

Course Outcomes: B.Sc. in Zoology as Major

Course Objectives:

- Invertebrate animals have been used medicinally for 4,000 years and have served as models for research and teaching since the late 1800s.
- This course contents will introduce the students to the systematic and scientific studies of the various forms of invertebrate animals present on Earth. They will learn about the general characteristics of invertebrates.
- The course will discuss the classification, structural and functional aspects of invertebrates. Students can identify the relative importance of invertebrates in evolutionary processes.
- In the laboratory work, students will understand the morphological and anatomical features of invertebrate animals

Semester I

ZOODSC101T : DS-1&ZOODSC101P

After Successful completion of this course, students will be able to

CO 1: Characterize and classify Protista, Parazoa, Metazoa, Porifera, Cnidaria, Ctenophora, Platyhelminthes, Nematelminthes .

CO 2: Academic attainment of the life cycles of *Giardia intestinalis*, *Leishmania donovani*, *Entamoeba histolytica* and *Plasmodium vivax*, *Fasciola hepatica* and *Taenia solium*, *Ascaris lumbricoides*, *Ancylostoma duodenale* and *Wuchereriabancrofti*

CO 3: Knowledge of the diversity, biological facts and formation of coral reefs

CO 4: Grouping and identification of animals based on morphological characters and structure.

CO 5: Development of ideas how a simple single cell creature evolves to a creature with complex body plan

Semester II

ZOODSC202T: DS-2: &ZOODSC202P:

After Successful completion of this course, students will be able to

CO 1: Understand the evolution of coelomate animals.

CO 2: Acquainted with the diversity, evolution and general characteristics of different taxa of non-chordate from Annelida to Hemichordata.

CO 3: Develop ideas on physiological techniques, organization of body plan of nonchordates

CO 4: Aware of the phylogenetic relationship between chordate and non chordate and evolutionary significance of taxon.

CO 5: Recognise animals based on morphological characters and structure.

CO 6: Learn the anatomy of internal system through dissection of a few animals.

CO 7: Get vulnerability to research while working on a short project on any related topic on pond water protozoan or invertebrate diversity/ life cycles of mosquitoes, butterfly/moth etc /coral and coral reefs

Semester III

ZOODSC303T: DS-3&ZOODSC303P

After Successful completion of this course, students will be able to

CO 1: Characterize and classify the phylum chordate with a knowledge on homology and homoplasy

CO 2: Understand the origin and evolution of chordate and vertebrates and their complex organ system

CO 3: Acquire knowledge on zoogeographical realms and distribution of animals all over the world.

CO 4: Group and Identify animals from protochordata to Mammalia based on their morphological characters.

CO 5: Study the anatomy of animals through dissection.

CO 6: Know the life sustaining mechanisms like Metamorphosis and parental care in Amphibia, Biting mechanism in Snake, Principles and aerodynamics of flight and adaptive radiation

CO 7: A student perusing a career in research of wild life, experimental biology, zoological gardens will benefit from the knowledge and practical exposure from this course.

Semester IV

ZOODSC404T: DS-4&ZOODSC404P:

After Successful completion of this course, students will be able to

CO 1 :Acquire knowledge on Structure, function and derivatives of integument in amphibian, birds and mammals.

CO 2: Know about axial and appendicular skeleton; Jaw suspension; Visceral arches.

CO 3: Understand the comparative anatomy brain, Cranial nerves in mammals, heart and aortic arches and stomach in mammals.

CO 4: Have ideas on structural and functional aspects of respiratory system, circulatory system, urinogenital system

CO 5: Understand the features of different scale types, disarticulated skeleton of Toad, Pigeon and Guineapig.

CO 6: Demonstrate Carapace and plastron of turtle.

CO 7: Identify between herbivorous and carnivorous skull.

CO 8: Acquire knowledge on Circulatory system, Brain, pituitary, urinogenital system of Tilapia through dissection

CO 9: The combination of comparative anatomy and physiology will enable students analyse experimental outcomes in similar models and shall aid them in the fields of drug designing, toxicology, pharmaceutical science and clinical experimentations.

