



***THE LEARNING OUTCOME
FRAME OF UG AND PG COURSE
OF ZOOLOGY***

PROGRAM SPECIFIC OUTCOMES
ZOOLOGY
PSO OF B.SC WITH ZOOLOGY

STUDENTS WOULD BE ABLE TO -

PSO1 Understand basic concepts of classification, rules of nomenclature and structure of representative animals and functions of their organ systems.

PSO2 Develop knowledge of cell biology, physiological, embryological, evolutionary process and development of vertebrates.

PSO3 Perform standard laboratory techniques to demonstrate and analyze procedures in the areas of Biochemistry, Biotechnology, Bioinformatics and Cytology.

PSO4 Observe and understand Nature, Environment, Biodiversity, Natural resources and take steps towards their conservation and take part in awareness programs.

PSO5 Understand applications of biological sciences in culture of economically important animals, agriculture and medicine.

COURSE OUTCOME OF B.SC ZOOLOGY

CO OF B.SC I YEAR ZOOLOGY

PAPER I

TITLE- INVERTEBRATE

STUDENTS_ WOULD BE ABLE TO –

CO1 Classify and name animals on the basis of rules of nomenclature and taxonomy.

CO2 Identify invertebrate representatives of Phylum Protozoa to Echinodermata and Hemichordata on the basis of structure.

CO3 Understand and know pathogenic Protozoa and Nematodes, diseases caused by them and insects as vectors of diseases.

CO4 Identify larval forms of Crustacea, Mollusca and Echinodermata and understand the significance of Trochophore larva in evolution.

CO5 Gain knowledge of Minor Phyla and Hemichordates and understand affinities of Hemichordates.

CO5 Develop practical knowledge of Invertebrates by museum study, and display of dissections by LCD as dissection of animals is banned.

CO OF B.SC I YEAR ZOOLOGY
PAPER II
TITLE - CELL BIOLOGY & DEVELOPMENT

Students In Would Be Able To -

CO1 Differentiate between types of Microscopes, their structure and working and study types of cells and organelles by using them.

CO2 Gain knowledge of cell division, cell differentiation, embryology, development and regeneration.

CO3 Differentiate between normal and stem cells, Necrosis and Apoptosis.

CO4 Develop practical knowledge of cytological, embryological and histological techniques and applied genetics.

CO5 Identify chromosomes, genes and processes related to heredity, mutation and variations.

CO6 Gain knowledge of genetic diseases of man, genetic code, genetic experimentations and DNA fingerprinting.

CO OF B.SC II YEAR ZOOLOGY
PAPER I
TITLE- CELL BIOLOGY & DEVELOPMENTAL BIOLOGY

Students would be able to--

CO1 Differentiate between between Prokaryotic and Eukaryotic cells and have knowledge of Nuclear and Extra nuclear organelles of cells.

CO2 Gain knowledge of Cell division, Necrosis and Apoptosis.

CO3 Develop knowledge of Spermatogenesis,Oogenesis and developmental processes of embryo.

CO4 Understand development of Frog and Chick.

CO5 Gain knowledge of Extra embryonic membranes, Regeneration and Stem cells.

CO6 Develop practical knowledge of cell division and embryo stages through permanent slides.

CO OF B.SC II YEAR ZOOLOGY

PAPER II

TITLE- GENETICS

STUDENTS WOULD BE ABLE TO-

CO1 Develop understanding of Types of Chromosomes, Heredity and Variation, Genes and Genetic code.

CO2 Understand gene linkage, sex determination and sexlinked diseases like Haemophilia and Colour blindness.

CO3 Understand cytoplasmic inheritance, gene expression and Lac Operon model.

CO4 Gain knowledge of Mutations, causes and related Mutagens.

CO5 Understand gene therapy, DNA fingerprinting, Human chromosomes and chromosomal diseases.

CO6 Develop practical understanding of instruments like PCR, Gel Electrophoresis, DNA fingerprinting and solve problems of genetics.

CO OF B.SC. III YEAR ZOOLOGY
PAPER I
TITLE- ANIMAL PHYSIOLOGY AND BIOCHEMISTRY

Students would be able to -

CO1 Understand the physiology of mammals and various metabolic processes.

CO2 Understand vital processes like Respiration, Excretion and Immune system.

CO3 Develop understanding of neurons, Nerve impulse, Human brain and Neuromuscular co-ordination.

CO4 Gain knowledge of Endocrine glands, their functions and effects of hypo and hyper secretion and physiology of reproduction.

