



PANSKURA BANAMALI COLLEGE(AUTONOMOUS)
DEPT. OF ZOOLOGY

PROGRAMME: B.Sc. (Zoology)

PROGRAMME SPECIFIC OUTCOMES (PSO):

PSO1 Disciplinary knowledge: Capable of demonstrating

- (i) comprehensive knowledge of major concepts, theoretical principles and experimental findings in Zoology and its different subfields including biodiversity, anatomy, physiology, biochemistry, ecology, evolutionary biology, cell biology, molecular biology, immunology and genetics, and some of the other applied areas of study such as wildlife conservation and management, apiculture, sericulture, neurosciences, aquatic biology, fish and fisheries sciences,
- (ii) interdisciplinary knowledge of allied biological sciences, environmental science and chemical science,
- (iii) learning of the various techniques, instruments, computational software used for analysis of animal's forms and functions.

PSO2 Effective communicator: Capability to convey the intricate zoological information effectively and efficiently.

PSO3 Critical thinker and problem solver: Ability to rationally analyze and solve the problems related to animal sciences without relying on assumptions and guess work.

PSO4 Logical thinking and reasoning: Capability of seeking solutions and logically solving them by experimentation and data processing either manually or through software.

PSO5 Team spirit: Ability to work effectively in a heterogeneous team.

PSO6 Leadership quality: Ability to recognise and mobilise relevant resources essential for a project and manage the project in a responsible way by following ethical scientific conduct and bio-safety protocols.

PSO7 Digitally literate: Capable of using computers for biological simulation, computation and appropriate software for biostatistics, and employing search tools to locate, retrieve, and evaluate zoology-related data.

PSO8 Ethical-awareness: Avoiding unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, as well as appreciate environmental and sustainability issues.

PSO9 Lifelong learners: Capable of self-paced and self-directed learning aimed at personal and social development.



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COURSE OUTCOMES (COS): B.Sc. (Zoology Hons.)

SEMESTER – I

CORE -1: NON-CHORDATES I: PROTISTS TO PSEUDOCOELOMATES

Course Outcomes: This course will enable the students to

- CO1 Learn about the importance of systematics, taxonomy and structural organization of animals.
- CO2 Appreciate the diversity of non-chordates living in varied habit and habitats.
- CO3 Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
- CO4 Critically analyse the organization, complexity and characteristic features of non-chordates making them familiarize with the morphology and anatomy of representatives of various animal phyla.
- CO5 Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- CO6 Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

CORE – 2: PRINCIPLES OF ECOLOGY

Course Outcomes: This course will enable the students to

- CO1 Demonstrate an understanding of key concepts in ecology with emphasis on historical perspective, role of physical factors and concept of limiting factors.
- CO2 Comprehend the population characteristics, dynamics, growth models and interactions.
- CO3 Understand the community characteristics, ecosystem development and climax theories.
- CO4 Know about the types of ecosystems, food chains, food webs, energy models, and ecological efficiencies.
- CO5 Apply the basic principles of ecology in wildlife conservation and management.
- CO6 Inculcate scientific quantitative skills, evaluate experimental design, read graphs, and analyse and use information available in scientific literature.

GE-1: ANIMAL DIVERSITY

Course Outcomes:

Upon completion of the course, students will be able to:

- CO1 Distinguish between major phyla of animals through a demonstrated understanding of their taxonomic classification and diversity.
- CO2 Describe the distinguishing characteristics of all major phyla.
- CO3 Understand the fundamental differences among animal body plans and relate them to function, taxonomic classification, and evolutionary relationships among phyla.
- CO4 Illustrate lifecycles, structure, function and reasons for importance of few representative organisms from different groups of animals.
- CO5 Identify anatomical structures from prepared tissues.
- CO6 Observe living animals in the environment and relate observations to theory from the course.
- CO7 Recognize major animal phyla and animals on the basis of their external characteristics.



