SITANANDA COLLEGE, NANDIGRAM

Department of Zoology

Criterion 1.3.

Programme Specific Outcomes (PSOs) and Course Outcomes (COs) of Zoology (Part of B.Sc. Program, offered in combination with other subjects)

After completion of this programme, the students would be able to:

1. Know about the core fundamentals of basic biological sciences.
2. Biological application in various fields of everyday life.
3. Demonstrate, solve and an understanding of interdisciplinary concepts of science.
4. Analyze any data in a scientific manner, interpret the data and come to a logical conclusion.
5. Apply the acquired knowledge for community welfare.
6. Put in ethical principles and commit to professional ethics and responsibilities.
7. Practice sustainable development of environment.
8. Acquired knowledge for handling scientific instruments, planning and performing in laboratory experiments.
9. Take higher studies i.e. M. Sc and then do some research for the welfare of mankind.
10. Look for professional job-oriented courses, Fisheries, Sericulture, Forestry, Microbiology, Marine Science, Forensic Science, Limnology, and Teacher and many more.

Programme Specific Outcomes (PSOs) of B.Sc. Zoology

Semester	PSO1
I	Know the taxonomic positions and characteristics, life cycles, and even the parasitic mode of important lower animals.
	Conceptual knowledge of ecology and its important attributes; biodiversity and its conservation and scope tourism sector.
	Comprehensive understanding of water ecosystem, types and their biomes; impact on water quality by different wastes.
II	**PSO2**
	Distinguish the general features and classification of phylums Annelida, Arthropoda, Mollusca and Echinodermata.
	Acquaint with the structure and function of various cell organelles, cell division and cell signalling.
	Understand Environmental hazard and it sources, climatic change and its effect, pollutants, waste management technologies and some common diseases.
III	**PSO3**
	Know the origin of chordate, general descriptions of Pisces, Amphibian, Reptilia, Aves and Mammals.
	Know the types of tissues, physiology of nervous and muscles, reproduction and endocrine system.
	Comprehend the structure and functions of carbohydrates, lipids, proteins, nucleic acid and enzymes.
	Biology of honey bee; their diseases and enemies. Prospect in economy and entrepreneurship.

	Know the physiology of digestion, excitable tissue, respiration, excretion, circulation, endocrine and reproduction.
IV	**PSO4**
	Know the anatomy of vertebrates; integumentary,circulatory,digestive, respiratory.urinogenital and nervous systems; sense organs in vertebrates.
	Conceptual knowledge of the Mechanism involved in digestion,respiration,blood, renal and heart.
	Understand the metabolism of carbohydrates, protein, lipids and protein; mechanisms involved in oxidative phosphorylation.
	Know important diagnostic methods in blood and urine; infectious and noninfectious diseases including tumours .
	Understand the importance of Macro- and micronutrients; deficiencies and their effect on health. Contemporary life-styles, parasitic microorganisms and health.
V	**PSO5**
	Understand the concept of DNA as a genetic material and their behavior.
	Understand Mendelian genetics; Mutation, role of chromosomes in sex determination; recombinant bacteria and viruses.
	Understand the historical evolution of ethology and chronobiology; biological Rhythm and clocks and its effect on animal behavior.
	Know the anatomy of male and female reproduction; Hormones and its role in fertilization and reproductive health.
VI	**PSO6**
	Know the different stages of embryonic development and its implications.
	Understand the theories of evolution of life; population genetics.
	Comprehend the classification, morphology and physiology of fish; Inland fisheries and its sustainable aquaculture.
	Realize the broad concept of immune system; immunoglobulins, types of vaccines.