ZOODSC405T: DS-5 & ZOODSC405P

After Successful completion of this course, students will be able to

CO 1 : understand nature in the context of ecosystem dynamics, ecosystem functioning and provision of ecosystem services. The course would demonstrate a broad understanding of the processes that shape the distribution and abundance of organisms from the micro-habitat to the globe; recognize that the distribution of organisms is a product of positive and negative interactions within and across trophic levels, including competition, mutualism, predation, and parasitism.

CO 2 : Acquire information on key factors that influence the habitat including climate, energy input, spatial/temporal complexity, and resource availability.

CO 3 : Develop an appreciation of the ecosystem services and would appreciate the modern scopes of scientific inquiry in the field of Ecology. They will develop an understanding of the differences in the structure and function of different types of ecosystems and will learn techniques of data analysis as well as methods of presenting scientific information in figures and tables.

CO 4 : Acquire an appreciation of the natural world through direct experience with local ecosystems; learn techniques for gathering data in the field.

Zoology as Minor

Semester 1

MA-1(5) : Animal Diversity

Course Objective

- Demonstrate a fundamental understanding of the academic field of Zoology, its different learning areas and applications, and its link with related disciplinary areas/subjects; provides awareness on the divisions in Animal Kingdom, their distribution, relationship among them and with the environment.
- Show Procedural knowledge in various professions related to the subject in different fields inclusive of research and development, teaching, government and public services with the help of practical tests in different branches; Use it to analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment.

Course Outcome

After Successful completion of this course, students will be able to

CO 1 : Acquire an entry level detailed idea of animal kingdom.

CO 2 : Enough to teach in schools, act as a keeper of animal specimens, help in identification of species.

CO 3 : The student will be able to act as an assistant.

Semester II

MA - 2 (5) : Physiology and Biochemistry

Course Objective

- This will form as an introductory level of detailed study of physiology (higher vertebrates) and biochemistry. A simple approach to understand in mammalian physiology into various principles of life-supporting process like nervous system, respiration, digestive system etc.
- The biochemistry part will mainly introduce to structure and metabolism of protein, carbohydrate and lipids. The course does not intend to deal with very much details which will be higher compared to the standard of class 12 but much simpler than its counterpart courses in the Major section.

Course Outcome

After Successful completion of this course, students will be able to

CO 1: Understand the process of digestion and its control.

CO 2 :Develop understanding in muscle structure and contraction mechanism.

CO 3 : Learn the process of respiration and transport of gases.

CO 4 : Understand kidney structure and regulation of urine formation.

CO 5 : Understand heart structure and functioning.

CO 6 : Understand function of endocrine glands and formation of gametes.

CO 7: Understand about the importance and scope of biochemistry.

Semester III

MA - 3 (5): Insect, Vectors and Disease

Course Objective

- This course has two distinct parts, the first dealing with insect classification (basic level not as detailed as in Major) of Insects,
- The second part is dedicated in understanding in the part that the insects act as vectors and the disease they cause. More emphasis is laid on second part that is vector biology as that is the more important part in recent times.

Course Outcome

After Successful completion of this course, students will be able to

CO1 : To learn understand the general features of insects and gain knowledge about their distribution and success on Planet Earth and to learn Insect's taxonomy, general morphology and physiology

CO2 : Learn about vector and vector borne diseases.

CO3 : Describe the mechanisms for transmission, virulence and pathogenicity in pathogenic micro-organisms.

CO 4. Diagnose the causative agents, describe pathogenesis and treatment for important diseases like malaria, leishmaniasis, Dengue, Chikungunya, Viral encephalitis, Filariasis .

CO 5. Explain how the infectious disease can transmit to human.

CO 6. Properly understand the prevention and control mechanism of infectious diseases.

CO 7. Develop education, communication programme and learn how to maintain proper WHO guidelines about infectious diseases.

Semester IV

MA - 4 (3) Applied Zoology

Course Objective

- The course deals with the knowledge of animal science in three parts primarily as parasites and roles in disease causing or spreading, secondly as an introductory to the science of epidemiology and finally of animals which help humans in commerce.
- More emphasis is laid on second part that is disease causing as that is the more important to man.

Course Outcome

CO 1 : Health science is huge part of a countries economy. This course makes aware and responsive students to the science of parasitism and epidemiology.

CO 2 :This knowledge may allow them to participate in epidemiological surveys as assistants. The knowledge can be used for participation in mass awareness programs.