

Program Specific Outcomes (P.S.O.) of Zoology
Department of Zoology (UG)

PSO-1- Understand the biological diversity and grades of complexity of various animal forms through their systematic classification, structure, life cycle and pathogenicity of certain animals from protozoa to Echinodermata.

PSO-2- Inspire the students in learning the gametogenesis, types of eggs, fertilization, types and pattern of cleavage, fate maps and gastrulation in frog and chick, extraembryonic membrane, placenta and primary organizer and parthenogenesis in animals.

PSO-3- Equip the students to diagrammatic representation of general anatomy, digestive and nervous system of cockroach, earthworm and prawn, preparation of temporary mount, study of museum specimen, histological and embryological slides, habituation in earthworm and pond water zooplanktons, determination of pH and dissolved oxygen.

PSO-4- Students will have descriptive knowledge about the cell biology and genetics.

PSO- 5- Students will acquire complete in-depth knowledge of reproductive biology in male and female in vertebrates including men and new reproductive assisted technology like *in vitro* fertilization and embryo transfer, use of different biostatistical tools to test authenticity of different biological experiment.

PSO-6- Learn about the fishes, mounting of materials, spotting of bones of tetrapoda, museum specimen, histological and embryological slide, use of mean, median, mode, standard deviation and standard error in biological experiments.

PSO-7: Student learn about the biochemistry of carbohydrate, proteins, lipids, Enzymes, metabolic pathway like glycolysis, Kreb`s cycle and beta oxidation of fat.

PSO-8- Student learn about the physiology of nutrition, respiration, circulation, excretion, osmo-regulation, muscle contraction and nerve conduction, hormones and their mechanism of action, structure and function of pituitary, thyroid, adrenal and islet of Langerhans.

PSO-9- Develop a basic concept of Biotechnology and its implementation for human welfare, provide an in-depth knowledge about antigen-antibody interactions, immune responses, immune disorders, allergy and inflammation and vaccine.

PSO-10- Learn about various theories of evolution of life, concept of species, genetic drift and hardy Weinberg laws, evolution of horse and men. Learn about the Zoogeographical realms of the world, living fossil, extinction, insular fauna, neoteny and orthogenesis.

PSO-11 Gained knowledge about pathogenic microbes like virus, bacteria, pathogenic protozoans, pathogenic helminths. the etiology, occurrence and eradication of small pox, AIDS, Hepatitis B and polio, Cancer etiology, prophylaxis and therapy, Contraceptive measures.

PSO-12 -Students can gain descriptive knowledge about sericulture, apiculture and lac culture. pond management, induced breeding and composite culture of carp, paste management, poultry, vectors and their control measures.

PSO-13 Students gain knowledge about estimations of glucose, protein and starch, RBC, Hemoglobin, differential count of WBC, blood group and ESR, descriptive knowledge of bony and cartilaginous fishes, silk moth, Musca, Culex and Anopheles, endocrinological slides.

Course Outcomes (CO)
B.Sc. Part-I, ZOOLOGY (Hon.) Paper-I
Animal Diversity-I

CO-1-Understand the biological diversity and grades of complexity of various animal forms through their systematic classification and comparative structural studies from protozoa to Echinodermata.

CO-2-Get thorough knowledge about the structure, nutrition, reproduction and life cycle of *Paramecium*, *Trypanosoma gambiense* and *Entamoeba histolytica* and pathogenicity of *T. gambiense* and *E. histolytica*.

CO-3- Understand about evolution of metazoan.

CO-4- Students get familiar about morphology and canal system in sponges and life history of Obelia, formation of polymorphism and about corals and coral reefs.

CO-6- They will understand structure and affinities of Ctenophora.

CO-7--Gain knowledge about the structure, life cycle and pathogenicity caused by *Taenia solium*, *Ascaris lumbricoids* and *Wuchereria bancrofti*.

CO-8-Learn about the Haemocoelomic system in leech and mechanisms of excretion of annelids.

CO-9-Studetns can implement knowledge about pearl formation and torsion and detorsion in gastropods.

CO-10- Learn about the water vascular system in starfish and their larva.

GROUP-B, Environmental biology and animal behavior

CO-1-. Learn about the laws of limiting factor.

CO-2- Learn about the general principles of Environmental Biology with emphasis on ecosystems. Abiotic and biotic factors of ecosystems, food chain, food web, ecological pyramids and energy flow through an ecosystem.

CO-3- Get thorough knowledge about Biodiversity and conservation of wild life.

CO-4-Knowledge about details of nature and types of toxicants, its mode of action and safe guard.

CO-5- Learn about the ethology, its concept origin and historical background.

CO-6- Understand about the types and mechanism of learning.

CO-7- Knowledge about the social behavior in Insects.

CO-8- Learn about the various models of rain water harvesting.

CO-9 Get thorough knowledge about Pheromones and other similar chemicals as means of communication among animals.

CO-10. Understand about the altruism and selfishness.

PAPER-II; GROUP-A; ANIMAL DIVERSITY-II

CO-1- The course teaches the students about the origin of chordates.

CO-2- The course leads the students to understand the general characters and classification of Hemichordate, Urochordata and Cephalochordates and retrogressive metamorphosis in herdmania.

CO-3: Learn about the general characters and classification of cyclostomes and Petromyzon.

CO4: Learn about the general characters and classification, migration and respiration in Chondrichthyes and Osteichthyes.

CO-5: Learn about the general character, origin, parental care, neoteny and classification of amphibia.

CO-6: Learn about the general character and classification of Reptilia, biting mechanism in snake, scalar peculiarities in Chelonians.

CO-7; Learn about the general character, origin, flight adaptations, migration and classification of Aves.

CO-8: general characters and affinities of Prototheria and Metatheria, adaptive radiation and dentition.