Course Outcomes (COs) of B. Sc Zoology

Semester	Course	COs	
I	**Core 1 Non-Chordates I**	**CO1**	To describe the general characters, classification and life cycles of selected species from Protozoa, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematoda.
	Core 2 Ecology	**CO2**	To explain the population and its attributes, characteristics of community, structure and functions of ecosystem and concept of biodiversity and wildlife conservation. To perform various physico-chemical experiment.
	GE 1 Animal Cell Biotechnology	**CO3**	Understand basic concepts of recombinant DNA technology and describe the types and uses of DNA manipulation enzymes Use and importance of blotting and DNA fingerprinting
II	**Core 3 Non-chordates II**	**CO4**	To describe the general characters and classification of Annelida, Arthropoda, Mollusca, Echinodermata
	Core 4 Cell Biology	**CO5**	To describe the structure and functions of Endoplasmic Reticulum, Golgi apparatus, Lysosome, Mitochondria, Peroxisomes Cytoskeleton/ Nucleus. To write an account on cell division and cell signalling.
	GE 2 Animal Diversity	**CO6**	Understand the general characters and specialized systems of phylum Protozoa to Chordates and class Pisces to Mammalia.
III	**Core 5 Chordates**	**CO7**	To learn the general characteristics, classification of chordate, pisces, amphibia, reptilian, aves and mammals.
	Core 6 Animal Physiology: Controlling and Coordinating Systems	**CO8**	To explain the structure and functions of various tissues, nervous, muscular, reproductive, and endocrine system.
	Core 7 Fundamentals of Biochemistry	**CO9**	To explain the structure properties and functional significance of carbohydrates, lipids, protein, nucleic acid and enzymes.
	SEC 1	**CO10**	To learn the morphology of honeybee, modern bee hive, various diseases and enemies, products of

	Apiculture		apiculture industry,
	GE 3 **Aquatic Biology**	**CO11**	Able to understand how to measure pH using pH paper and pH meter; estimate dissolved oxygen and carbon dioxide in water samples by understanding basic principles of titration; study various physical and chemical properties of water
IV	**Core 8** **Comparative Anatomy of Vertebrates**	**CO12**	Realize the importance of integumentary, circulatory, digestive, respiratory, urinogenital and nervous systems in vertebrates. Types of sense organs in vertebrates will be broadly understood.
	Core 9 **Animal Physiology: Life Sustaining Systems**	**CO13**	To explain the structure and mechanism of digestion and respiration, circulation, excretion and blood components.
	Core 10 **Biochemistry of Metabolic Processes**	**CO14**	Comprehensive knowledge of the metabolism involved in carbohydrates, protein, lipids and Protein breakdown. Familiarize the mechanisms involved in oxidative phosphorylation
	SEC 2 **Medical Diagnostics**	**CO15**	To distinguish various diagnostic methods in blood and urine analysis; know infectious and noninfectious diseases. Get an extensive impression of tumours and their impact on health.
	GE 4 **Environment and Public Health**	**CO16**	Describe the causes, effects of water-, noise-, air-, thermal and nuclear pollution and study various control measures. Understand the concepts and causes of acid rain, greenhouse effect, ozone depletion leading to global warming, sewage treatment
V	**Core 11** **Molecular Biology**	**CO17**	To describe the process of DNA replication, transcription and translation. Write the post transcriptional modifications and processing of eukaryotic RNA. Explain the regulation in gene and DNA repair mechanism.
	Core 12 **Genetics**	**CO18**	To explain linkage, crossing over and chromosomal mapping. Write the different types of gene mutation. Explain the different types of recombination in bacteria and viruses.
	DSE 1 **Fish and Fisheries**	**CO19**	To write the classification, morphology and physiology of fish and also inland fisheries and its sustainable aquaculture, understand the practice and importance of induced breeding using hypophysation and the new generation drugs, commercial aspects aquaculture with respect to prawn culture

	DSE 2 **Microbiology**	**CO20**	Study of different microbes and their role in spread of disease, control, Culture media preparation, staining of microbes.
VI	**CORE 13** **Development Biology**	**CO21**	To describe the history and different stages of embryonic development and its implications.
	CORE 14 **Evolutionary Biology**	**CO22**	To describe the evolutionary concept, theories, population genetics, products of evolution, origin and evolution of man and its phylogenetic trees.
	DSE 3 **Parasitology**	**CO23**	Introduction of parasitology. Discussion about morphology, life cycle epidemiology, pathogenecity and diagnosis of parasitic- protists, platyhelminthes, nematods, athhropods and vertebrates
	DSE 4 **Biology of Insects**	**CO24**	Learn about insect taxonomy, morphology, physiology of various insects. Discussion on social insects, insect-plant interaction and role of insects as vectors.