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SEMESTER – II

CORE - 3: NON-CHORDATES II: COELOMATES

Course Outcomes: This course will enable the students to:

- CO1 Learn about the importance of systematics, taxonomy and structural organization of animals.
- CO2 Appreciate the diversity of non-chordates living in diverse habit and habitats.
- CO3 Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
- CO4 Critically think about the organization, complexity and characteristic features of non-chordates.
- CO5 Getting familiarized with the morphology and anatomy of representatives of various animal phyla.
- CO6 Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- CO7 Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.
- CO8 Recognize bounded, convergent, divergent, Cauchy and monotonic sequence and to calculate their limit superior, limit inferior and the limit of a bounded sequence.
- CO9 Apply the ratio, root, alternating series and limit comparison testes for convergence and absolute convergence of an infinite series of real numbers.

CORE 4: CELL BIOLOGY

Course Outcomes: Upon completion of the course, students should to be able to:

- CO1 Understand fundamental principles of cell biology.
- CO2 Explain structure and functions of cell organelles involved in diverse cellular processes.
- CO3 Appreciate how cells grow, divide, survive, die and regulate these important processes.
- CO4 Comprehend the process of cell signalling and its role in cellular functions.
- CO5 Have an insight of how defects in functioning of cell organelles and regulation of cellular processes can develop into diseases.
- CO6 Learn the advances made in the field of cell biology and their applications.

GE-2: AQUATIC BIOLOGY

Course Outcomes:

Upon completion of the course, students will be able to:

- Know the physico-chemical environment, and its role in aquatic ecosystem.
- Learn about adaptations exhibited by organisms to survive in these typical conditions.
- Realize how human activities influence the physicochemical environment of water bodies, and devastating impact it has on aquatic organisms.
- Learn about the laws governing the use of freshwater systems, as well as the local, state, federal, and international agencies that enforce these laws to protect endangered and vulnerable species.
- Understand and apply relevant scientific principles in the area of aquatic biology and educate others or work to conserve our natural resources.



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SEMESTER – III

CORE 5: DIVERSITY OF CHORDATES

Course Outcomes:

Upon completion of the course, the students will be able to:

- CO1 Understand different classes of chordates, level of organization and evolutionary relationship between different subphyla and classes, within and outside the phylum.
- CO2 Study about diversity in animals making students understand about their distinguishing features.
- CO3 Appreciate similarities and differences in life functions among various groups of animals in Phylum Chordata.
- CO4 Comprehend the circulatory, nervous and skeletal system of chordates.
- CO5 Know about the habit and habitat of chordates in marine, freshwater and terrestrial ecosystems.

CORE - 6: PHYSIOLOGY: CONTROLLING AND COORDINATING SYSTEMS

Course Outcomes:

Upon completion of the course, students will be able to:

- CO1 Know the basic fundamentals and understand advanced concepts so as to develop a strong foundation that will help them to acquire skills and knowledge to pursue advanced degree courses.
- CO2 Comprehend and analyze problem-based questions
- CO3 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
- CO4 Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body. Synthesize ideas to make connection between knowledge of physiology and real-world situations, including healthy life style decisions and homeostatic imbalances
- CO5 Know the role of regulatory systems *viz.* endocrine and nervous systems and their amalgamation in maintaining various physiological processes.

CORE – 7: FUNDAMENTALS OF BIOCHEMISTRY

Course Outcomes:

- CO1 Upon completion of the course, students should be able to: Gain knowledge and skill in the fundamentals of biochemical sciences, interactions and interdependence of physiological and biochemical processes.
- CO2 Get exposed to various processes used in industries and gain skills in techniques of chromatography and spectroscopy.
- CO3 Demonstrate foundation knowledge in biochemistry; synthesis of proteins, lipids, nucleic acids, and carbohydrates; and their role in metabolic pathways along with their regulation.
- CO4 Know about classical laboratory techniques, use modern instrumentation, design and conduct scientific experiments, and analyze the resulting data.
- CO5 Be knowledgeable in proper procedures and regulations in handling and disposal of chemicals.



