Yogoda Satsanga Palpara

Mahavidyalaya

Dept. of Zoology

Programme Outcome (PO):-

Students will be able to:-

- ***To embolden curiosity in the students for Zoology.***
- ***To make conscious amongst students for the basic &applied areas of Zoology.***
- ***To demonstrate and applied the fundamental knowledge of the basic principles of major field of Zoology.***
- ***To apply knowledge to solve the issues related to animal science.***
- ***To take appropriate steps towards conservation of endemic and endangered species.***
- ***To inculcate good laboratory practices in students and to train them about proper handling of lab instruments.***

Programme Specific Outcome (PSO):-

Students will:-

- ***Understand the basic nature and basic concepts of Taxonomy, Ecology, Cell biology, Physiology, Bio-chemistry, Immunology, Development biology, Genetics, Molecular biology, Biotechnology, Applied Zoology.***
- ***Perform procedures as per laboratory standards in the areas of taxonomy, physiology, ecology, cell biology, entomology, nematology, applied zoology, genetics, bio-chemistry, immunology and animal biotechnology.***

- ***Understand the applied biological science or economic zoology such as Sericulture, Apiculture, aquaculture, rDNA technology for their career opportunity.***
- ***Recognized the relationships between structure and functions at different levels of biological organisation like molecular level, cellular level, tissue and organ-system level, genetic level, physiological level, population level, community, ecosystem, landscape and biosphere levels for major groups of animal.***
- ***Drawing upon this knowledge they are able to give specific examples of physiological adaptation, development, reproduction, and behaviour of different forms of life.***
- ***Understand and appreciate the environment & ecological services of life on earth.***
- ***Contributes the knowledge for nation building.***

Course Specific Outcome of Zoology (CSO):-			
Semester	***Paper/Course***	***Name of the paper/course***	***Course outcome***
Semester-I	*CC-1*	*Non chordates I: Protista to pseudocoelomates*	• Understand the basic concept of classification, taxonomy & systematics of different taxa. • Understand the evolution, history of phylum & their phylogenetic relationship. • To study the external as well as internal characters, structure & physiological processes of non chordates. • Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem. • Improve knowledge & awareness about many pathogenic invertebrate parasites and their pathogenesity, treatment measures & prevention. • Enhance the collaborative learning and communication skills through practical sessions, team work, assignments and projects.
	CC-2	*Ecology*	• To know the basic principle of ecology, Autecology, Synecology & biotic-abiotic component of ecosystem. • Learn about population density, despersion, dispersal & survivorship curves. • Learn about geometric exponential and logistic growth curves and equation. • Students gains knowledge about

			statistical methods like measures of central tendencies, probability. • Understand animal community and ecological adaptation in animals. • To know about food chain & food web in ecosystem. • To make the students aware about management and strategies for wildlife conservation.
	GE-1	*Animal cell Biotechnology*	• Use or demonstrate the basic techniques of biotechnology like DNA isolation, PCR, Transformation, restriction digestion etc. • To understand principles of animal cell culture, media preparation. • To emphasize the role of recombinant DNA technology in production of pharmaceuticals like recombinant vaccines, humulin & recombinant hormones. • To learn about modern approaches of bioinformatics. • Improve the ability to demonstrate important recent advance in method and application of biotechnology with regards to microorganisms, plants and animals.
	CC-3	*Non-Chordates II: Coelomates up to Hemichordata*	• Learn about the evolution of coelome and segmentation Of animals. • Understand evolutionary history and relationships of different non chordates through functional and structural affinities. • Critically think about the organization, complexity and characteristic features

Semester-II			of non- chordates. • To develop the practical skill through microscopic study, dissection, project work etc.
	CC-4	*Cell Biology*	• Understand the structure and function of the cell as the fundamentals for understanding the functioning of all living organisms. • To briefly learn about the cellular transport system and cell junction. • To acquire the brief idea of different pathways related to cell signalling. • To emphasise the detail knowledge about cell cycle and its regulation, cancer, apoptosis & necrosis. • To develop the practical skill like squash preparation for study of different cell cycle stages.
	GE-2	*Animal Diversity*	• Understand the diversity among various groups of animal Kingdom. • Scope, importance and management of bio diversity. • Enhance the collaborative learning and communication skills through practical sessions, team work, assignments and projects. • To study the external as well as internal characters, structure & physiological processes of non chordates and chordate animals.
	CC-5	*Chordates*	• To understand the concept of origin of chordates. • Understand different classes of chordates, level of organization and