GROUP-B DEVELOPMENTAL BIOLOGY

CO-1- Understand the basic knowledge of spermatogenesis and oogenesis.

CO-2: Learn about the types of eggs, fertilization, types and pattern of cleavage, fate maps and gastrulation in frog and chick up to the formation of three germinal layers.

CO-3- Learn about the extra embryonic membranes in birds.

CO-4-Understood the structure, types and structure of placenta.

CO-5-Knowledge of primary organizer and parthenogenesis.

Practical

CO-1-Learn about diagrammatic representation of general anatomy, digestive and nervous system of cockroach, earthworm and prawn.

CO-2--Well versed about Temporary mount preparation of various samples.

CO-3- Learn about the spotting of museum specimens of histological and embryological slides.

CO-4- Knowledge about habituation in Earthworm, Zooplanktons in pond water.

CO-5-- Knowledge about Determination of pH and dissolved oxygen content.

B.Sc. Part-II, ZOOLOGY (Hon.) Paper-III GROUP-A, Cell biology

CO-1- Obtain knowledge of the structures and functions of prokaryotic and eukaryotic cells.

CO-2: Learn about the structure and function of plasma membranes and transport of substances across membrane.

CO-3: Learn about the ultrastructure and function of mitochondria, Golgi complex ribosome, chromosome and cytoskeleton.

CO-4-Understand the cell division like mitosis and meiosis.

GROUP-B, Genetics

CO-1— Understands about various concepts of genetics, laws of heredity and its importance in human health and understand the sex determination in *Drosophila*, chromosomal mapping, interaction of genes, multiple alleles, non-chromosomal, inheritance, chromosomal aberration and gene mutation.

Paper -IV, Group A Reproductive biology

CO-1-Learn about the detailed structure and functions of mammalian ovary, reproductive cycles in vertebrates, parturition and its regulation, structure of mammary gland and hormone control of lactation, structure and function of mammalian testis, biochemistry of semen, IVF and embryo transfer.

GROUP-B, BIOMETRY

CO-1 Gets a thorough knowledge about introduction to biostatistics and basic concepts of Biostatistics, analysis of variance, probability distribution, chi square test and student's t test, correlation.

CO-2- Enable learners to effectively apply suitable statistical tests in research and equip them to prepare research papers and project proposals.

Practical

CO-1-Learn the cartilaginous and bony fishes, mounting of materials, spotting of bones of tetrapoda, museum specimen, histological and embryological slide, use of mean, median, mode, standard deviation and standard error in biological experiments.

B. Sc. Part – III - ZOOLOGY (HONOURS)

Paper-V (Biochemistry, Physiology & Endocrinology) GROUP: -A

CO-1-Get thorough knowledge about understand the structure and classification of carbohydrate, Amino acids, proteins, lipids and vitamins.

CO-2- Students will be familiar with nomenclature and classification of enzyme, mechanism of action of enzymes; coenzymes, co-factors, Isozymes; kinetics of enzyme catalyzed reactions and enzyme inhibitions and regulatory process.

CO-3-Understood about the selective metabolic pathway such as glycolysis, Kreb`s cycle and beta oxidation of fats.

GROUP: -B

CO 1: Student know about the physiology of nutrition, respiration, circulation, excretion, osmo-regulation, muscle contraction and nerve conduction.

CO -2- Learn about the general characters of hormones and mechanism of hormone action.

CO -3-Well versed about the structure and function of pituitary, thyroid, adrenal and islet of Langerhans.

PAPER-VI; Group-A Biotechnology and immunology

CO-1-Develop a holistic understanding of the basic concept of Biotechnology and its implementation for human welfare.

CO-2-1 Imparts the knowledge about DNA technology, genetic manipulations and application in the identification of actual culprit.

CO-3-Provide an in-depth knowledge about antigen-antibody interactions, immune responses, immune disorders, allergy and inflammation and vaccine.

Group-B (Evolution and Zoogeography)

CO-1-Learn about various theories of evolution of life such as Lamarckism, Darwinism and Neo Darwinism, concept of species, genetic drift and hardy Weinberg laws and evolution of horse and men.

CO-2: Learn about the Zoogeographical realms of the world like Ethiopian, Australian and

Oriental region with their faunal distribution, living fossil, extinction, insular fauna, neoteny and orthogenesis.

PAPER-VII, GROUP-A, Medical Zoology

CO-1- Gained knowledge about pathogenic microbes like virus, bacteria, pathogenic protozoans (plasmodium and leishmania) pathogenic helminths (Wuchereria bancrofti and Ancylostoma duodenale).

CO-2: Learn about the etiology, occurrence and eradication of small pox, AIDS, Hepatitis B and polio

CO-3: Learn about the Cancer etiology, prophylaxis and therapy.

CO-4: Learn about the Contraceptive measures for family planning.

PAPER-VII, GROUP-B, Economic Zoology

CO-1-Students can gain descriptive knowledge about sericulture, apiculture and lac culture.

CO-2: Learn about the pond management, induced breeding and composite culture of carp.

CO-3: Learn about the paste management of paddy, wheat and rice.

CO-4: Learn about the descriptive knowledge of poultry.

CO-5: Learn about the biology of vectors and their control measures.

PAPER-VIII (PRACTICAL)

CO-1—Students gain knowledge about quantitative and qualitative estimations of glucose, protein and starch.

CO 2- Get knowledge about the Enumeration of total RBC and Hemoglobin, differential count of WBC in different group of vertebrates, determination of blood group and ESR.

CO-3-Understand the identification and description of bony and cartilaginous fishes, silk moth, Musca, Culex and Anopheles.

CO-4-Learn the endocrine gland through graphics and endocrinological slides.

CO-5. Learn the preparation of class records and viva voce.

