

Program Outcomes:

Bachelor of Science (BSc) offers theoretical as well as practical knowledge about different subject areas. These subject areas include Physics, Chemistry, Botany, Zoology, Mathematics and Statistics, Electronics and Computer Sciences, depending on the specialization a student opts. This Programme course is most beneficial for students who have a strong interest and background in Science and Mathematics. The course is also beneficial for students who wish to pursue multi and inter-disciplinary science careers in future.

Following are the various Programme outcomes:

PO1. This course forms the basis of science and comprises of the subjects like physics, chemistry, biology, zoology and mathematics. It helps to

PO2. Develop scientific temper and thus can prove to be more beneficial for the society as the scientific developments can make a nation or society to grow at a rapid pace.

PO3. Understand the basic concepts, fundamental principles, and the scientific theories related to various scientific phenomena and their relevancies in the day-to-day life and get self-employment in the fields like Goat farming, pathological laboratories, organic manure preparation, the horticultural plant production, cultivation of crops in poly-house condition, plant tissue, culture laboratories etc. Science graduates can go to serve in industries or may opt for establishing their own industrial unit.

PO4. Acquire the skills in handling scientific instruments, planning and performing in laboratory experiments

PO5. Think creatively (divergently and convergent) in explaining facts and figures or providing new solution to the problems.

PO6. Imbibe ethical, moral and social values in personal and social life leading to highly cultured and civilized personality as well as develop various communication skills such as reading, listening, speaking, etc., which we will help in expressing ideas and views clearly and effectively

PO7. After the completion of this course students have the option to go for higher studies i.e. M. Sc. and then do some research for the welfare of mankind and can even look for professional job oriented courses. After higher studies students can join as

scientist. This course also offers opportunities for serving in Indian Army, Indian Navy, Indian Air Force as officers.

Programme Specific Outcomes

ZOOLOGY

PS1. Students could understand the functional anatomy, taxonomy and geographical distribution of chordates and Non-Chordates.

PS2. Students achieve knowledge and skill in the fundamentals of animal sciences and understand the complex interactions among various living organisms.

PS3. Students could comprehend Biostatistics, Bioinformatics and Medical Zoology, Molecular Biology, Biotechnology and Bio techniques, Endocrinology, Environmental Biology & Toxicology, Comparative anatomy of vertebrates, developmental biology, Physiology & Applied Zoology.

PS4. Student can get knowledge of physiology i.e mechanism of digestion, respiration, circulation, excretion, nervous system. They use their knowledge in pathological laboratories and clinics like ESR and Blood cell count.

PS5. Student can build own small scale business in poultry farming, goat farming, fisheries, dairy, and in sericulture by acquiring knowledge of applied zoology.

PS6. Understanding of environmental conservation processes, importance, pollution control, biodiversity and protection of endangered species.

PS7. Understand the basic concept, fundamental principles and the scientific theories related to various scientific phenomenon and their relevancies in the day today life.

PS8. Acquire the skills in handling scientific instruments, planning and performing in laboratory experiments.

PS9. Develop the scientific attitude which makes the students open minded, critical observation, curiosity thing about biotechnical methods.

PS10. Acquire the comprehension about pathogen, pathogenicity vector and human diseases and study of antibiotics.

PS11. Student will gain knowledge about anatomical, histological, physiological concept, feature study of male and female reproductive system and fertilization in rat and human.

PS12. Understand about reproductive Health and infertility in male and female and its causes, diagnosis and management modern contraceptive technologies.

PS13. Students will develop the compassion towards and adore animals and contributes the knowledge for nation building.

COURSE OUTCOMES

Zoology Paper- IX

DSE-E29 (COMPARATIVE ANATOMY OF VERTEBRATES)

Comparative anatomy is an important tool that helps to determine evolutionary relationships between organisms. Early evolutionary scientists like Buffon and Lamarck used comparative anatomy to determine relationships between species. Organisms with similar structures, they argued, must have acquired these traits from a common ancestor.

CO1. Analyze the relationships among animals.

CO2. Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment

CO3. identify the anatomical features that distinguish vertebrates from invertebrate system.

CO4. Compare and contrast the anatomical systems of different vertebrate and identify common traits across species or group.

CO5. Recognize the vertebrates structural principles by studying all body systems of vertebrates in an evolutionary context.