Semester-III			evolutionary relationship between different subphyla and classes, within and outside the phylum. • Study about diversity in animals making students understand about their distinguishing features. • Appreciate basic concept in life-functions among various groups of animals in phylum chordates, like-biting mechanism of snakes, aerodynamics of birds and echolocation in mammals etc. • To understand the processes of geological distribution of animal species in different realms. • Develop the skill of students to dissect and display of different chordate organs.
	CC-6	*Animal Physiology: Controlling & Coordinating Systems*	• Recognize and explain how all physiological systems work in unison to maintain homeostasis in the body and use of feedback loops to control the same. • Learn an integrative approach to understand the interaction of various organ systems resulting in the complex overall functioning of the body. • End of the course students should be familiar with many physiological processes, hormonal regulation & coordination in several vertebrates' body with special reference of humans. • Know the role of regulatory system viz. endocrine and nervous systems and their amalgamation in maintaining

			various physiological systems. • Students should be learning to prepare permanent slides to study many histological tissues.
	CC-7	*Fundamentals of Biochemistry*	• Understand the molecular basis of life. • Understand the structure and biological significance of carbohydrates, amino acids, Proteins and lipids and their metabolism. • Understand the concept of enzyme, its mechanism of action and regulation. • Understand the roles of nucleic acid and its metabolic pathways along with their regulation. • Know the principals, instrumentation and applications of bio analytical techniques. • To provide a basic understanding of the experimental method and designs that can be used for further study and research.
	SEC-1	*Apiculture*	• To gain knowledge about apiculture. • To provide scientific knowledge of profitable farming. • To equip the students with self employment capability. • To understand the nutritional value of honey. • It helps to study storage and marketing of bee-products.
	GE-3	*Aquatic Biology*	• Students will acquire a broad concept on different aquatic ecosystem. • Demonstrate the morphometry, Physico-chemical characteristic and

			nutrient cycles of lakes ecosystem. • Demonstrate skill at identifying organisms found in marine and aquatic environments. • Gain knowledge about conservation and management principles for conservation and sustainable use of aquatic resources.
Semester-IV	*CC-8*	*Comparative Anatomy of vertebrates*	• Upon completion of the course, students should be able to: Explain comparative account of the different vertebrate system. • Recognize and explain the pattern of vertebrate evolution, organisation and functions of various systems. • Students should learn the comparative account of integument, skeletal components, their functions and modification in different vertebrates. • To emphasize the knowledge about evolution of heart, modification in aortic arches, structure of respiratory organs used in aquatic, terrestrial and aerial vertebrates; and digestive system and its anatomical specialisations with respect to different diets and feeding habits. • To study the comparative account of brain, succession of kidney, evolution of urinogenital ducts etc.
	CC-9	*Animal Physiology: Life Sustaining Systems*	• To develop a working knowledge of the major physiological system, and to associate anatomical areas with their specific function. • Learn an integrative approach to

			understand the interactions of various organ systems in the complex overall functioning of the body. • Students will know the physiology of digestion, respiration, renal physiology, blood & physiology of heart. • Students should know the process of osmoregulation & thermoregulation in vertebrates. • Enable to demonstrate & determine the ABO blood group, enumeration of blood cell, estimation of haemoglobin etc. • To learn the recording of blood pressure using sphygmomanometer.
	CC-10	*Immunology*	• Develop their understanding on the concepts on health and diseases, cells and organs of the Immune system gain, knowledge of immunological processes at a cellular and molecular level. • Learn the different type of immunity, Structure and functions of immunogens and immunoglobulins antigen-antibody interaction, monoclonal antibody etc. • Understand the role of cytokines in immune cell activation, significance of Major Histocompatibility Complex in terms of immune response. • Be able to provide an overview of the interaction between the immune system and pathogen. • Understand the vaccines, their historical perspective, types of vaccines and modern advances on vaccination

			and immunization.
	SEC-2	*Sericulture*	• To provide scientific knowledge about sericulture as profitable farming. • Understand the cultivation of mulberry plants, pest, diseases and control measures. • To develop the knowledge about quality and processing of silk. • To analyze the importance of sericulture in entrepreneurship development and prospectus of sericulture in India.
	GE-4	*Environment and Public Health*	• To understand the basic concepts of environmental toxicology, their impact on human health and remedial measures. • To create a consciousness regarding environmental issues, climate change and its impact on public health. • To make aware about pollution of environment, their impact and waste sources, disposal and their management strategies. • To promote healthier environments to improve health. • Become aware about environmental caused diseases, symptoms and their control measures.
	CC-11	*Molecular Biology*	• Understand the basic structure and chemistry of hereditary material viz. nucleic acids, DNA & RNA. • Compare and contrast machinery and mechanisms of DNA replication, transcription in prokaryotes and

