DEPARTMENT OF ZOOLOGY LAKHIMPUR GIRLS' COLLEGE

Program Outcomes, Program Specific Outcomes and Course Outcomes for all programs offered by the department.

Program Outcomes

- 1. This program is one of the most fundamental unit of basic sciences studied undergraduate level. this program helps to develop scientific tempers and attitudes, which in turn can prove to be beneficial to the society.
- 2. Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.
- 3. They analyze complex interactions among various Invertebrates and Vertebrates (animals) of different phyla, their distribution and their relationship with the environment.
- 4. They understands the complex evolutionary process and behaviour of animals.
- 5. Apply the knowledge of internal structure of cell, its functions in control of various metabolic (anabolic and catabolic) functions of organism.
- 6. Understanding the environmental conservation process and its importance like pollution control and biodiversity and protection of endangered species.
- 7. They understands about various concepts of genetics and its importance in human health.
- 8. They can apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.
- 9. Gain knowledge of Agro based small scale industries like, pig farming, fish farming (pisciculture) sericulture Bee farming, butterfly farming and vermicompost preparation.
- 10. Apply their knowledge and understanding of zoology to one's own life and work.
- 11. After completion of this course, they have the option to go for higher studies like M.Sc / Integrated M.Sc., PhD and then do research work for the welfare of mankind.
- 12. Develops empathy and love towards animals.

Program Specific Outcomes

- 1. Students enrolled in B.Sc. (Hons) degree programme in zoology will study and acquire complete knowledge of disciplinary as well as allied biological sciences.
- 2. They understand the nature and basic concepts of Cell biology, genetics, taxonomy, physiology, ecology, evolution biostatistics, animal behaviour, biochemistry and applied zoology.
- 3. They analyze the relationship between animals, plants and microbes.
- 4. They perform procedures as per laboratory standards in the area of ecology, genetics, cell biology, taxonomy, physiology, applied zoology, clinical science, tools and techniques of zoology, nanotechnology, sericulture, biochemistry, pisciculture etc.
- 5. Understand the applications of biological sciences in apiculture, aquaculture, agriculture and medicine.
- 6. Gains knowledge about research methodologies, effective communications and skills of problem solving methods.

- 7. These are numerous career opportunities for students completing their B.Sc. in Zoology in Public and Private sector. they may find jobs as Animal behaviorist, wildlife priologist, zoo curator, wildlife educator, zoology faculty, forensic experts, lab technicians etc.
- 8. They contribute the knowledge for nation building.

Course Outcomes

Course	Outcomes
NON-CHORDATES I: PROTISTS TO	Students will have learning about the basic taxonomy and systematics and classification of Protozoa, Porifera, Cnidaria and Helminth groups.
PSEUDOCOELOMATES	They also will acquire knowledge about the biology of these taxonomic categories as well as about some acoelomate plus pseudocoelomate parasites for their life cycles, epidemiology, pathology, diagnosis, symptoms and treatments. They will also have knowledge about the basics of parasitology such as origin and evolution of parasitism, role of vectors, parasitoids, host-parasite interactions etc.
PRINCIPALES OF ECOLOGY	Students will be understanding the various features and aspects of population ecology, community ecology and ecosystem ecology. They might have the knowledge about environmental biology in details. They will acquire knowledge about various tools and techniques of field ecology.
NON-CHORDATES II: COELOMATES	Students will be learning about classification of coelomate invertebrates and the structure, function plus biology of these taxonomic categories as well. They will understand about different vector born diseases and the related life cycles, epidemiology, pathology, ,diagnosis, symptoms and treatments. They will also know the basics of sericulture, apiculture and lac culture
CELL BIOLOGY	Students will understand the structures, positions and functions of plasma membrane and all cellular organelles in details. They will acquire knowledge about chromosomes and cell divisions, both mitosis and meiosis. They will also know about cell signalling and cancers. They will know how to measure and stain different cell types.
DIVERSITY CHORDATES	Students will understand the classification, structure, function and biology of chordates of different taxonomic classes. They will also learn some special topics like zoogeography, metamorphosis, snake bites, migration of birds, parental care of amphibian, echolocation of mammals, poultry managements and different breeds of domestic animals.
PHYSIOLOGY: CONTROLLING AND COORDINATING SYSTEMS	Students will learn about basics of histology and tissue staining. They will also understand the physiology of muscles, nerves, reproductive systems and bone. They will learn details of endocrinology with classification of hormones, their biosynthesis, receptors, mode of molecular actions, physiological function, feedback controls and related disorders.
FUNDAMENTALS OF BIOCHEMISTRY	Students will understand the basic and fundamental carbohydrates, proteins, lipids and nucleic acids. They will understand the nature, mechanism, and kinetics of enzyme action. Some instrumentation such