CO5 Understand Nervous system and Neuromuscular coordination.

CO6 Develop practical knowledge of biochemical tests, Histology and Haematology.

CO OF B.SC. III YEAR ZOOLOGY
PAPER II
TITLE- ECOLOGY AND APPLIED ZOOLOGY

STUDENTS WOULD BE ABLE TO-

CO1 Gain knowledge of food chain, food web, biogeochemical cycle and concept of population.

CO2 Understand habitat ecology, biodiversity and importance of natural resources and their conservation.

CO3 Develop respect for nature and wildlife and understand relation between man and environment.

CO4 Gain knowledge of Aquaculture, Pearl Industry, Carp culture, preservation and processing of fish.

CO5 Understand Economic zoology, Sericulture, Apiculture and Lac culture, pest management and biological control of pests.

CO6 Develop practical knowledge of pests and their management and evidence based decision making skills.

Program Specific Outcomes PSO

M.Sc. Zoology

Specializations- 1 Ichthyology
2 Entomology

Students in M.Sc. with Zoology would be able to-

PSO1 Understand Nature, environment natural resources and their conservation, Classification & Behaviour of different animals, Human genetics, Cytology and Evolution.

PSO2 Apply the wide range of subject based skills to various fields that provide a base for future career in disciplines such as Health Sciences, Agriculture, Environmental Management, Biotechnology, Publishing ,Teaching and Research.

PSO3 Distinguish between the Structure, Function, Behaviour and evolution of different animals.

PSO4 Perform, Assess and implement practical techniques and procedure to solve biological problems and analyse and quantify data collected during any project.

PSO5 Understand the applications of Biological techniques to various fields of biology.

**COURSE OUTCOMES OF
M.Sc. ZOOLOGY
M.Sc. ZOOLOGY SEMESTER I**

**CO OF COURSE I
BIOSYSTEMATICS, TAXONOMY AND EVOLUTION**

Students would be able to--

CO1 Classify animals on the basis of their relation to other animals by body structure, external characters, development and DNA

.

CO2 Apply the International rules of Nomenclature to give a scientific name to animals which are found during research..

CO3 Understand the gradual development and evolutionary history of different kinds of living organisms from earlier forms over several generations

.

CO4 Understand and demonstrate the internal anatomy of various animals, biodiversity and related indices .

**CO OF COURSE II
STRUCTURE AND FUNCTIONS OF INVERTEBRATES**

Students would be able to --

CO1 Understand the structure and organisation of invertebrate animals.

CO2 Explain modifications in various functions of animals during transition from invertebrates to vertebrates.

CO3 Discuss the evolutionary significance of larval forms of invertebrates.

CO4 Identify invertebrates and homology, analogy and modifications of mouthparts in relation to feeding habits.

CO OF COURSE III

QUANTITATIVE BIOLOGY, BIODIVERSITY AND WILDLIFE

Students would be able---

CO1 To understand quantitative approaches and technologies involved in research.

CO2 To identify diversity of fauna on earth and implement conservation measures to save diversity

CO3 To understand importance of wildlife and conservation measures, National parks and Sanctuaries.

CO4 Analyse biological data mathematically and statistically.

CO OF COURSE IV

BIOMOLECULES AND STRUCTURAL BIOLOGY

Students would be able -

CO1 To explain Biomaterial, Nanoparticles and their importance.

CO2 To understand biological reactions, structure of protein, carbohydrates fats, nucleic acids and their metabolism.

CO3 To develop a knowledge of enzymes and mechanism of their action in various biological reactions.

CO4 To understand the process of gene expression & protein synthesis.

SEMESTER II

CO OF COURSE V

GENERAL AND COMPARATIVE ANIMAL PHYSIOLOGY & ENDOCRINOLOGY OF VERTEBRATES.

Students would be able to -

CO1 Understand all physiological processes of vertebrates & analyse them biochemically.

CO2 Correlate the comparative physiology of the systems and understand their regulation & control.

CO3 Compare the structure, functions and regulation of the receptor organs of vertebrates

CO4 Understand the structure, function and regulation of endocrine & neuroendocrine glands,

CO OF COURSE VI

POPULATION ECOLOGY AND ENVIRONMENTAL PHYSIOLOGY

Students would be able to --

CO1 Understand population and its characters and regulation.

CO2 Correlate physiological adaptations to environment and pollution, control measures for environmental degradation.as well as risk factors to human health.

CO3 Understand limiting factors, predator-prey relationships and physiological responses of the body to environment.

