping and Management of Bee Colony.
			CO8	Students will be able to elaborate the identification, classification, habit, habitat

				and economic importance of various fishes and aquatic animals.
			CO9	Students will be able to understand the techniques to maintain Aquarium.
			CO10	Students will be able to explain structure and application of various fishing crafts and gears used in Indian fisheries.
			CO11	Students will be to estimate total protein from fish muscle sample.
			CO12	The students will be able to make field visit report on Apiculture/Fish industry on the basis of their real experience.
SEMESTER V				
T.Y.B.Sc.	ZO-351	Pest Management	CO1	Define pest management.
			CO2	Describe the economic, ecological, and sociological benefits of IPM.
			CO3	Distinguish positive and negative impacts of pesticide use.
			CO4	Understand problems resulting from misuse, overuse, and abuse of chemical pesticides.
			CO5	Define and describe pesticide resistance and how it develops.
			CO6	Identify ecological and biological characteristics important in development of pest populations.
			CO7	Identify 10 tactics commonly used in IPM and be able to distinguish them.
			CO8	Understand society's role in IPM decisions.
			CO9	Describe different groups of pests and compare them to weeds and plant pathogens.
			CO10	Analyse and compare management tactics to determine the best approach to reducing pest populations, weeds, and disease presence.
			CO11	Locate appropriate, scientifically valid sources of information on specific tactics to manage insect pests, weeds, and diseases.
			CO12	Know and how to develop an IPM program.
T.Y.B.Sc.	ZO-352	Histology	CO1	The students will be able to understand, classify and identify the different types of

				tissue.
			CO2	The students will understand the complexity of various tissues in an organ.
			CO3	The students will be able to learn structure & functions of various tissues.
			CO4	The students will understand the various diseases related to organs.
			CO5	The student will be able to know the role of glands in mammals.
T.Y.B.Sc.	ZO-353	Biological Chemistry	CO1	Learners shall be able to understand basic concepts and significance of biochemistry
			CO2	The students will learn about the pH and Buffers.
			CO3	The students will learn about the chemical structures of carbohydrate, and their biological and clinical significance.
			CO4	The students will be able to understand, interpret structure and importance of proteins, carbohydrates and lipids
			CO5	Learners will be able to comprehend variations in enzyme activity and kinetics.
T.Y.B.Sc.	ZO-354	Genetics	CO1	To understand the Mendel's principles of inheritance & exception to Mendel's principles of inheritance
			CO2	The students will be able to understand the causes of mutations & mutagenic agents
			CO3	Describe how a change in genetic material influences function
			CO4	Explain the principles of Population genetics.
			CO5	The students will be able to understand the methods of sex determination in different organism
			CO6	Relate population genetics to evolution
			CO7	Articulate the importance of genetics to societal, medical, and personal issues
T.Y.B.Sc.	ZO-355	Developmental Biology	CO1	Define the terms in developmental biology
			CO2	Explain the various theories of developmental biology
			CO3	Explain the types of eggs, concept of fertilization, cleavage pattern and gastrulation.
			CO4	Explain the concept of growth and differentiation.
			CO5	Compare and contrast between the spermatogenesis and oogenesis.
			CO6	Identify and describe the various

				developmental stages of chick embryo
T.Y.B.Sc.	ZO-356	Parasitology	CO1	The students will be able to learn about basics and scope of parasitology.
			CO2	The students will be able to learn the types of host and parasite with examples.
			CO3	The students will be able to learn about the morphology, life cycle, pathogenicity and treatment of common parasites (Protists and Platyhelminthes).
			CO4	The students will be able to learn about host -parasite relationships and their effects on host body.
			CO5	The students will be able to learn about the arthropod parasites and their role as vector.
T.Y.B.Sc.	ZO-3510	Aquarium Management	CO1	The students will be able to identify both exotic and endemic aquarium fishes.
			CO2	The students will be able to identify the equipment and protocols of aquarium keeping
			CO3	The students will be able to understand the biology of aquarium fishes.
			CO4	The students will be able to set up and maintain freshwater aquarium
			CO5	The students will be able to maintain proper water quality of fresh water aquariums
			CO6	The students will be able to follow biosecurity protocols and ensure safety, hygiene in marine and freshwater aquariums.
			CO7	The students will be able to learn about feeding, breeding, transportation and preservation methods of aquarium fshes.
T.Y.B.Sc.	ZO-3511	Poultry Management	CO1	The students will be able to understand the Poultry farming practices.
			CO2	The students will able to understand the poultry breeding techniques.
			CO3	The students will be able to understand poultry rearing techniques.
			CO4	The students will be able to understand feeding requirement and food ingredients.
			CO5	The students will be able to understand the