Zoology Paper- X

DSE-F29 (Molecular Cell Biology and Animal Biotechnology)

CO1. To make student aware of Biotechnology.

CO2. To provide practical experiences which form a part of their learning process like Bio-technique, Electrophoresis, HPLC, TLC, DNA Isolation.

CO3. To understand about genetic material nucleic acid and Replication of DNA, DNA damage and repair mechanism.

CO4. To improve knowledge about Regulation of gene expression.

CO5. To understand the concept about Genetic code and character and Codon assignment.

CO6. To understand the process of protein synthesis. To study various type of RNA and process of Transcription and Translation.

CO7.To define laboratory bio-techniques and applications.

Zoology Paper- XI

DSE-F30 (Biotechniques and Biostatistics)

CO1.Biological studies needs some equipments for it analysis of different functions. In this topic students may understand about the qualitative and quantitative results.

CO2. To understand various methods of determination analysis of different parameters.

CO3. Biostatistics methods are useful for students in Research to analysis the data (whenever they working for project) in project study.

Zoology Paper- XII

DSE-F31 (AQUATIC BIOLOGY)

CO1.To understand the Concept on the environment, aquaculture, and fisheries.

CO2.To Understand the different forms of aquaculture and fisheries , aquatic biomes

CO3.To understand effect of physicochemical parameters on aquatic biology.

CO4.To understand the major endocrine hormones: origin, structure, regulation of synthesis, mode of actions, physiological functions, abnormalities. aquatic biology.

Zoology Paper- XIII

DSE-E30 (DEVELOPMENTAL BIOLOGY OF VERTEBRATES)

Developmental biology is the study of the process by which organisms grow and develop. Modern developmental biology studies the genetic control of cell growth, differentiation and "morphogenesis," which is the process that gives rise to tissues, organs and anatomy. The students will be able

CO1.To understand the complex evolutionary processes and behavior of animals.

CO2. To understand the process of development of chick embryo.

CO3.Students gain knowledge about organogenesis of selected organs, development of extra embryonic membrane and the nature and physiology of placenta.

CO4.To know inducer and inductor role in embryogenesis and knowledge about metamorphosis and the process of regeneration.

CO5.To do Preparation, direct observation and appreciation of sperm motility and different stages of chick embryo development and placentation of animals.

Zoology Paper- XIV

DSE-E32 (IMMUNOLOGY)

CO1.To obtain the knowledge of the mammalian Cells and Organs of the immune system

CO2. To understand the evolution of immune mechanisms and Principles of innate and adaptive immune system.

CO3.To analyze and inculcate the fundamental knowledge on immune system and immunological responses to antigens.

CO4. Understand the immune mechanisms in disease control, vaccination, process of immune interactions.

Zoology Paper- XV

DSE-E31 (Applied Zoology - II)

The study of this paper will

CO1.Understand the fundamentals of animal sciences, understands the complex interactions among various living organisms.

CO2.Understand the ethical principles and commit to professional ethics and responsibilities in delivering his duties.

CO3.Understandthe applied Zoology to one's own life and work.

Zoology Paper- XVI

DSE-F32 (Insect Vectors and Histology)

The student will be able to

CO1.Understand ofInsect vector host interactions of many important diseaseslike Malaria, Filaria, Dengue and environmental methods for vector control, biological control and other Insect bites.

CO2. Understand of denudation of forests its results in increased human vector contactwhich have become almost irreversible.

CO3.Students gain knowledge about the concepts of overview of Entomology.

CO4. To identify the basic structure of Tooth, tongue, Salivary glands, Stomach, Duodenum, Ileum, Liver, Pancreas, Kidney, cells, tissues and organs and describe their contribution to normal function.

B.SC. II ZOOLOGY COURSE OUTCOMES

Paper V - ANIMAL DIVERSITY-II

- CO1. Biodiversity boosts ecosystem productivity where, every species plays an important role.
- CO2. Student learning about animal attributes similarities, differences, and environments.
- CO3. Understood the animal classification system characterizes animals based on their anatomy, morphology, and evolutionary history, features of embryological development, geographical distribution and genetic composition of the animal kingdom (Agnatha, Pices, Amphibia, Reptile, Aves and Mammals).
- CO4. Understood the various systems like digestive system, mechanism of respiration, circulatory system and parental care in Phylum Vertebrata.
- CO5. Understood the differentiate venomous and non-venomous snakes and biting mechanism in snakes.
- CO6. This classification scheme is constantly developing as new information about species arises. Understanding and classifying the great variety of living species help us better understand how to conserve the diversity of life on earth.