	as microscopy chromatograph electrophoresis, centrifugation, spectrophotometry etc will also be learnt.
COMPARATIVE ANATOMY OF VERTEBRATES	Students will have understood the structures of different systems as, integumentary skeletal digestive, respiratory circulatory, urinogenital, nervous and sensory organs in comparative way among the vertebrate groups.
PHYSIOLOGY: LIFE SUSTAINING	Students will know the physiology of digestion, respiration, circulation, excretion and adaptation.
BIOCHEMISTRY OF METABOLIC PROCESS	Students will understand the metabolism of carbohydrates, proteins in details. They will also learn about oxidative and redox reactions.
MOLECULAR BIOLOGY	Students will acquire knowledge about replication, transcription, translation, post transcriptional and post translational modifications, gene regulation, DNA repair mechanisms and various molecular tools and techniques like PCR, southern, northern and western blotting, recombinant DNA technology etc. They will also know the various tools and techniques related to bacterial microbiology. Some aspects of applied microbiology and diseases related to microbiology will also be learnt by the students.
PRINCIPLES OF GENETICS	Students will learn the fundamental genetics like Mendelian and Non Mendelian inheritances, linkages, mutations, sex determination of various animals, extrachromosomal inheritances, transposable genetic elements etc. They will also understand the various aspects of biostatistics such as central tendency, t-test, chi-square, ANOVA, correlations and regression.
DEVELOPMENTAL BIOLOGY	Students will learn the different aspects of early, late and post embryonic developments. They will have the knowledge about implications of developmental biology in various fields, such as in teratogenesis, stem cell biology, in vitro fertilization, cryopreservation, cord blood transfusion etc.
EVOLUTIONARY BIOLOGY	Students will know about population genetics, human evolution, various concepts about origin of species, extinctions, phylogenetic tree making. They will also understand few basic of bioinformatics.
ANIMAL BEHAVIOUR AND CHRONOBIOLOGY	Students will know in details about patterns of behaviours, survival strategies, social and cooperative behaviours, design of signals and chronobiology. They will also know to construct ethograms.
IMMUNOLOGY	Students will develop knowledge about structures and function of immune cells, immunoglobulins, antigens and their interactions with antibodies. They will know about MHC molecules, cytokines, hyper sensitivity reactions and cellular mode of immunity development. They will know the immune diffusion technique and ELISA.
FISH AND FISHERIES	Students will learn details about taxonomy and biology of fishes aswell as various aquaculture techniques in details.
BIOLOGY OF INSECTS	Students imparts knowledge beneficial and non beneficial insects & knowledge of how they interact with their environment, other species and humans. They know about classification of insects and role of insects in spread of disease.

PARASITOLOGY	They imparts knowledge about parasite, vectors of the diseases and
	their relationship. how parasite completed their life cycle and parasite
	adaptations developed in different types of parasite.
ANIMAL DIVERSITY	Describe general texonomic rules or classifications. They impart
	conceptual knowledge of investments and vertebrates, their
	adaptations and associations in relation to their environment.
INSECT VECTORS	Students imparts knowledge beneficial and non beneficial insects &
AND DISEASES	knowledge of how they interact with their environment, other species
	and humans. They know about classification of insects and role of
	insects in spread of disease.
ENVIRONMENT AND	Impart knowledge to the students regarding environment and
PUBLIC HEALTH	conservation of it, all types of ecosystem, climate change. They impart
	knowledge about waste management technologies, pollution and
	diseases.