PANSKURA BANAMALI COLLEGE(AUTONOMOUS)
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SEC-1 SERICULTURE

Course Learning Outcome:

Upon completion of the course, students should be able to:

- CO1 Learn about the history of sericulture and silk route.
- CO2 Recognize various species of silk moths in India, and exotic and indigenous races.
- CO3 Be aware about the opportunities and employment in sericulture industry- in public, private and government sector.
- CO4 Gain thorough knowledge about the techniques involved in silkworm rearing and silk reeling.
- CO5 Develop entrepreneurial skills necessary for self-employment in mulberry and seed production and be apprised about practicing sericulture as a profit-making enterprise.
- CO6 Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

GE – 3: Environment and Public Health

Course Outcomes:

Upon completion of course, students will be able to:

- CO1 Get familiarized with various aspects of environmental risks and hazards.
- CO2 Recognize the climate change due to human activities.
- CO3 Be aware about the various impacts of environmental degradation on human health through case studies and how it can be prevented.
- CO4 Learn about the nuclear and chemical disasters and their after effects through cases studies.
- CO5 Know various waste management technologies and their utility.
- CO6 Understand the diagnostic methods of various diseases and ways to prevent them.
- CO7 Realize the importance of nature conservation for betterment of human race and all living beings.

SEMESTER – IV

CORE -8: COMPARATIVE ANATOMY OF VERTEBRATES

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Explain comparative account of the different vertebrate systems
- CO2 Understand the pattern of vertebrate evolution, organisation and functions of various systems.
- CO3 Learn the comparative account of integument, skeletal components, their functions and modifications in different vertebrates.
- CO4 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.
- CO5 Learn the evolution of brain, sense organs and excretory organsto a complex, highly evolved form in mammals;
- CO6 Learn to analyze and critically evaluate the structure and functions of vertebrate systems, which helps them to discern the developmental, functional and evolutionary history of vertebrate species.
- CO7 Understand the importance of comparative vertebrate anatomy to discriminate human biology.



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CORE – 9: PHYSIOLOGY: LIFE SUSTAINING SYSTEMS

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Have a clear knowledge of basic fundamentals and understanding of advanced concepts so as to develop a strong foundation that will help them to acquire skills and knowledge to pursue advanced degree courses.
- CO2 Comprehend and analyse problem-based questions on physiological aspects.
- CO3 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.
- CO4 Learn an integrative approach to understand the interactions of various organ systems resulting in the complex overall functioning of the body.

COURSE- 10: BIOCHEMISTRY OF METABOLIC PROCESSES

Course Outcomes:

Upon completion of the course, students will be able to

- CO1 Gain knowledge and skill in the interactions and interdependence of physiological and biomolecules
- CO2 Understand essentials of the metabolic pathways along with their regulation.
- CO3 Know the principles, instrumentation and applications of bioanalytical techniques.
- CO4 Get exposure to various processes used in industries.
- CO5 Become aware about classical laboratory techniques, use modern instrumentation, design and conduct scientific experiments and analyze the resulting data.
- CO6 Be knowledgeable in proper procedures and regulations in handling and disposal of chemicals

SEC -2: AQUARIUM FISH KEEPING

Course Learning Outcome:

- CO1 Upon completion of the course, students should be able to: Acquire knowledge about different kinds of fish their compatibility in aquarium.
- CO2 Become aware of Aquarium as commercial, decorative and of scientific studies.
- CO3 Develop personal skills on maintenance of aquarium.
- CO4 Know about the basic needs to set up an aquarium, i.e., dechlorinated water, reflector, filters, scavenger, aquatic plants etc. and the ways to make it cost-effective.

GE IV: Environment and Public Health

Course Learning Outcome:

Upon completion of course, students will be able to:

- CO1 Get familiarized with various aspects of environmental risks and hazards.
- CO2 Recognize the climate change due to human activities.
- CO3 Be aware about the various impacts of environmental degradation on human health through case studies and how it can be prevented.
- CO4 Learn about the nuclear and chemical disasters and their after effects through cases studies.
- CO5 Know various waste management technologies and their utility.
- CO6 Understand the diagnostic methods of various diseases and ways to prevent them.



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- CO7 Realize the importance of nature conservation for betterment of human race and all living beings.

