

Syllabus wise course outcome of Zoology Department(UG)
FYUGP
PAPER:ZOO-1011

Studying the diversity of non-chordates at the undergraduate level provides students with a foundational understanding of the vast array of invertebrate organisms that form the majority of animal life on Earth. This field of study encompasses a wide range of phyla, including arthropods, mollusks, annelids, and many others, offering insights into the evolution, anatomy, physiology, and ecological roles of these diverse organisms. By delving into the intricacies of non-chordate diversity, students gain valuable knowledge about the fundamental principles of biology and ecology, fostering a holistic perspective on the complexity of life. This exploration of non-chordates also lays the groundwork for future studies in marine biology, entomology, zoology, and other specialized fields, equipping undergraduates with a solid biological foundation and an appreciation for the richness of biodiversity in the natural world.

FYUGP
PAPER:ZOO-1021

Studying the diversity of chordates at the undergraduate level offers students a comprehensive exploration of vertebrate animals, providing a deep understanding of the evolutionary history and biological characteristics that unite this diverse group. Chordates include familiar vertebrates like fishes, amphibians, reptiles, birds, and mammals. Through this study, undergraduate students gain insights into the anatomical, physiological, and ecological adaptations that have allowed chordates to successfully inhabit a variety of environments. Moreover, students learn about the significance of chordates in various ecosystems and their crucial roles in maintaining ecological balance. The exploration of chordate diversity serves as a foundation for more specialized studies in fields such as comparative anatomy, physiology, and evolutionary biology. Overall, it equips undergraduates with a solid grasp of the fundamental principles governing vertebrate life, fostering a broader appreciation for the complexity and interconnectedness of life on Earth.

UG 1st Semester
Paper: ZOO:HC-1016

Non-chordates:Protista to Pseudocoelomates

The exploration of Non-chordates, specifically from Protista to Pseudocoelomates, in the Zoology 1st semester has yielded a comprehensive understanding of the diverse and fascinating world of invertebrates. Students have delved into the intricate structures, life cycles, and ecological roles of organisms belonging to these taxonomic groups. The study of Protista has unraveled the complexity of unicellular and colonial organisms, while the examination of Porifera, Cnidaria, Platyhelminthes, Nematoda, and Rotifera has provided insights into the morphological diversity and adaptations of multicellular non-chordates. The coverage of Acoelomates, Pseudocoelomates, and their respective characteristics has further enriched the students' knowledge of the structural and developmental variations within this branch of the

animal kingdom. Overall, this semester has equipped students with a foundational understanding of non-chordate diversity, setting the stage for deeper explorations into the intricacies of invertebrate biology in subsequent coursework.

PAPER: ZOO:HC-1026

Principles of Ecology

The study of Principles of Ecology in the Zoology 1st semester has provided students with a fundamental grasp of ecological concepts and their applications. Covering topics ranging from population dynamics and community interactions to ecosystem structure and function, the semester has equipped students with a holistic understanding of the intricate relationships that govern the natural world. Through theoretical frameworks and practical examples, students have explored ecological principles such as energy flow, nutrient cycling, and biodiversity, gaining insights into the factors that shape ecosystems. The emphasis on ecological sustainability, conservation, and the impact of human activities on ecosystems has fostered an awareness of the importance of responsible environmental stewardship. Overall, the Principles of Ecology topic has laid a robust foundation for students to comprehend the complexities of ecological systems and contribute to the conservation and sustainable management of biodiversity.

GENERIC:

PAPER:ZOO:HG:1016

Animal Diversity

The exploration of Animal Diversity in the Zoology graduation program has provided students with a comprehensive understanding of the vast array of forms and functions exhibited by the animal kingdom. Covering topics ranging from invertebrates to vertebrates, students have delved into the morphological, physiological, and ecological diversity of various animal phyla. The course has emphasized the evolutionary relationships among different taxa, shedding light on the interconnectedness of life on Earth. Graduates from this program emerge with a profound appreciation for the complexity and adaptability of animals, setting the stage for careers in fields such as conservation biology, ecology, and animal behavior. The outcome of this course underscores the significance of understanding animal diversity in addressing ecological challenges and contributes to the broader appreciation of the intricacies of life within diverse ecosystems.

