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DEPARTMENT OF ZOOLOGY

Programme Outcomes, Programme Specific Outcomes and Course Outcomes

Programme : M.Sc. - Zoology

Programme outcome (POs) : As per Syllabus (IGU, Haryana):-
The programme has been designed by the IG University for post graduate students in the subject of zoology. The programme enables the students with subject technical skillful for the techniques used life sciences and in particular for animals and their uses for human kind. The aim of the Programme is to make the students expert in all the fields of animal sciences with the combination of core and elective paper as per CBCS. Students learn modern technologies that are used in the subject and make them expert. The program also makes the students aware to the social and environmental issues with respect to the knowledge of animals and their uses in different areas of human development and animal sciences.

Programme Specific Outcomes (PSOs): As per Syllabus (**IGU, Haryana**):-

PSO1. After completing the programme the student will be able to understand different branches of Zoology such as systematics, evolution, ecology, developmental biology, animal physiology, biochemistry, morphology, anatomy, reproduction, human and animal genetics, molecular biology, diversity of animals and other fields of animal sciences.

PSO2.
The course enables the students to design and execute experiments related to modern research tools and techniques on different fields of life sciences.

PSO3.
Students will be technically sound for various analytical and biological skills competent to biological fields.

PSO4.
After completion of the programme the students will be able to design short research projects that develop the research attitude and scientific temperament among students.

Programme : B.Sc. Zoology

Programme Outcomes (PO's)
The programme enables the students to understand about diversity of animals and its importance in the maintenance of ecological balance. Students will learn to carry out practical work, in the field and in the laboratory, interpreting Animal morphology and anatomy, Animal identification, tissue analysis techniques. They will be able to apply the knowledge of basic science, life sciences and fundamental process of Animals, modern techniques and instruments for Biochemical estimation, Molecular Biology, Biotechnology, Animal Tissue culture experiments, cellular and physiological studies of animals and their uses.

Programme Specific Outcomes (PSO's)

PSO1.
Students will be able to study the interaction of different groups of animals such as porifera, coelentrata, helminthes, annelida, arthropoda, mollusca, echinodermata and vertebrates.

PSO2.
Students will also be able to use the comparative biology to learn about evolution of animals, morphology, anatomy and diversity of life on earth.

PSO3.
After completing the programme the students will be able to evaluation of ideas and arguments by collecting relevant information about the animals and put critical value, to recognize their position in the classification systems.

PSO4.
The programme enables students to explain that how animals function at gene, genome, cellular and tissue level, organ and organ system level and their relations.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject : Life and diversity from protozoa to helminths **Class: B.Sc. 1st Sem.**

Course objectives

1. To understand the animal kingdom .
2. To understand the taxonomic position of protozoa to helminthes.
3. To understand the general characteristics of animals belonging to protozoa to helminthes.
4. To understand the body organization of phylum from protozoa to helminthes.
5. To understand the origin and evolutionary relationship of different phylum from protozoa to helminthes.

Course outcomes

1. Student should be able to describe unique characters of protozoa, porifera, coelenterate and helminthes.
2. Student should be able to recognize life functions of protozoa, porifera, coelenterate and helminthes.
3. To recognise the ecological role of phylum protozoa, porifera, coelenterate and helminthes.
4. To recognise the diversity from protozoa, porifera, coelenterate and helminthes.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject : Cell Biology **Class: B.Sc. 1st Sem.**

Course Objectives

1. To understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles
2. To understand how these cellular components are used to generate and utilize energy in cells
3. To understand the cellular components underlying mitotic cell division.
4. To understand responses to environmental or physiological changes, or alterations of cell function brought about by mutation.
5. To understand the process of cell division in both somatic and germ cell.

Course Outcomes

1. Able to Describe the function and the composition of the plasma membrane.
2. Able to Explain the principles of the cell theory.
3. Able to Differentiate between prokaryotes and eukaryotes.
4. Able to Understand the importance of the nucleus and its components.
5. Able to Understand how the endoplasmic reticulum and Golgi apparatus interact with one another and know with which other organelles they are associated..
6. Able to Identify the three primary components of the cell's cytoskeleton and how they affect cell shape, function, and movement.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject : Life and diversity of chordates 1 **Class: B.Sc. 3rd Sem.**

Course objectives

1. To understand what the chordates are.
2. To understand different categories of chordates.
3. To understand the general characters of chordates.
4. To understands the level of organization in chordate subphylum.
5. To understand the origin and evolutionary relationship in different subphylum of chordates.

Course outcomes

1. Student should be able to describe unique characters of urochordates, cephalochordates and fishes.
2. Student should be able to recognize life functions of urochordates to fishes.
3. To understand the ecological role of different groups of chordates.
4. To understand the diversity ofchordates.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject : Mammalian Physiology 1 **Class: B.Sc. 3rd Sem.**

Course objectives

1. To understand the metabolic activities in mammalian body.
2. To understand the various biomolecules in body.
3. To understand the structural chemistry of proteins, carbohydrates, fats.
4. To understand the functions of biomolecules in body. secretion.
5. To understand the process of digestion.

Course outcomes

1. Students are able to understand the physiology at cellular and system levels .
2. Students are able to describe the role and functions of different biomolecules.
3. Able to describe the physiology of digestion
4. Students are able to understand how mammalian body get nutrition from different biomolecules.