SEMESTER – V

CORE COURSE- 11: MOLECULAR BIOLOGY

Course Outcomes:

Upon completion of the course, students will be able to:

- CO1 Describe the basic structure and chemistry of nucleic acids, DNA and RNA;
- CO2 Compare and contrast DNA replication machinery and mechanisms in prokaryotes and eukaryotes.
- CO3 Elucidate the molecular machinery and mechanism of information transfer processes—transcription and translation-in prokaryotes and eukaryotes;
- CO4 Explain post-transcriptional modification mechanisms for the processing of eukaryotic RNAs;
- CO5 Discuss general principles of transcription regulation in prokaryotes by exploring the structure and function of lactose and tryptophan metabolism operons;
- CO6 Give an overview of gene expression regulation in eukaryotes;
- CO7 Explain the significance of DNA repair mechanisms in controlling DNA damage;
- CO8 Recognise role of RNAs (riboswitches, siRNA and miRNA) in gene expression regulation.
- CO9 Demonstrate practical knowledge of raising, handling, maintenance and special features such as antibiotic resistance of a simple prokaryotic model organism, *Escherichia coli*.
- CO10 Quantitatively estimate concentration of DNA and RNA by colorimetric methods.

CORE 12: PRINCIPLES OF GENETICS

Course Outcomes:

Upon completion of the course, students will be able to:

- CO1 Have a deeper understanding of the varied branches of the biological sciences like microbiology, evolutionary biology, genomics and metagenomics.
- CO2 Gain knowledge of the basic principles of inheritance.
- CO3 Analyse pedigree leading to development of analytical skills and critical thinking enabling the students to present the conclusion of their findings in a scientific manner.
- CO4 Know the mechanisms of mutations, the causative agents and the harmful impact of various chemicals and drugs being used in day to day life.
- CO5 Find out the effects of indiscriminate use of various chemicals, drugs or insecticides in nature by studying their effect on various bacterial species in soil and water samples from different industrial or polluted areas.

DSE -1: FISH AND FISHERIES

Course Learning Outcome:

After completion of the course the students will be able to:

- CO1 Acquire knowledge of physiology, reproduction of fishes.
- CO2 Analyse different kinds of water and identify/differentiate different kinds of fishes.
- CO3 Procure pure fish seed by artificial procedures such as artificial and induced breeding which can learn by visiting any fish farm or demonstrated in research labs in college/Departments
- CO4 Become aware and gain knowledge of In-land and marine Fisheries in India and how it contributes to Indian economy.



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- CO5 Know about different kinds of fishing methods and fish preservation which can be employed for export and storage of commercial fishes.
- CO6 Find the reasons behind the depletion of fisheries resources.
- CO7 Develop skills for entrepreneurship or self-employment in their own fisheries-related business.

DSE-2: WILDLIFE CONSERVATION AND MANAGEMENT

Course Learning Outcome:

Upon completion of the course, students will be able to:

- CO1 Become aware about the importance of wildlife in general, and its conservation and management in particular.
- CO2 Comprehend the application of the principles of ecology and animal behaviour to formulate strategies for the management of wildlife populations and their habitats.
- CO3 Understand the management practices required to achieve a healthy ecosystem for wildlife population along with emphasis on conservation and restoration.
- CO4 Know the key factors for loss of wildlife and important strategies for their *in situ* and *ex situ* conservation.
- CO5 Recognize the techniques for estimation, remote sensing and Global Position Tracking for wildlife.
- CO6 Gain knowledge about the wildlife diseases and the quarantine policies.
- CO7 Know about the Protected Area Networks in India, Ecotourism, Ecology of perturbation and Climax persistence.
- CO8 Perform critical thinking, literature review; scientific writing as well as presentations; and participation in citizen science initiatives with reference to wildlife.

SEMESTER – VI

CORE - 13: DEVELOPMENTAL BIOLOGY

Course Learning Outcome:

Upon completion of the course, students should be able to:

- CO1 Understand the events that lead to formation of a multicellular organism from a single fertilized egg, the zygote.
- CO2 Acquire basic knowledge of the cellular processes of development and the molecular mechanisms underlying these.
- CO3 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.
- CO4 Discuss the general mechanisms involved in morphogenesis and to explain how different cells and tissues interact in a coordinated way to form various tissues and organs.
- CO5 Understand about the evolutionary development of various animals.
- CO6 Know the process of ageing leading to interventions that can improve the overall health and quality of life in aged people.
- CO7 Learn the importance of latest techniques like stem cell therapy, *in vitro* fertilization and amniocentesis etc. to be applied for human welfare.
- CO8 Develop the skill to raise and maintain culture of model system; *Drosophila* in the laboratory.