				poultry disease and their pathogens.
			CO6	The students will be able to understand market value of poultry products.
T.Y.B.Sc	ZO-357	Zoology Practical Paper – I	CO1	Understand the basic tools and techniques useful for pest management.
			CO2	Characterize the major components of pest management strategies and compare their relative merits for different pests and crops.
			CO3	Understand the life cycle stages of important insect pests and able to think the possible ways to control the population of harmful insect pest.
			CO4	Understand the histological architecture of various organs with the help of permanent slides through the microscopic examinations.
			CO5	Learn to prepare the histological mountings of tissues with the help of temporary mounting of tissues techniques.
T.Y.B.Sc	ZO-358	Zoology Practical Paper – II	CO1	The students will be understand about the pH and Buffers.
			CO2	The students will be able to detect the different carbohydrates with the help of appropriate tests.
			CO3	The learners will be able to understand the variations in enzyme activity and kinetics.
			CO4	The students will be able to learn Preparation of Acid, Alkali & it's standardisation.
			CO5	Develop skill in simple biochemical laboratory procedures.
			CO6	The students will be able to understand basic Mendelian genetics.
			CO7 CO8	The students will be able to understand about the genetics behind the blood groupings system, karyotyping of chromosomes, chromosomal mutations and genetic disorders.
T.Y.B.Sc	ZO-359	Zoology Practical Paper – III	CO1	Familiar with various stages involved in the developing embryo
			CO2	Apply the knowledge to collect various Biological data
			CO3	Understand the initial development al procedures involved in Amphioxus, frog and chick.

			CO4	Familiarise with the principle of developmental biology.
			CO5	Identify the different types of parasites.
			CO6	Classify each parasite.
			CO7	Describe the structure of each parasite.
			CO8	Explain the parasites' life cycles.
			CO9	Discuss the relationship between each parasite and its host.
			CO10	Assess the reasons of infection with parasites.
			CO11	Conduct procedures related to isolation and identification of some parasites.
			CO12	Report the best identification method for parasites causing some diseases.
SEMESTER VI				
T.Y.B.Sc.	ZO-361	Medical & Forensic Zoology	CO1	The students will be able to understand the basics principles of Medical and Forensic Zoology.
			CO2	The students will able to understand scientific methods in crime detection.
			CO3	The students will be able to understand the advancements in the field of Medical and Forensic Zoology.
			CO4	The students will be able to understand modern tools, techniques and skills in forensic investigations.
			CO5	The students will be able to describe the fundamental principles and functions of forensic science and its significance to human society.
T.Y.B.Sc.	ZO-362	Animal Physiology	CO1	The students will be able to describe the various physiological organ-systems and their importance to the integrative functions of the human body.
			CO2	The students will be able to understand Concept of energy requirements
			CO3	The students will be able to explain various aspects of Digestive physiology.
			CO4	The students will be able to describe circulatory system and identify the medical conditions
			CO5	The students will be able to understand Respiratory mechanism and gases transport.
			CO6	The students will be able to understand the mechanism of eliminations of waste

				materials from the body.
			CO7	The students will be able to explain the structure and functions of muscles
			CO8	The students will be able understand formation of gametes and function of endocrine glands.
T.Y.B.Sc.	ZO-363	Molecular Biology	CO1	Learner shall get an insight into molecular mechanisms of various biological processes in cells and organisms
			CO2	Learner shall get an insight into the Structure of DNA and RNA, DNA and RNA as genetic material
			CO3	The course shall prepare learner to get insight into the Central Dogma of Molecular Biology
			CO4	Learner shall also understand the concept of gene regulation
			CO5	Learner shall get an insight into the DNA Damage and Repair
T.Y.B.Sc.	ZO-364	Entomology	CO1	Students will understand basic concepts in Entomology and its scope.
			CO2	Students will learn morphology and anatomy of Insects.
			CO3	Students will understand the concept of social organization in Insects.
			CO4	Students will understand the development process of Insects.
			CO5	Students will identify disease causing insect vectors.
			CO6	Students will be able to design and implement pest controlling methods against pests.
T.Y.B.Sc.	ZO-365	Techniques in Biology	CO1	Students will be able to explain the importance and applications of techniques in biology
			CO2	Students will be able to explain the principle and applications of various microscopic techniques.
			CO3	Students will be able to explain the principle, working, materials used and applications of microtomy, haematological and immunological techniques,
			CO4	Students will be able to compare and contrast between different types of PCR
			CO5	Students will be able to describe DNA

