Programme outcomes/ Course outcomes

B.Sc. Programme (Subject: Zoology)

ProgrammeName:B.Sc. Programme (Subject:Zoology)

Programme Outcomes:

The undergraduate Zoology (Programme) curriculum, which employs the Choice Based Credit system, has been structured in accordance with the UGC model syllabus. The primary goal of this new syllabus is to provide students with a comprehensive understanding of the topic by providing equal weight to the fundamental concepts and methods of Zoology. Adequate attention has been paid to new methodologies and subject understanding, keeping in mind and in tune with the subject's ever-changing nature. 3 years undergraduate course of B.Sc. Programme is composed of 4 papers of Discipline Specific Core Course(DSC) for each semester from 1st to 4th Semester along with 2papers of Ability Enhancement Compulsory Course (AECC)consecutively in 1st and 2nd Semester and2 papers of SkillEnhancement Compulsory Course(SEC) for 3rd and 4th Semester respectively. Finally in 5th and 6th Semester B.Sc. Programme students gather their knowledge from 2 papers on Discipline Specific Elective Course (DSE) for each semester.

The entire Zoology curriculum fosters scientific tempers and attitudes, which can ultimately be advantageous for society as a whole because scientific advancements can cause a country or community to expand quickly. Students will be better prepared to learn about many biological systems, their coordination and control, as well as the evolution, behavior, and biological roles of the animals in the ecosystem, after completing this programme. The programme will also support the use of classical genetics to understand the distribution or inheritance of various traits and diseases across populations, their ethnic makeup and to compare with modern and cutting-edge tools such as genomics and molecular diagnostics.After the course students will define and articulate key concepts in the biological sciences.They will be proficient in the use of biological instruments and laboratory techniques. They will also be able to describe the ecological, economic and health significance of different animals in people's lives. Zoology curriculum used to provoke curiosity and interest among the undergraduate students, so that they can investigate animal diversity and take up wild life photography or wild life exploration as a career option.Procedural knowledge of animal classification gives students professional advantages in teaching, research and taxonomic work in variousgovernment organizations; including Zoological Survey of India andNational parks/ Sanctuaries/ Reserve Forests.

The students will be acquiring basic experimental skills in various techniques in the fields of genetics; molecular biology; biotechnology; qualitative and quantitative microscopy; enzymology and analytical biochemistry. These methodologies will provide an extra edge to our students, who wish to undertake higher studies.

After 3 years UG course on B.Sc. Programme pupils can also look forprofessional job oriented courses, such as Indian Forest Services, Indian Civil Services, Indian Police Services and other Banking and Railway services.
Science graduates can go toserve in Pharmaceuticalindustries, Drug designing Companies or may opt for establishing their own industrial units.Practical and theoretical skills gained in this programme will be helpful indesigning different public health strategies like establishment of Pathological Laboratories, Diagnostic Centres, Physiotherapy Units, Mental Health Awareness Camps for social welfare.

The program has been designed to provide in-depth knowledge of applied subjects ensuring the inculcation of employment skills so that students can make a career and become an entrepreneur in diverse fields.

CourseOutcomes

SEMESTER-I,II,III,IV, V, VI		
CourseCode	**CourseName**	**Course Outcomes**
DSC-1 (Semester-I)	Animal Diversity	Animal diversity provides a boost to the ecosystem's productivity, where each species, no matter how small, has a vital role to play. Students will get idea on diversification of animal world.Students taking the course learn about the diversity of the animal kingdom's vertebrate and invertebrate members. Students who take the course will get an understanding of the global distribution of animals, their evolutionary relationships with one another, and their current state of conservation.