CORE – 14: EVOLUTIONARY BIOLOGY

Course Outcomes:

Upon completion of the course, students should be able to:



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- CO1 Acquire problem solving and high order analytical skills by attempting numerical problems as well as performing simulation studies of various evolutionary forces in action.
- CO2 Apply knowledge gained, on populations in real time, while studying speciation, behaviour and susceptibility to diseases.
- CO3 Gain knowledge about the relationship of the evolution of various species and the environment they live in.
- CO4 Get motivated to work towards mitigating climate change so that well adapted species do not face extinction as a result of sudden drastic changes in environment.
- CO5 Use knowledge gained from study of variations, genetic drift to ensure that conservation efforts for small threatened populations are focused in right direction.
- CO6 Predict the practical implication of various evolutionary forces acting on the human population in the field of human health, agriculture and wildlife conservation.
- CO7 Use various software to generate interest towards the field of bioinformatics and coding used in programming language

DSE – 3: IMMUNOLOGY

Course Outcomes:

After completion of the course the students will be able to:

- CO1 Describe the basic mechanisms, distinctions and functional interplay of innate and adaptive immunity
- CO2 Define the cellular/molecular pathways of humoral/cell-mediated adaptive responses including the role of Major Histocompatibility Complex
- CO3 Explain the cellular and molecular aspects of lymphocyte activation, homeostasis, differentiation, and memory
- CO4 Understand the molecular basis of complex, humoral (Cytokines and Complement) and cellular processes involved in inflammation and immunity, in states of health and disease
- CO5 Describe basic and state-of-the-art experimental methods and technologies
- CO6 Integrate knowledge of each subsystem to see their contribution to the functioning of higher-level systems in health and disease including basis of vaccination, autoimmunity, immunodeficiency, hypersensitivity and tolerance

DSE – 4: Biology of Insecta

Course Outcomes:

After completion of the course, the students will be able to:

- CO1 Appreciate the diversity of insects.
- CO2 Understand the physiology of Insects which has made them the most successful animals in terms of numbers and variety of species.
- CO3 Get a glimpse of the highly organized social life of insects.



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COURSE OUTCOMES (COS): B.Sc. (Zoology GEN)

DSC (ZOOLOGY) - 1: ANIMAL DIVERSITY

Course Outcomes:

Upon completion of the course, students will be able to:

- CO1 Distinguish between major phyla of animals through a demonstrated understanding of their taxonomic classification and diversity.
- CO2 Describe the distinguishing characteristics of all major phyla.
- CO3 Understand the fundamental differences among animal body plans and relate them to function, taxonomic classification, and evolutionary relationships among phyla.
- CO4 Illustrate lifecycles, structure, function and reasons for importance of few representative organisms from different groups of animals.
- CO5 Identify anatomical structures from prepared tissues.
- CO6 Observe living animals in the environment and relate observations to theory from the course.
- CO7 Recognize major animal phyla and animals on the basis of their external characteristics.

DSC (ZOOLOGY) - 2: GENETICS AND EVOLUTIONARY BIOLOGY

Course Outcomes:

Upon completion of the course, students will be able to:

- CO1 Have a deeper understanding of the varied branches of the biological sciences like microbiology, evolutionary biology, genomics and metagenomics.
- CO2 Gain knowledge of the basic principles of inheritance.
- CO3 Analyse pedigree leading to development of analytical skills and critical thinking enabling the students to present the conclusion of their findings in a scientific manner.
- CO4 Know the mechanisms of mutations, the causative agents and the harmful impact of various chemicals and drugs being used in day to day life.
- CO5 Find out the effects of indiscriminate use of various chemicals, drugs or insecticides in nature by studying their effect on various bacterial species in soil and water samples from different industrial or polluted areas.

DSC (ZOOLOGY) – 3: PHYSIOLOGY AND BIOCHEMISTRY

Course Outcomes:

- CO1 Upon completion of the course, students should be able to: Gain knowledge and skill in the fundamentals of biochemical sciences, interactions and interdependence of physiological and biochemical processes.
- CO2 Get exposed to various processes used in industries and gain skills in techniques of chromatography and spectroscopy.
- CO3 Demonstrate foundation knowledge in biochemistry; synthesis of proteins, lipids, nucleic acids, and carbohydrates; and their role in metabolic pathways along with their regulation.