				barcoding
			CO6	Students will be able to apply various methods and biodiversity indices for biodiversity assessment
			CO7	Students will be able to able to used various digital instruments and software's for image capturing and processing
T.Y.B.Sc.	ZO-366	Evolutionary Biology	CO1	Students will be able to learn most of the essential aspects of Evolutionary Biology in detail which will help them in acquiring better understanding regarding the subject.
			CO2	Students will be able to explain important processes, principles and concepts and critically evaluate theories and empirical research within evolutionary biology
			CO3	Students will be able to apply evolutionary theory and concepts to address empirical and theoretical questions in evolutionary biology.
			CO4	Students will be able to investigate evolutionary questions using literature and analyses of empirical data independently.
			CO5	Students will be able to communicate the principles, theories, problems and research results associated with questions that lie within the evolutionary framework to students
T.Y.B.Sc.	ZO-3610	Environmental Impact Assessment	CO1	Students will be able to understand terminologies associated with environment.
			CO2	Students will be able to describe the types and impact of various pollutions on environment.
			CO3	Students will be able to understand the concept of sustainable development.
			CO4	Students will be able to understand the various Environment Protection Acts
			CO5	Students will be able to examine a range of environmental impact assessments.
			CO6	Students will be able to identify and explore impact assessment fields and approaches
			CO7	To provide students with the knowledge and professional skills necessary to enable them to undertake environmental impact

				assessment.
T.Y.B.Sc.	ZO-3611	Project	CO1	Students will be able to understand the fundamentals of research.
			CO2	Students will be able to understand the process and flow of research.
			CO3	Students will be able to design the experiment to address the particular problem or hypothesis.
			CO4	Students will be able to identify, analyse and solve the societal and environmental problems by applying the previous knowledge.
			CO5	Students will be able to develop scientific approach to solve social and environmental issues.
T.Y.B.Sc.	ZO 367	Zoology Practical Paper I	CO1	Students will be able to carry out physico-chemical analysis of urine sample
			CO2	Students will be able to estimate the urea, uric acid and calcium level in blood serum
			CO3	Students will be able to understand the structural difference among the hairs belonging to various species.
			CO4	Students will be able to prepare slides of scale pattern of human hair.
			CO5	Students will be able to prepare a report on the functionality of Forensic Laboratory.
			CO6	Students will be able to identify and differentiate various types of Finger prints
			CO7	Students will be able to make of report of determination of time of death on the basis of insect development in dead body.
			CO8	Students will be able to perform the experiments related to hematological parameters.
			CO9	Students will be able to measure blood glucose level.
			CO10	Students will be able to understand the causes and symptoms of endocrine disorders.
			CO11	Students will be able to detect nitrogenous waste in sample.
			CO12	Students will be able to make kymograph & respirogram

T.Y.B.Sc.	ZO 368	Zoology Practical Paper II	CO1	Students will be able to understand the standards of lab safety and precautions
			CO2	Students will be able to detect, isolate, quantify the nucleic acid
			CO3	Students will be able to understand the principle, working and application of Spectrophotometer and PCR
			CO4	Students will be able to illustrate external morphology of insects and peculiarity of their different parts.
			CO5	Students will be able to explain digestive and reproductive system of local insects.
			CO6	Students will be able to elaborate social organization of termite.
			CO7	Students will be able to illustrate developmental stages of insects.
			CO8	Students will be able to explain pathogenicity of various insect vectors.
			CO9	Students will be able to preserve insects and their body parts of insects and permanent mounting of it.
			CO9	Students will be able to experience wildlife management practices and their significance through a visit to Wildlife sanctuary or National Park.
T.Y.B.Sc.	ZO 369	Zoology Practical Paper III	CO1	Students will be able to understand principle, working and application of different types of microscopes.
			CO2	Students will be able understand the tools and techniques of tissue fixation and microtomy.
			CO3	Students will be able to map the biodiversity around their vicinity.
			CO4	Students will be able to capture animal photograph for scientific documentation.
			CO5	Students will be able to witness habit habitat of faunal biodiversity at its natural habitat.
			CO6	Students will be able to understand the principle and working of PCR machine and application in DNA barcoding.
			CO7	Students will be able to explain the evolutionary connection between man and ape
			CO8	Students will be able to elaborate

				adaptation in different animal and their evolutionary significance.
			CO9	Students will be able to understand the evidences in favor of common ancestry
			CO10	Students will be able to explain the successive evolutionary stages of man
			CO11	Students will be able to understand pattern of animal distribution across the world with respect to different Zoogeographical Realms.