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Course Objective & Outcomes

Subject : Fish and Fisheries **Class: B.Sc. 5th Sem.**

Course objectives

1. To give the students the necessary basic information about fishery and aquaculture.
2. To discuss advantages and disadvantages with the two aquatic food primary production systems, fishery and aquaculture.
3. To discuss important factors for performing a sustainable fishery and a sustainable aquaculture.
4. Provide the technical and general knowledge necessary for competent fisheries management.
5. To exchange and circulate information, ideas and practical experience on all matters relating to fisheries and their management.

Course objectives

1. Students will learn about the role of the Fisheries Management Authority.
2. Students will learn about the importance of sustainable fishing and protecting the marine environment.
3. Students learn about freshwater or saltwater fish species .
4. Students learn about how fish adapt or change to better survive their environment
5. Students able to understand about prawn culture, mollusk culture.

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Course Objective & Outcomes

Subject : Ecology And Evolution **Class: B.Sc. 5th Sem.**

Course objectives

1. To describe the interaction between organisms and enviorment.
2. To describe the theory of natural selection.
3. To understand how species evolve.
4. To understand the exchange of nutrients within the ecosystem.
5. To describe the population dynamics.

Course outcomes

1. Students are able to describe the relation between abiotic and biotic factors.
2. Students are able to describe various biological interactions.
3. Students are able to understand how change in population affect the ecosystem.
4. Able to describe evolutionary history of man.
5. Able to describe origin of species on earth.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject: Life and diversity from annelid to hemichordata **Class: B.Sc. 2nd Sem.**

Course objectives

1. To understand the animal kingdom.
2. To understand the taxonomic position of annelids to hemichordates.
3. To understand the general characteristics of animals belonging to annelids upto hemichordates.
4. To understand the body organization of phylum from annelids to hemichordates.
5. To understand the origin and evolutionary relationship of different phylum from annelids to hemichordates.

Course outcomes

1. Student should be able to describe unique characters of annelids, arthropods, mollusks, echinoderms and hemichordates.
2. Student should be able to recognize life functions of annelids, arthropods, mollusk, echinoderms and hemichordates.
3. To recognise the ecological role of phylum from annelid to hemichordate.
4. To recognise the diversity from annelid to hemichordate.

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Course Objective & Outcomes

Subject: Genetics **Class: B.Sc. 2nd Sem.**

Course objectives

1. To understand how the behavior of chromosomes during meiosis can explain mendal law.
2. To understand how inheritance patterns are affected by position on chromosomes.
3. To understand the similarities and differences between how genetic information is passed on in prokaryotes and eukaryotes.
4. To understand gene interactions.
5. To understand the chemical nature of heredity.

Course outcomes

1. Comprehensive and detailed understanding of the chemical basis of heredity.
2. Understanding about the role of genetics in evolution.
3. The ability to evaluate conclusions that are based on genetic data.
4. The ability to understand results of genetic experimentation in animals.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject: Life and diversity of chordates 2 **Class: B.Sc. 4th Sem.**

Course objectives

1. To understand what the vertebrates are.
2. To understand different categories of vertebrates.
3. To understand the general characters of each class of vertebrates.
4. To understands the level of organization in vertebrate classes.
5. To understand the origin and evolutionary relationship in different classes of vertebrates.

Course outcomes

1. Student should be able to describe unique characters of amphibians, reptiles, aves and mammals.
2. Student should be able to recognize life functions of amphibians, reptiles, aves and mammals.
3. To understand the ecological role of different classes of vertebrates.
4. To understand the diversity of vertebrates.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject : Mammalian Physiology 2 **Class: B.Sc. 4th Sem.**

Course objectives

1. To understand the metabolic activities in mammalian body.
2. To understand the types mechanism of working of nerve cells.
3. To understand the gaseous transport and the structure involved in gaseous transport in mammalian body.
4. To understand the nature of endocrine glands and their secretion.
5. To understand the process of reproduction.
6. To understand the blood flow in mammalian body.

Course outcomes

1. Students are able to understand the physiology at cellular and system levels .
2. Students are able to describe the role and functions of different systems.
3. Able to describe the physiology of respiratory, renal, endocrine and reproductive systems to define normal and abnormal functions.
4. Students are able to understand how physiological parameters are measured in mammals.

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Course Objective & Outcomes

Subject : Pest management **Class: B.Sc. 6th Sem.**

Course objectives

1. To understand taxonomic position of various insect pest.
2. To understand the natural history and evolutionary relationship of insects.
3. To understand the impact that insects have on huaman society.
4. To understand insect pest management techniques.
5. To understand the practical application of pesticides and their proper use.

Course outcomes

1. Students are able to understand ecologicaly important and harmful insects.
2. Able to recognize ecology and morphology of insect pest.
3. Able to understand the nature of damage done by insect pest.
4. Able to know about the methods of control of various insect pest.
5. Come to know how to handle different pesticides.

DEPARTMENT OF ZOOLOGY
Course Objective & Outcomes

Subject : Developmental Biology **Class: B.Sc. 6th Sem.**

Course objectives

1. To understand how organisms maintain gametic population.
2. To understand fertilization process.
3. To understand way of cleavage and different patterns to form zygote.
4. To understand the fundamental embryonic development.
5. To understand the complete process of formation of germ layers.

Course outcomes

After the successful completion of the course students will be

1. Be able to list the types of characteristics that make an organism ideal for the study of developmental biology.
2. Be familiar with the events that lead up to fertilization.
3. Be able to describe the first four rounds of cell division in different groups.
4. Be able to describe the stages and cellular mechanisms for gastrulation.
5. Able to understand difference between specification and determination.