Semester-V			eukaryotes. • Get in depth understanding the molecular machinery and mechanism of central dogma (hereditary information transfer processes) in prokaryotes and eukaryotes. • Know the mechanism of post transcriptional modification & processing of eukaryotic RNA. • Recognize and explain the concept of gene regulation in prokaryotes; Lac operon and trp operon. • To understanding the genetics and relate modern DNA technology (PCR, Blotting techniques and DNA sequencing) and their application.
	CC-12	*Genetics*	• Elucidate the principles of Mendelian genetics and its extension. • Become aware and gain knowledge about linkage, crossing over, recombination and chromosomal mapping. • Understand the cause and effect of alterations in chromosome number and structure. • Recognize and explain how sex is determined in Drosophila and human and also explain the Dosage compensation. • To appreciate the concept of extra-chromosomal inheritance. • Able to solving the problems related to – measures of central tendency, recombinant frequency, linkage intensity, interference and

			coincidence. Studying analysing and solving the hypothetical tests like Chi-square test, pedigree analysis etc.
	DSE-1	*Fish & Fisheries*	• Learn an integrative approach to understand the introduction and classification of fish, feeding habit, habitat and manner of reproduction. • Understand the fish morphology and physiology. • Become aware and gain knowledge of Inland marine fisheries, fishing crafts and gears, remote sensing and GIS. • Understand the concept of sustainable aquaculture, extensive and intensive culture, pen and cage culture. • To know about different kinds of fishing methods and fish preservation, which can be employed for export and storage of commercial fishes. • Become aware and gain knowledge of transgenic fish and Zebra fish (which is a model organism in research).
	DSC-2	*Animal Biotechnology*	• Understand the concept of genomics (Prokaryotic and Eukaryotic genome). • Gain insight into the molecular techniques in gene manipulation. • Use or demonstrate the basic techniques of biotechnology like DNA isolation, PCR, transformation, restriction digestion etc. • Get-in-depth understanding of genetically modified organisms' viz. production of cloned and transgenic animal and its application. • To develop the knowledge about the

			animal cell culture techniques and molecular diagnosis of genetic diseases.
Semester-VI	*CC-13*	*Development Biology*	• Develop critical understanding how a single celled fertilized egg become an embryo and then fully formed adult by going through three important processes of cell division, cell differentiation and morphogenesis. • Get in depth understanding about different mode of cell-cell communication. • To develop the knowledge about brain and eye development of vertebrate. • Understanding about teratogenic agents, and their effects on embryonic development. • Advanced understanding of activity and function of genes under different cellular environment. • Develop the skill to raise and maintain culture of model system, Drosophila in the laboratory.
	CC-14	*Evolutionary Biology*	• Understand the evidences of organic evolution by anatomical embryological list, paleontological, physiological, genetics and molecular biology evidences. • Understand the theories of organic evolution, isolation, and speciation. • Gain knowledge about population variations, genetic drift, natural selection, founder effect and bottleneck effect. • Gain knowledge about background

			extinctions and mass extinctions of various species. • Learn about the origin and evolution of man and molecular analysis of human origin.
	DSE-3	*Endocrinology*	• Understand endocrine system and the basic properties of hormones. • Appreciate the importance of endocrine system and the crucial role it plays along with the nervous system in maintenance of homeostasis. • Understand the molecular mechanism of steroidal and non-steroidal hormone action and its regulation. • To know the regulation of physiological process by the endocrine system and its implication in diseases. • Develop the ability to estimate of plasma level of any hormone using ELISA.
	DSE-4	*Wild Life Conservation and Management*	• Understand the values of wild-life, become aware about the causes of wild-life depletion and their conservation strategies and importance of conservation. • Understand the management practices required to achieve a healthy ecosystem for wild-life population along with emphasis on conservation and restoration. • To develop the concept about carrying capacity, climax persistence, ecology of perturbence. • To learn about causes and consequences of human-wildlife

			conflict and management of excess population. • Gain knowledge about national park, sanctuary, biosphere reserve and their importance along with emphasis on management challenges in wildlife reserve.