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- CO4 Know about classical laboratory techniques, use modern instrumentation, design and conduct scientific experiments, and analyze the resulting data.
- CO5 Be knowledgeable in proper procedures and regulations in handling and disposal of chemicals.

DSC (ZOOLOGY) – 4: COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY OF VERTEBRATES

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Explain comparative account of the different vertebrate systems
- CO2 Understand the pattern of vertebrate evolution, organisation and functions of various systems.
- CO3 Learn the comparative account of integument, skeletal components, their functions and modifications in different vertebrates.
- CO4 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.
- CO5 Learn the evolution of brain, sense organs and excretory organs to a complex, highly evolved form in mammals;
- CO6 Learn to analyze and critically evaluate the structure and functions of vertebrate systems, which helps them to discern the developmental, functional and evolutionary history of vertebrate species.
- CO7 Understand the importance of comparative vertebrate anatomy to discriminate human biology.

DSE 1 : AQUATIC BIOLOGY

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Demonstrate an understanding of key concepts in ecology with emphasis on historical perspective, role of physical factors and concept of limiting factors.
- CO2 Comprehend the population characteristics, dynamics, growth models and interactions.
- CO3 Understand the community characteristics, ecosystem development and climax theories.
- CO4 Know about the types of ecosystems, food chains, food webs, energy models, and ecological efficiencies.
- CO5 Apply the basic principles of ecology in wildlife conservation and management.
- CO6 Inculcate scientific quantitative skills, evaluate experimental design, read graphs, and analyse and use information available in scientific literature.



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DSE 2: INSECT, VECTORS AND DISEASES

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Learn about the importance of systematics, taxonomy and structural organization of animals.
- CO2 Appreciate the diversity of non-chordates living in varied habit and habitats.
- CO3 Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
- CO4 Critically analyse the organization, complexity and characteristic features of non-chordates making them familiarize with the morphology and anatomy of representatives of various animal phyla.
- CO5 Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- CO6 Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

SEC 1: APICULTURE

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Learn about the importance of systematics, taxonomy and structural organization of animals.
- CO2 Appreciate the diversity of non-chordates living in diverse habit and habitats.
- CO3 Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
- CO4 Critically think about the organization, complexity and characteristic features of non-chordates.
- CO5 Getting familiarized with the morphology and anatomy of representatives of various animal phyla.
- CO6 Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- CO7 Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

SEC 2: AQUARIUM FISH KEEPING

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Learn about the importance of systematics, taxonomy and structural organization of animals.



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- CO2 Appreciate the diversity of non-chordates living in varied habit and habitats.
- CO3 Understand evolutionary history and relationships of different non-chordates through functional and structural affinities.
- CO4 Critically analyse the organization, complexity and characteristic features of non-chordates making them familiarize with the morphology and anatomy of representatives of various animal phyla.
- CO5 Comprehend the economic importance of non-chordates, their interaction with the environment and role in the ecosystem.
- CO6 Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

SEC-3 : SERICULTURE

Course Outcomes:

Upon completion of the course, students should be able to:

- CO1 Learn about the history of sericulture and silk route.
- CO2 Recognize various species of silk moths in India, and exotic and indigenous races.
- CO3 Be aware about the opportunities and employment in sericulture industry- in public, private and government sector.
- CO4 Gain thorough knowledge about the techniques involved in silkworm rearing and silk reeling.
- CO5 Develop entrepreneurial skills necessary for self-employment in mulberry and seed production and be apprised about practicing sericulture as a profit-making enterprise.
- CO6 Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

SEC – 4 : MEDICAL DIAGNOSTICS

Course Outcomes:

After completing this course, the students will be able to:

- CO1 Gain knowledge about various infectious, non-infectious and lifestyle diseases, tumors and their diagnosis
- CO2 Understand the use of histology and biochemistry of clinical diagnostics and learn about the molecular diagnostic tools and their relation to precision medicine.
- CO3 Develop their skills in various types of tests and staining procedure involved in hematology, clinical biochemistry and will know the basics of instrument handling.
- CO4 Learn scientific approaches/techniques used in the clinical laboratories to investigate various diseases and will be skilled to work in research laboratories.
- CO5 Gain knowledge about common imaging technologies and their utility in the clinic to diagnose a specific disease.