AECC-1 (Semester-I)	Environmental Science	Students will develop a concept regarding environmental awareness and deleterious effects of water pollution, air pollution, soil pollution, noise pollution, heavy metal pollution etc.Students who successfully complete this course will be prepared to participate as policy makers in the areas of environment protection, animal preservation, and wild life conservation.
DSC-2 (Semester-II)	Comparative Anatomy and Developmental Biology of Vertebrates	Comparative anatomy is an important tool that helps determine evolutionary relationships between organisms and whether they share common ancestors or not. Anatomical similarities between organisms support the idea that these organisms evolved from a common ancestor. Students will be able to use the evidence of comparative biology to explain how the theory of evolution offers the only scientific explanation for the unity and diversity of lifeon earth. Units of Developmental Biology of this paper will help the students to understand the development of multicellular organisms from a single cell zygote. Students will be able to appreciate the mechanisms that support growth and development. They will learn interesting and unique post embryonic development that happens in other animals. The ramifications of developmental biology in a variety of domains, including teratogenesis, stem cell biology, in vitro fertilization, cryopreservation, and blood transfusion, will be familiar to them.
AECC-2 (Semester-II)	Comm. English/ MIL	Students will develop their learning aptitude and personality through this course. Spoken English skills will be developed among students. Such paper enhances their collaborative learning and communication skills through discussions in the class group.
DSC-3 (Semester-III)	Physiology and Biochemistry	In physiology, the study of body function, biochemistry has broadened our understanding of how biochemical changes relate to physiological alteration in the body. It helps us understand the chemical aspects of biological processes such as digestion, hormonal action, and muscle contraction-relaxation. This course aids in the students' understanding of the fundamentals of human anatomy and physiology. Pupils are aware of how their bodies work and the chemical changes that occur throughout any activity, such as writing, when their hands and brains work together.They know what the hormones are and how their concentration changes with puberty or some other conditions like menstruation, pregnancy, stress or happy moments. In Biochemistry Units students will be familiar with enzyme, mechanism of action of enzymes; coenzymes, co-factors, Isozymes; kinetics of enzyme catalysed reactions and enzyme inhibitions and regulatory processes. They learn about basic laboratory techniques and equipments used in biochemistry. They will perform qualitative analysis to characterize properties of various biomolecules. This paper also help them to understand carbohydrate, protein and lipid metabolism through various anabolic and catabolic pathways such as glycolysis, gluconeogenesis, Krebs cycle, glycogen metabolism, transamination, deamination, urea cycle, beta and omega oxidation of saturated fatty acids and their regulation.
SEC-1 (Semester-III)	Apiculture	Apiculture is important for the following reasons: Apiculture provides products such as honey and wax that are used commercially. Honeybees are responsible for pollination and thus help in increasing the yield of the several plants.The paper would assist them in launching their own businesses and creating independent income, enabling them to become

		prosperous business owners.
DSC-4 (Semester-IV)	Genetics and Evolutionary Biology	Genetics is the scientific study of genes and heredity—of how certain qualities or traits are passed from parents to offspring as a result of changes in DNA sequence. A gene is a segment of DNA that contains instructions for building one or more molecules that help the body work. This paper explains the interrelationship of DNA, RNA and proteinsynthesis and how these interactions are regulated. It Demonstrates the profound understanding of the process of transcription, including the three major steps of initiation, elongation, and termination and how this process is both similar and different in prokaryotic and eukaryotic organisms. Students will able to understand the characteristics of genetic code, how to interpret the codon table and explain the relationship between codons on mRNA and the amino acids in a polypeptide. The Units of Evolutionary Biology is important because it explains how life developed on Earth and how different species are connected. The evolutionary linkages aid in the addressing of biological challenges, as well as the diversity of life. Drawing upon this knowledge, they will be able to give specific examples of the physiological adaptations, development, reproduction and behavior of different forms of life.Students can predict the practical implication of various evolutionary forces acting on the human population in the field of human health, agriculture and wildlife conservation.
SEC-2 (Semester-IV)	Sericulture	Sericulture is a very important agro-based rural industry increasing rapidly in India, which has the potential to generate high income for small and marginal farmers. And it will keep on increasing to offer better employment to labours. This paper would help them in starting their own ventures and generating self-employment making them successful entrepreneurs.
DSE-1 (Semester-V)	Applied Zoology	In this paper students will understand concepts of fisheries, fishing tools and site selection, Aqua culture systems, induced breeding techniques, post harvesting tecniques. This paper also provides the knowledge about Epidemiology of Diseases like Tuberculosis, typhoid etc.along with life history and pathogenicity of *Entamoeba histolytica*, *Plasmodium vivax*. Applied Zoology includes the Insects of Medical importance such as *Anopheles*, *Aedes*, *Xenopsylla* and the Insects of Economic importance like *Helicoverpa*, *Papilio*, *Heloveltis*, *Sitophilus* and *Tribolium*. Principles of poultry breeding, Management of breeding stock and broilers and concept of artificial insemination in cattle also taught in this paper.Student gains knowledge regarding vector born diseases their pathology, control measures, thus aiming at 'Swach and Swasth Bharat'. Students feel confident in teaching Medical Entomology as well as executing research projects.
DSE-2 (Semester-VI)	Immunology	The immune system protects us from infection through various lines of defence. If the immune system is not functioning as it should, it can result in disease, such as autoimmunity, allergy and cancer.Students will be able to understand different types of immunity and interactions of antigens, antibodies, complements and other immune components and immune mechanisms in disease control along with vaccination. pupils will get the concept about MHC molecules, cytokines, hyper sensitivity reactions and cellular mode of immunity development. They can understand the immune diffusion technique and ELISA.