UG 2nd Semester

PAPER-ZOO:HC-2016

Non-chordates II:Coelomates

The Zoology semester's exploration of Non-chordates II: Coelomates has significantly enriched students' understanding of the structural and functional diversity within the coelomate animal kingdom. Students have delved into the complex anatomy, physiology, and ecological roles of organisms belonging to diverse phyla, including Annelida, Arthropoda, Mollusca, and

Echinodermata. Through this comprehensive study, students have gained insights into the adaptive features and evolutionary significance of coelomate animals. The examination of their life cycles, reproductive strategies, and ecological interactions has provided a nuanced perspective on the ecological roles played by these organisms in various ecosystems. This semester has laid a solid foundation for students to appreciate the remarkable diversity within the coelomate phyla, setting the stage for deeper explorations into the intricacies of invertebrate biology in subsequent coursework.

PAPER: HC-2016

Cell Biology

The study of Cell Biology in the Zoology graduation program has yielded a profound understanding of the fundamental unit of life and its intricate mechanisms. Students have delved into the structural and functional aspects of cells, exploring topics such as cell organelles, membrane dynamics, cellular transport, and cell division. The comprehensive coverage of molecular processes, including DNA replication, transcription, and translation, has provided a molecular perspective on cellular functions. Practical applications, such as cell culture techniques and microscopy, have complemented theoretical knowledge, allowing students to gain hands-on experience. The outcome of this Cell Biology course equips graduates with a robust foundation in cellular sciences, preparing them for advanced studies and research in various fields, including molecular biology, genetics, and biotechnology. Additionally, graduates are well-positioned to apply their knowledge to broader contexts, such as medicine, environmental science, and biomedicine, contributing to advancements in these disciplines.

GENERIC

PAPER:ZOO:HG:2016

The study of Comparative Anatomy and Developmental Biology of Vertebrates in the Zoology graduation program has provided students with a profound understanding of the structural and developmental intricacies within the vertebrate animal kingdom. Covering topics such as embryonic development, organogenesis, and the comparative anatomy of major vertebrate groups, students have delved into the evolutionary patterns that have shaped the diversity of vertebrate forms. The course has highlighted both the similarities and differences in the anatomical structures and developmental processes among vertebrates, offering insights into the evolutionary adaptations that have occurred over millions of years. Graduates from this program emerge with a solid foundation in vertebrate biology, well-equipped for careers in fields such as

comparative anatomy, evolutionary biology, and paleontology. The outcome of this course underscores the importance of understanding the shared ancestry and unique adaptations that characterize vertebrate life forms, contributing to a deeper appreciation of the evolutionary processes that have sculpted the animal kingdom.

UG 3rd Semester

PAPER: ZOO:HC-3016

DIVERSITY OF CHORDATES

The exploration of the Diversity of Chordates in the Zoology graduation program has provided students with a comprehensive understanding of the vast and varied animal phylum Chordata. Covering a broad spectrum of organisms, from the primitive cephalochordates to the highly evolved vertebrates, students have delved into the anatomical, physiological, and ecological intricacies of chordate species. The study has encompassed not only the diversity of vertebrates but also the unique characteristics of non-vertebrate chordates like tunicates and lancelets. By examining the evolution of chordates, students have gained insights into the adaptive features that have shaped this diverse group over time. This knowledge serves as a foundational platform for graduates, offering a profound appreciation for the complexity of chordate biology and setting the stage for further studies and research in areas such as comparative anatomy, evolutionary biology, and vertebrate zoology.

