

Department of Zoology

Programme Outcomes

1. Demonstrate, solve and an understanding of major concepts in all disciplines of Zoology.
2. Solve the problem and also think methodically, independently and draw a logical conclusion.
3. Understand the evolution, history of phylum.
4. Create an awareness of the impact of Zoology on the environment, society, and development outside the scientific community.
5. To study and understand the classification of whole phyla includes in Non chordates with the help of charts/models/pictures.
6. To inculcate the scientific temperament in the students and outside the scientific community.

Programme Specific Outcomes

1. Gain the knowledge of Zoology through theory and Practical's.
2. Study and understand the DNA Recombinant technology.
3. Understand the testing of hypothesis.
4. Use modern Zoological tools, Models, Charts and Equipment's.
5. Know structure-activity relationship.
6. Understand good laboratory practices and safety.
7. Develop Research oriented skills.
8. Make aware and handle the sophisticated instruments/equipment's.

Course Specific Outcome of Zoology.

Semester	Paper /Course	Name of the Paper/Corse	Course Outcome
Semester-1	CC-1	Non chordates I: Protista to Pseudocoelomates	<ol style="list-style-type: none"> 1. Understand the evolution, history of phylum. 2. Understand about the Non-Chordate animals. 3. To study the external as well as internal characters of non chordates. 4. To study the distinguishing characters of invertebrates. 5. Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem. 6. Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.
	CC-2	Principles of Ecology	<ol style="list-style-type: none"> 1. Know the biotic and abiotic components of ecosystem. 2. Food chain & food web in ecosystem. 3. To Understand what makes the scientific study of animal ecology a crucial and exciting endeavour. 4. Understand Animal community & ecological adaptation in animals. 5. Students gains knowledge about statistical methods like measures of central tendencies, Probability 6. Learns about hypothesis testing and inferential statistics 7. Learns the problem-solving methods.
	GE	Animal Diversity	<ol style="list-style-type: none"> 1. Understand diversity among various groups of animal kingdom 2. Scope, importance and management of biodiversity.
Semester-2	CC-3	Non chordates II: Coelomates	<ol style="list-style-type: none"> 1. Learn about the importance of systematics, taxonomy and structural organization of animals. 2. Understand evolutionary history and relationships of different non-chordates through functional and structural affinities. 3. Critically think about the organization, complexity and characteristic features of non-Chordates.
	CC-4	Cell biology	<ol style="list-style-type: none"> 1. Understand fundamental principles of cell biology. 2. Explain structure and functions of cell organelles involved in diverse cellular processes. 3. Understand the functioning of nucleus and extra nuclear organelles and understand the intricate cellular mechanisms involved.

			4. Acquire the detailed knowledge of different pathways related to cell signalling.
	GE 1-P-I	Food, Nutrition and Health	<ol style="list-style-type: none"> 1. Have a better understanding of the association of food and nutrition in promoting healthy living. 2. Think more holistically about the relationship between nutrition science, social and health issues.
Semester-3	CC-5	Diversity of Chordates	<ol style="list-style-type: none"> 1. Understand different classes of chordates, level of organization and evolutionary relationship between different subphyla and classes, within and outside the phylum. 2. Study about diversity in animals making students understand about their distinguishing features. 3. Appreciate similarities and differences in life functions among various groups of animals in Phylum Chordata.
	CC-6	Physiology: Controlling and Coordinating systems.	<ol style="list-style-type: none"> 1. 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. 2. Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body. 3. Synthesize ideas to make connection between knowledge of physiology and real world, situations, including healthy life style decisions and homeostatic imbalances. 4. Know the role of regulatory systems viz. endocrine and nervous systems and their amalgamation in maintaining various physiological processes.
	CC-7	Fundamentals of Biochemistry and microbiology	<ol style="list-style-type: none"> 1. Understand the structure and biological significance of carbohydrates, amino acids, proteins and lipids. 2. Understand the structure and function of immunoglobulins. 3. Understand the concept of enzyme, its mechanism of action and regulation. 4. Demonstrate foundation knowledge in biochemistry; synthesis of proteins, lipids, nucleic acids, and carbohydrates; and their role in metabolic pathways along with their regulation. 5. Develop understanding on the microbiology diversity, processes and applications in the environment.
	SEC-1	Mushroom Cultivation	<ol style="list-style-type: none"> 1. To gain knowledge of cultivation of different types of edible mushrooms. 2. To understand nutritional value of edible mushrooms. 3. It helps to study storage and marketing of edible of mushroom.