Paper VI - BIOCHEMISTRY

- CO1. Understood the detailed concepts of structure and types of DNA and RNA, Carbohydrate, Protein and Lipid metabolism.
- CO2. Understood about interactions and interdependence of physiological and biochemical processes.
- CO3. Understood the study of enzyme classification and nomenclature, Mechanism of action, Enzyme Kinetics, Inhibition and Regulation, Isoenzymes, Co-enzymes and Co-factors.
- CO4. Understood the physiological and biochemical understanding through scientific enquiry into the nature of mechanical, physical, and biochemical functions of humans, their organs, and the cells of which they are composed.

Paper VII- REPRODUCTIVE BIOLOGY

- CO1. Student acquired knowledge about anatomical, histological, physiological concept, feature study of male and female reproductive system and fertilization in rat and human.
- CO2. Understood about reproductive health and infertility in male and female and its causes, diagnosis and management modern contraceptive technologies.

Paper-VIII-APPLIED ZOOLOGY

CO1. Understood the fundamentals of animal sciences, understands the complex interactions among various living organisms.

CO2. Understood the ethical principles and commit to professional ethics and responsibilities in delivering his duties.

CO3. Understood the applied Zoology to one's own life and work.

B.SC. I ZOOLOGY

COURSE OUTCOMES

Paper I: ANIMAL DIVERSITY-I

CO1. Understood the general characters of kingdom protista and its locomotory organelles and locomotion in protozoa.

CO2. Understood the general characters and classify up to classes of phylum Porifera with canal system.

CO3. Understood the general characters and classify up to classes of Phylum Cnidaria and its Polymorphism in hydrozoa.

CO4. Understood the general characters and classify up to classes of phylum platyhelminthes with their life history and its parasitic adaptation.

CO5. Understood the general characters of phylum Annelida with metamerism.

CO6. Understood the general characters of phylum Arthropoda and metamorphosis, vision of insects.

Paper II: ANIMAL PHYSIOLOGY

CO1. Students gain fundamental knowledge of animal physiology.

CO2. Students are taught the detailed concepts of digestion, respiration and excretion the functioning of nerves and muscles.

CO3. Imparts knowledge about various metabolic and physiological mechanisms of the human body.

CO4. To describe the types of Digestion and the process of carbohydrates, protein, lipid digestion

CO5. To describe the structure of mammalian lungs and heart and its functioning

CO6. How are the animals classified on the basis of excretion of nitrogenous waste products

CO7. Understanding of stress physiology and endocrine mechanisms will allow them to control their stress and emotions there by diverting their energy towards the positive nation building activities.

CO8. Students will gain skill to execute the roles of a biology teacher or medical lab technicians with training as they have basic fundamentals.

Paper III: CELL BIOLOGY & EVOLUTIONARY BIOLOGY

CO1. Understood the differences between prokaryotic and Eukaryotic cells.

CO2. Understood the structure and function of different cell and cell organelles.

CO3. Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms, Structural and functional aspects of basic unit of life i.e. cell concepts.

CO4. Understanding the theories of Evolutions like Lamarckism, Darwinism, Neo-Darwinism.

CO5. To study Direct Evidences of Evolution and types of fossils, Incompleteness of fossil record, dating of fossils.

CO6. Understood the causes and role of extinction in evolution.

Paper IV: GENETICS

CO1. Understood the Mendel's work on transmission of traits, Genetic Variation, Molecular basis of Genetic Information and Mendelian and post mendelian inheritance.

CO2. Understood the Multiple alleles w.r.t. ABO, Rh blood groups and coat colour in rabbit, sex linked inheritance, linkage and crossing over.

CO3. Understood the concept behind genetic disorder, chromosomal mutations- various causes associated with humans and identify chromosomal mutations and in borne errors of metabolism.

CO4. Understood the Sex Chromosomal theory of sex determination, Genetic balance theory, Haploidy, Diploidy mechanism, Environmental sex determination, dosage compensation.