PAPER:ZOO:HC-3026

Physiology: Controlling and Coordinating Systems

The study of Physiology: Controlling and Coordinating Systems in the Zoology graduation program has equipped students with a profound understanding of the intricate mechanisms governing the physiological processes in animals. Exploring the nervous, endocrine, and sensory systems, students have delved into how organisms control and coordinate various physiological functions. Topics such as neural communication, hormonal regulation, and sensory perception have been thoroughly examined, providing a comprehensive insight into the integration of these systems. Graduates from this program are well-versed in the principles of homeostasis, the adaptability of physiological responses to environmental stimuli, and the interplay between different organ systems. This knowledge is essential for graduates pursuing careers in areas such as medical research, pharmaceuticals, and veterinary sciences, as it lays a solid foundation for understanding and addressing physiological challenges in diverse animal species.

PAPER: HC-3036

Fundamentals of Biochemistry

The Zoology graduation program's exploration of Fundamentals of Biochemistry has yielded a comprehensive understanding of the molecular underpinnings of biological processes. Students

have delved into the structure and function of biomolecules, including proteins, nucleic acids, lipids, and carbohydrates. The study has covered enzymatic reactions, metabolic pathways, and the principles of energy transfer within living organisms. Practical applications, such as biochemical assays and molecular techniques, have complemented theoretical knowledge, providing graduates with essential laboratory skills. The outcome of this course enables graduates to comprehend the molecular basis of life, fostering a solid foundation for further studies and research in diverse fields such as molecular biology, genetics, and bioinformatics. Additionally, graduates equipped with a strong understanding of biochemistry are well-prepared for careers in areas such as biotechnology, medicine, and pharmaceutical research.

GENRIC
PAPER:ZOO:HG-3016

The study of Physiology and Biochemistry in the Zoology graduation program has provided students with a comprehensive understanding of the intricate physiological and biochemical processes that govern the functioning of living organisms. Covering topics ranging from cellular metabolism and enzymology to organ system physiology, students have delved into the molecular mechanisms underlying various physiological functions. The course has integrated principles of biochemistry with the study of physiological adaptations, enabling graduates to comprehend the interconnectedness of molecular and organismal biology. Practical applications, including laboratory experiments and biochemical assays, have complemented theoretical knowledge, equipping graduates with valuable skills for both research and practical applications in fields such as medicine, biotechnology, and environmental science. The outcome of this course underscores the importance of bridging the gap between physiological and biochemical principles, providing graduates with a holistic understanding of life processes and preparing them for diverse career paths in biological sciences.

UG 4th Semester
PAPER:ZOO-HC:4016
Comparative Anatomy of Vertebrates

The Zoology graduation program's exploration of Comparative Anatomy of Vertebrates has provided students with a comprehensive understanding of the structural diversity and evolutionary adaptations among vertebrate organisms. Through an in-depth study of major vertebrate groups, including fishes, amphibians, reptiles, birds, and mammals, students have gained insights into the anatomical variations related to locomotion, feeding, reproduction, and sensory perception. The course has emphasized the evolutionary relationships and anatomical homologies among vertebrates, contributing to a broader understanding of the evolutionary processes that have shaped the diversity within this animal group. Graduates emerge from this

course with a profound appreciation for the structural complexities of vertebrates, setting the stage for advanced studies and research in fields such as evolutionary biology, paleontology, and vertebrate morphology.

PAPER:ZOO-HC:4026

Physiology: Life Sustaining

The study of Physiology: Life Sustaining in the Zoology graduation program has provided students with a deep understanding of the physiological mechanisms that sustain life in diverse organisms. Exploring topics such as cardiovascular, respiratory, digestive, and excretory systems, students have gained insights into how these systems contribute to the maintenance of homeostasis and overall organismal health. The course delves into the intricacies of physiological processes at both cellular and systemic levels, allowing graduates to comprehend the dynamic interactions that enable life-sustaining functions. Practical applications, including laboratory experiments and clinical case studies, have complemented theoretical knowledge, equipping graduates with valuable skills for further studies or careers in areas such as medical sciences, healthcare, and research. The outcome of this course underscores the crucial role of physiological processes in sustaining life and prepares graduates for contributing to advancements in biomedical sciences and related fields.