Semester-4	CC-8	Comparative anatomy of Vertebrates	<ol style="list-style-type: none"> 1. Upon completion of the course, students should be able to: Explain comparative account of the different vertebrate systems. 2. Understand the pattern of vertebrate evolution, organisation and functions of various systems. 3. Learn the comparative account of integument, skeletal components, their functions and modifications in different vertebrates. 4. Understand the evolution of heart, modification in aortic arches, structure of respiratory organs used in aquatic, terrestrial and aerial vertebrates; and digestive system and its anatomical specializations with respect to different diets and feeding habits.
	CC-9	Physiology: Life Sustaining Systems.	<ol style="list-style-type: none"> 1. understand how the body works, State the functions of each organ system of the body, explain the mechanisms by which each functions and relate the functions and the anatomy and histology of each organ system. 2. 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. 3. Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body.
	CC-10	Biochemistry of Metabolic Processes	<ol style="list-style-type: none"> 1. Gain knowledge and skill in the interactions and interdependence of physiological and biomolecules 2. Understand essentials of the metabolic pathways along with their regulation. 3. Know the principles, instrumentation and applications of bioanalytical techniques. 4. Understand the structure and biological significance of carbohydrates, amino acids, proteins and lipids.
	SEC-2	Biofertilizer	<ol style="list-style-type: none"> 1. Develop their understanding on the concept of bio-fertilizer. 2. Identify the different forms of biofertilizers and their uses. 3. Compare between the Green manuring and organic fertilizers.
Semester-5	CC-11	Molecular Biology.	<ol style="list-style-type: none"> 1. Describe the basic structure and chemistry of nucleic acids, DNA and RNA; 2. Compare and contrast DNA replication machinery and mechanisms in prokaryotes and eukaryotes. 3. Elucidate the molecular machinery and mechanism of information transfer processes–transcription (formation of RNA from DNA) and translation (formation of proteins from RNA) - in prokaryotes and eukaryotes. 4. Explain post-transcriptional modification mechanisms for the processing of eukaryotic

		<p>RNAs; and to Give an overview of gene expression regulation in eukaryotes.</p>
CC-12	Principles of Genetics	<ol style="list-style-type: none"> 1. Apply the principles of Mendelian inheritance 2. Understand the cause and effect of alterations in chromosome number and structure 3. Gain knowledge of the basic principles of inheritance.
DSE-1	Animal Behaviour, Animal Biotechnology and Endocrinology	<ol style="list-style-type: none"> 1. Learn a wide range of theoretical and practical techniques used to study animal behaviour. 2. Upon completion of the course, students should be able to understand types of animal behaviour and their importance to the organisms. 3. Enhance their observation, analysis, interpretation and documentation skills by taking short projects pertaining to Animal behaviour and chronobiology. 4. Understand various process of chronobiology in their daily life such as jet lag and Learn about the biological rhythm. 5. Use or demonstrate the basic techniques of biotechnology like DNA isolation, PCR, transformation, restriction digestion etc 6. Understand endocrine system and the basic properties of hormones. 7. Appreciate the importance of endocrine system and the crucial role it plays along with the nervous system in maintenance of homeostasis. 8. Gain insight into the molecular mechanism of hormone action and its regulation and to know the regulation of physiological process by the endocrine system and its implication in diseases.
DSE-2	Basic of Neuroscience, Reproductive Biology and Immunology	<ol style="list-style-type: none"> 1. Understand major advances in neuroscience, neural basis of emotions, behaviour, learning and memory, and how brain and behaviour can be trained/modified by experience. 2. Discuss how the hypothalamus controls various behavioural patterns by releasing neurohormones/ neuropeptides in brain and periphery in response to various signals. 3. Get in-depth understanding of morphology, anatomy and histology of male and female reproductive organs. 4. Know different processes in reproduction starting from germ cell formation to fertilization and consequent pregnancy, parturition and lactation and Compare estrous and menstrual cycles and their hormonal regulation. 5. Describe the basic mechanisms, distinctions and functional interplay of innate and adaptive immunity 6. Define the cellular/molecular pathways of humoral/cell-mediated adaptive responses

			<p>including the role of Major Histocompatibility Complex and explain the cellular and molecular aspects of lymphocyte activation, homeostasis, differentiation, and memory.</p> <p>7. Understand the molecular basis of complex, humoral (Cytokines and Complement) and cellular processes involved in inflammation and immunity, in states of health and disease.</p>
Semester-6	CC-13	Developmental Biology	<ol style="list-style-type: none"> 1. Develop critical understanding how a single-celled fertilized egg becomes an embryo and then a fully formed adult by going through three important processes of cell division, cell differentiation and morphogenesis. 2. Understand how developmental processes and gene functions within a particular tissue or organism can provide insight into functions of other tissues and organisms. 3. Describe the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multicellular organisms. 4. Develop the skill to raise and maintain culture of model system; <i>Drosophila</i> in the laboratory.
	CC-14	Evolutionary Biology	<ol style="list-style-type: none"> 1. Understand the evidences of organic evolution by anatomical embryological list, paleontological, physiological, genetics and molecular biology evidences. 2. Understand theories of organic evolution, isolation, speciation. 3. Gain knowledge about the relationship of the evolution of various species and the environment they live in. 4. Use knowledge gained from study of variations, genetic drift to ensure that conservation efforts for small threatened populations are focused in right direction.
	DSE-3	Fish and Fisheries, Wildlife Conservation	<ol style="list-style-type: none"> 1. After completion of the course the students will be able to: Acquire knowledge of physiology, reproduction of fishes. 2. Become aware and gain knowledge of Inland and marine Fisheries in India and how it contributes to Indian economy. 3. Know about different kinds of fishing methods and fish preservation which can be employed for export and storage of commercial fishes. 4. Become aware about the importance of wildlife in general, and its conservation and management in particular. 5. Comprehend the application of the principles of ecology and animal behaviour to formulate strategies for the management of wildlife populations and their habitats.

			<ol style="list-style-type: none">6. Understand the management practices required to achieve a healthy ecosystem for wildlife population along with emphasis on conservation and restoration.7. Know the key factors for loss of wildlife and important strategies for their in situ and ex situ conservation.
	DSE-4	Project Paper	<ol style="list-style-type: none">1. Make research proposal.2. Construct tool of data collection.3. Learn fieldwork modalities.4. Understand the process of data analysis5. Writing research report.