CO4 Demonstrate the methods of relaxation of Stress and body by Yoga, Meditation, Asana & Pranayam.

CO OF COURSE VII TOOLS AND TECHNIQUES IN BIOLOGY

Students would be able to---

CO1 Explain Microscopy,Colorimetry,Chromatography principle,process, applications and working of related instruments.

CO2 Demonstrate Microbiological, Cytological,Histological,Molecular biological techniques.

CO3 Apply and demonstrate Immunological Surgical Immunodetection and Cell culture techniques.

CO4 Understand Cryopreservation, Radioisotope and Isotope techniques and applications of all the techniques in biology.

CO OF COURSE VIII
MOLECULAR CELL BIOLOGY AND GENETICS

Students would be able to --

CO1 Explain Biomembranes and the processes of Cell-cell signalling and cell-cell adhesion.

CO2 Understand the process of Sex determination and details of Human chromosomes & Human chromosome project.

CO3 Understand gene libraries, Transgenic and Knockout animals.

CO4 Understand various genetic processes and their applications to biological systems.

SEMESTER III

CO OF COURSE IX COMPARATIVE ANATOMY OF VERTEBRATES

Students would have --

CO1 Knowledge of Origin, Evolution and general organisation of Chordates.

CO2 Knowledge of Evolution of heart , lungs and urino-genital organs of vertebrates

CO3 Knowledge of comparative anatomy of all systems of vertebrates.

CO4 Knowledge of flight and aquatic adaptations in birds and mammals.

CO OF COURSE X LIMNOLOGY

Students would have--

CO1 Knowledge of morphometry, physico-chemical and biological characteristics of fresh water bodies.

CO2 An understanding of the significance of aquatic flora, fauna, insects, birds and macrophytes in water bodies.

CO3 Knowledge of pollution of rivers, causes and control measures.

CO4 Knowledge of legislation and regulation on discharge of industrial effluents and domestic wastes in rivers and reservoirs.

CO OF COURSE XI ECOTOXICOLOGY

Students would be able --

CO1 To develop an understanding of environmental biology, productivity and pollution.

CO2 To develop knowledge of Toxicity of foods, pesticides and agrochemicals among youngsters.

CO3 To know public health hazards due to natural disasters and occupation..

CO4 To know the process of recycling and reuse technologies of solid and liquid waste.

CO OF COURSE XII AQUACULTURE

Students would be able to---

CO1 Develop a knowledge of farming of aquatic organisms for increasing food production and animals beneficial to human.

CO2 Observe culture techniques, farm management and hatchery operations.

CO3 Analyse harvesting and marketing strategies.

CO4 Understand the technique of fish preservation and Water quality monitoring techniques.

SEMESTER 1V

CO OF COURSE XIII ANIMAL BEHAVIOUR NEUROPHYSIOLOGY

Students would be able to ---

CO1 Understand neurophysiology of perception memory, domestic animal and human behaviour.

CO2 Analyse processes at different levels and neurophysiology of sensory processing of animal behaviour.

CO3 Classify behavioural patterns, communication, learning and memory.

CO4 Understand social, territorial aggressive behaviour of lower and higher animals.

CO OF COURSE XIV
GAMETE BIOLOGY, DEVELOPMENT & DIFFERENTIATION

Students would be able to -

- CO1** Understand reproductive physiology and development in mammals

- CO2** Develop a deep knowledge of the role of endocrine secretion in regulation of reproductive cycle

- CO3** Understand the process of differentiation of eggs and sperms before fertilization.

- CO4** Develop a knowledge of cryopreservation technique and stem cell disorders.

CO OF COURSE XV
ICHTHYOLOGY (FISHSTRUCTURE AND FUNCTION)

Students would be able to---

- CO1** Know the functional anatomy of all organ systems of fish

- CO2** Understand migration and adaptations in fishes.

- CO3** Observe the phenomenon of Parental care in various fishes and importance of electric organs in fishes.

- CO4** Understand the significance of Colouration, luminous and poisonous organs of fish.

CO OF COURSE XVI
PISCICULTURE AND ECONOMIC IMPORTANCE OF FISHES

Students would be able to---

CO1 Differentiate between natural and induced breeding in fish.

CO2 Manage hatcheries and fish farm in future.

CO3 Develop technical knowledge of fish preservation and Shark liver oil industry.

CO4 Identify fish by morphometric and meristic characters and apply the method in biodiversity oriented research.

CO5 Explain and apply genetic engineering in fishery technology.