PAPER:ZOO:HC-4036

Biochemistry of Metabolic Processes

The Zoology graduation program's exploration of the Biochemistry of Metabolic Processes has equipped students with a profound understanding of the molecular intricacies governing energy metabolism in living organisms. Covering topics such as glycolysis, Krebs cycle, oxidative phosphorylation, and metabolic regulation, students have delved into the biochemical pathways that underlie cellular energy production and utilization. The course has also explored the metabolism of carbohydrates, lipids, and proteins, providing a comprehensive view of the interconnected metabolic networks within cells. Graduates emerge from this course with a strong foundation in biochemistry, enabling them to comprehend the metabolic adaptations in various organisms and the implications for physiological functions. This knowledge is essential for graduates pursuing careers in areas such as medical research, nutrition sciences, and biotechnology, as it lays the groundwork for understanding metabolic disorders, energy regulation, and biochemical adaptations in different species.

GENERIC:

PAPER:ZOO:HG-4016

The combined study of Genetics and Evolutionary Biology in the Zoology graduation program has empowered students with a profound understanding of the interconnected processes that drive the diversity of life. Covering topics from Mendelian inheritance and population genetics to mechanisms of evolution and molecular genetics, students have explored how genetic variations

contribute to evolutionary processes. The course has provided insights into the principles governing heredity, the role of mutations in genetic diversity, and the selective forces influencing the adaptation and evolution of species over time. Graduates from this program emerge with a comprehensive understanding of the molecular and evolutionary foundations that underpin the complexity of life. This knowledge is crucial for careers in genetics research, conservation biology, and evolutionary studies, as it provides a solid foundation for addressing challenges related to genetic diseases, biodiversity conservation, and understanding the dynamics of life's evolution. The outcome of this course underscores the significance of genetic and evolutionary perspectives in unraveling the mysteries of biological diversity and adaptation

UG 5th Semester
PAPER:ZOO:HC-5016
Molecular Biology

The Zoology graduation program's exploration of Molecular Biology has provided students with a comprehensive understanding of the intricate mechanisms governing life at the molecular level. Covering topics such as DNA structure and replication, transcription, translation, and gene regulation, students have delved into the molecular processes that underpin cellular functions and genetic inheritance. The course has also explored advanced techniques in molecular biology, including DNA sequencing, PCR, and genetic engineering, equipping graduates with practical skills for laboratory research. Graduates from this program emerge with a profound appreciation for the role of molecular biology in shaping the diversity of life, and they are well-prepared for further studies or careers in fields such as genetics, biotechnology, and medical research. The outcome of this course underscores the pivotal role of molecular insights in advancing our understanding of living organisms and addressing challenges in diverse biological disciplines

PAPER:-ZOO-HC-5026
Principles of Genetics

The study of Principles of Genetics in the Zoology graduation program has provided students with a foundational understanding of the principles that govern the inheritance and transmission of genetic information. Covering topics such as Mendelian genetics, molecular genetics, population genetics, and genetic engineering, students have delved into the mechanisms underlying genetic variation and heredity. The course has explored the molecular basis of genetic processes, including DNA replication, transcription, and translation. Additionally, students have examined the principles of genetic evolution and the application of genetics in biotechnology. Graduates from this program emerge with a solid grasp of the fundamental principles that govern the diversity of life, preparing them for careers in genetics research, healthcare, or biotechnology, and laying the groundwork for advanced studies in genetics or related fields. The

outcome of this course underscores the pivotal role of genetics in shaping biological diversity and advancing our understanding of inherited traits.

