

Govt.Degree College Nowshera

Department Of Zoology

Name of The Program:-B.Sc

B.Sc (Zoology as core subject) Program Outcomes, Program Specific Outcomes and Course Outcomes

Zoology Program Outcomes:

=To impart basic knowledge of various disciplines of Zoology and General biology meant for a graduate and for higher studies.

= To acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation.

= Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms.

= Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment.

=Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.

= Understands the complex evolutionary processes and behavior of animals.

= Correlates the physiological processes of animals and relationship of organ system.

=Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species.

=Gain knowledge of Agro based Small Scale industries like sericulture, fish farming, and vermicompost preparation.

= Understands about various concepts of genetics and its importance in human health.

= Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties.

=Apply the knowledge and understanding of Zoology to one's own life and work.

=Develops empathy and love towards the animals.

Program Specific Outcomes:

= Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology.

= Analyze the relationships among animals, plants and microbes.

=Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology, Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology.

=To explain physiological and biochemical activities and its impact on human bodies.

=Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine.

=To identify socio-economic animals & it's beneficial to humans.

=Gains knowledge about research methodologies, effective communication and skills of problem solving methods.

=Contributes the knowledge for Nation building.

Course Outcomes:-

SEMESTER: 1ST

COURSE NAME: ANIMAL DIVERSITY

COURSE CODE: UZOTC-101(Theory) UZOPC-101 (Practical)

=After successfully completing this course, students will be able to:

- Understand general taxonomic rules on animal classification.
- Observe the diversity in non-chordates and chordates and their systematic position.
- Classify Protista up to phylum using examples from parasitic adaptation .
- Classify Phylum Porifera to Echinodermata with taxonomic keys.
- Describe Phylum Nematoda and give examples of pathogenic Nematode.
- Classify phylum Protochordates to Mammalia.
- Imparts conceptual knowledge of invertebrates and vertebrates, their adaptations and associations in relation to their environment.
- Understand economic importance of some classes.
- Learn dissection of different systems of invertebrates.
- Learn preparation of temporary slide and studied through prepared slides.
- Study of museum specimens.

SEMESTER 2ND

**COURSE NAME: COMPARATIVE ANATOMY AND DEVELOPMENTAL BIOLOGY
VERTEBRATE**

COURSE CODE: UZOTC-201(Theory) UZOPC-201 (Practical)

=After successfully completing this course, students will be able to:

- Understand ontogenetic and phylogenetic developmental in vertebrates.
- The structural comparisons of vertebrate systems in major groups of vertebrates.
- Understand functional anatomy of organs.

- 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.
- Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration.
- Elucidate early embryonic development of frog.
- Gain knowledge regarding internal system of vertebrates.
- Understand organs through permanent slides.
- Gain skill about histological slide preparation, staining and mounting
- Analyze and describe zoological concepts, including morphology and anatomy
- Acquire basic understanding of methods and designs that can be used for further study and research.

Semester 3rd

COURSE NAME: ANIMAL PHYSIOLOGY AND BIOCHEMISTRY

COURSE CODE: UZOTC-301(Theory) UZOPC-302 (Practical)

=After successfully completing this course, students will be able to:

- Gain a deep knowledge of physiology.
- Explain various aspects of physiological activities of animals with special reference to humans.
- Understand concepts of digestion respiration excretion the functioning of nerves and muscles.
- Gain deep knowledge in biochemistry and bioenergetics.
- Define and explain the basic principles of biochemistry and bioenergetics useful for biological studies for illustrating different their structure, function and metabolism.
- understand Interactions and interdependence of physiological and biochemical processes.
- Gain skill about various lab tests.
- Gain skill about histological slide preparation, staining and mounting.
- Gain skill about determination of pH and quantitative analysis of blood cells.

Semester 3rd

COURSE NAME: APICULTURE (SKILL ENHANCEMENT COURSE)

COURSE CODE: UZOTS-303

=After successfully completing this course, students will be able to:

- Explain what the prerequisite to get started in beekeeping are.
- Identify where to purchase equipment and demonstrate how to assemble it.
- Name and identify major parts of the honeybee such as the stinger or mandibular parts.
- Describe bee biology and anatomy from the perspective of managing bees.
- Describe the importance of wax and identify what to look for in comb during hive inspections

Semester 4th

COURSE NAME: PRINCIPAL OF GENETICS AND EVOLUTIONARY BIOLOGY

COURSE CODE: UZOTC-401(Theory) UZOPC-402 (Practical)

=After successfully completing this course, students will be able to:

- Understand the mechanism of cell cycle and cell division.
- Understand Mendelian and Non Mendelian inheritance.
- Apply the principles of Mendelian inheritance.
- Understand the cause and effect of alterations in chromosome number and structure.
- understand the central role that genetics play in the life of all organisms.
- Acquire knowledge about the evolutionary history of earth (living and non living).
- Develop a holistic appreciation on the phylogeny and adaptations in animals.
- Understand the evolution of universe and life.

- Understand the process and theories in evolutionary biology.

-Gain knowledge about the distribution of animals on earth, its pattern, evolution and causative factors and its adaptation.

Semester 4TH

COURSE NAME: AQUARIUM FISH KEEPING (SKILL ENHANCEMENT COURSE)

COURSE CODE: UZOTS-403

=After successfully completing this course, students will be able to:

-To learn the scientific method of setting an aquarium.

-Gain knowledge of ornamental fish breeding which is highly professional and attractive avenue for youth

- Understand conditioning factors and how they can be manipulated.

Semester 5th

COURSE NAME: Applied Zoology

COURSE CODE: UZOTE-501(Theory) UZOPC-502 (Practical)

=After successfully completing this course, students will be able to:

- Explain animal associations and their types.

-Acquire knowledge about life cycle and importance of major parasites.

-Understand transmission routes of animal and zoonotic parasites

-Gain knowledge about immunity, antigens-antibodies and their properties

-Understand the culture techniques of prawn, pearl and fish.

-Understand silkworms rearing and their products

- Understand the Bee keeping equipments and apiary management.
- Understand dairy animals' management, the breeds and diseases and learn the testing of egg and milk quality.
- Learn various concepts of lac cultivation.
- Understand Aqua culture systems, induced breeding techniques, post harvesting techniques.
- Gain knowledge about various disease related vectors and their impact on human.
- Understands processes of fisheries, sericulture, along with crop pest management techniques.
- Understands concepts of tissue and cell culture techniques.

Semester 5TH

COURSE NAME: Public Health and Hygiene (SKILL ENHANCEMENT COURSE)

COURSE CODE: UZOTS-503

=After successfully completing this course, students will be able to:

- Identify current national and global public health problems.
- Aware about the issues of food safety, water safety, vaccination, exercise and obesity, exposure to toxins.
- Frame a public health plan during any epidemic or spread of infectious disease etc.
- Analyze case studies of infant mortality and obesity.

SEMESTER 6TH

COURSE NAME: INSECT VECTOR AND DISEASES

COURSE CODE: UZOTE-601(Theory) UZOPC-602 (Practical)

=After successfully completing this course, students will be able to:

- Acquire general morphology of insects
- Understand the role of insects in spread of diseases

- Understand the role of household insects in relation to human health.
- Develop awareness about the causative agents and control measures of many commonly occurring diseases.
- Devise strategies to manage the vectors population below threshold levels, public health importance.
- Justify the control measures of arthropod vectors.
- Collect parasite, vector and pest specimen.

Semester 6TH

COURSE NAME: SERICULTURE (SKILL ENHANCEMENT COURSE)

COURSE CODE: UZOTS-503

=After successfully completing this course, students will be able to:

- Explain what the prerequisite to get started in sericulture are.
- Generation of skilled man power in the field of sericulture.
- Gain knowledge of pre and post cocoon management.
- Gain knowledge of silk worm rearing, mulberry cultivation, pests and diseases associated with silk worm, mulberry and various process involved in silk production.-Describe silkworm biology and anatomy from the perspective of managing silkworm.
- To provide field exposure.