PAPER:-ZOO-HE-5036
Principles of Genetics

The study of Endocrinology in the Zoology graduation program has provided students with a foundational understanding of the intricate hormonal regulatory systems across the animal kingdom. Covering topics such as hormone production, secretion, and their physiological effects, students have delved into the diverse endocrine mechanisms that govern growth, development, metabolism, and reproduction in animals. The course has explored both vertebrate and invertebrate endocrinology, providing a comprehensive view of the hormonal signaling pathways. Graduates from this program emerge with a solid foundation in endocrine principles, prepared for further studies or careers in areas such as biomedical research, healthcare, and environmental science. The outcome of this course underscores the importance of endocrinology in unraveling the complexities of animal physiology and contributes to the broader understanding of how hormonal systems shape the diverse functions of organisms in their respective environments

UG 6th Semester
PAPER: ZOO:HC-6016
Developmental Biology

The study of Developmental Biology in the Zoology graduation program has equipped students with a profound understanding of the processes that govern the growth, differentiation, and organization of living organisms. Covering topics such as embryonic development, cell differentiation, morphogenesis, and organogenesis, students have delved into the molecular and cellular mechanisms underlying the formation of complex multicellular organisms. The course explores various developmental stages and regulatory pathways, providing insights into the genetic and environmental factors that influence organismal development. Graduates from this program emerge with a comprehensive understanding of how a single fertilized egg evolves into a complex, functional organism. This knowledge is essential for careers in fields such as reproductive medicine, genetics, and evolutionary biology, as it provides a solid foundation for understanding the intricacies of developmental processes in diverse animal species. The outcome of this course underscores the importance of developmental biology in elucidating the principles that shape the diversity of life.

PAPER:ZOO:HC-6026
Evolutionary Biology

The study of Evolutionary Biology in the Zoology graduation program has provided students

with a profound understanding of the processes that drive the diversity of life on Earth. Covering topics such as natural selection, speciation, adaptation, and phylogenetics, students have delved into the mechanisms underlying the evolutionary changes observed in organisms over time. The course explores the historical development of life forms, the genetic basis of evolution, and the role of ecological factors in shaping biodiversity. Graduates from this program emerge with a comprehensive understanding of the principles that govern the unity and diversity of living organisms. This knowledge is essential for careers in fields such as conservation biology, ecology, and paleontology, as it provides a solid foundation for understanding the evolutionary forces that have shaped the biological world. The outcome of this course underscores the significance of evolutionary biology in unraveling the intricate patterns and processes that define life's journey through time.

PAPER:ZOO:HE-6014

Biology of Insecta

The study of Biology of Insecta in the Zoology graduation program has provided students with a comprehensive understanding of the diverse and fascinating world of insects. Covering topics such as insect morphology, physiology, behavior, and ecology, students have delved into the unique adaptations that have made insects the most successful and abundant group of organisms on the planet. The course explores the life cycles, reproductive strategies, and ecological roles of various insect orders, providing insights into their significance in ecosystems and human societies. Graduates from this program emerge with a solid foundation in insect biology, well-equipped to contribute to fields such as entomology, agriculture, and environmental science. This knowledge is crucial for addressing challenges related to insect pests, pollinators, and the broader impact of insects on ecological systems. The outcome of this course underscores the pivotal role of insect biology in understanding and appreciating the remarkable diversity and importance of this class of organisms.

PAPER:ZOO:HE-6036

Reproductive Biology

The study of Reproductive Biology in the Zoology graduation program has equipped students with a profound understanding of the intricate mechanisms governing reproduction in various organisms. Covering topics such as reproductive anatomy, endocrinology, mating behaviors, and reproductive strategies, students have delved into the diverse ways in which species ensure their survival through successful reproduction. The course explores reproductive adaptations, mechanisms of fertilization, and the developmental stages of embryos, providing insights into the evolution of reproductive processes. Graduates from this program emerge with a comprehensive understanding of the reproductive diversity seen in the animal kingdom. This knowledge is crucial for careers in fields such as reproductive medicine, conservation biology, and evolutionary studies, as it lays the foundation for understanding and addressing challenges

related to fertility, reproductive health, and the conservation of endangered species. The outcome of this course underscores the pivotal role of reproductive biology in shaping the continuation of life across different taxa.