

Department of Zoology

Programme outcomes of Masters of Science (MSc)

PO1. M.Sc. course is a two-year postgraduate course of study that emphasises the scientific fields of zoology Physics, Chemistry, Botany and life sciences

PO2. The curriculum is offered by top MSc colleges as an MSc in general or an MSc in a specific speciality.

PO3. The majority of MSc admissions are determined through entrance tests; however, certain universities may also provide some seats based on merit.

Programme specific outcomes:

PSO1: Specialized Knowledge: MSc programs typically offer in-depth and specialized knowledge in a specific field.

PSO2: Career Advancement: An MSc degree can open up new career opportunities and pathways.

PSO3: Research and Innovation: If candidates are interested in research and contributing to the advancement of knowledge in your field, an MSc can provide you with the opportunity to conduct original research, publish papers, and contribute to innovative solutions.

PSO4: Higher Earning Potential: In many industries, having an MSc degree can lead to higher earning potential compared to having only a bachelor's degree.

Course outcomes of zoology:

After completion of 3 years degree students be able to:

SEMESTER:1 (PAPER:1)

CO1: In this unit they will study about what is carbohydrates proteins and their importance.

CO2: About mono, Oligo and polysaccharides uses and also types of proteins.

CO3: Classification of lipids fatty acids importance of DNA and RNA. Importance of enzymes and examples and their functions.

CO4: How many enzymes are present and also can learn about amylase lipase and their difference and know about the importance of structures Coelom and structures and body cavity.

CO5: Minor phyla organization of larval forms like coelenterata annelida arthropoda crustaceans and evolution type and their importance of larva.

LABORATORY: determination of proteins, lipids, glucose, glycogen. estimation on cholesterol.

SEMESTER:1(PAPER:2)

CO1: Basic concepts of ecology and law of limiting factors types of ecosystems and micro and macro nutrients and followed by population dynamics.

CO2: Community organization and structure, community analysis, concepts of productivity, pollution ecology, acid rain sources, Greenhouse effect and ozone depletion.

CO3: Biogeography of India habitats and resources continental drift and also about natural resources and over exploitation exploitation of resources.

CO4: natural resources and management and also environmental impact assessment displacement of local communities NGOs in conservation efforts.

LABORATORY: Estimation of totalalkalinity and bigeographical regions.

SEMESTER :1 (PAPER :3)

CO1: introduction to immunology evolution of immune system types of immunity and lymphoid tissue.

CO2: immunoglobulins and complement system antigens and antibodies add monoclonal antibodies and complement system. CO3: hypersensitivity reactions and autoimmune diseases types of hypersensitivity.

CO4: transplantation and tumour immunology and immunosurveillance.

LABORATORY: agglutination test ABO blood grouping, RDT KIT for malaria and dengue, widal test.

Semester:1(paper 4)

CO1: advances in taxonomy basic concepts of biosystematics and branches of taxonomy.

CO2: Taxonomic hierarchy and species concept

CO3: recent trends in biosystematics molecular taxonomy add integrated opportunities.

CO4: international code for zoological nomenclature, operative principles interpretation and applications of important roles.

LABORATORY: identification of invertebrate specimens and dissection of cockroach and prawn.

SEMESTER:2 (PAPER :1)

CO1: to know about introduction to principles and microscopic techniques and light UV importance and the separation methods types and techniques.

CO2: spectroscopic techniques principles and applications and the imaging techniques like MRI ECG and CT where they use and what is its importance.

CO3: Introduction of Biostatistics statistical data measures of dispersion types range finds their probability problems

CO4: Introduction sampling concepts of statistical hypothesis and correlation and regression analysis and its applications.

LABORATORY: Quantitative detection, paper chromatography, Graphical presentation of data.

SEMESTER:2 (PAPER:2)

CO1: Digestion respiration and circulation along with cellulose digestion and their mechanisms.

CO2: osmoregulation excretion and thermoregulation and detoxification of nitrogen products.

CO3: Muscle Physiology neurophysiology and receptors and types of neurons and also types of synapsis.

CO4: Endocrinology bioluminescence and stress Physiology endocrine glands of invertebrates and vertebrates' hormones and mechanism of hormone action.

LABORATORY: Hyperosmotic media, metabolic rate, blood clotting time.

SEMESTER :2 (PAPER: 3)

CO1: introduction to genetics mendelism linkage study multiple alleles blood group antigens.

CO2: Extra chromosomal inheritance and crossing over and genetic disorders chromosomal disorders inborn errors bacterial genetics in that about transformation conjugation and transduction.

CO3: Molecular genetics introduction of DNA technology and features of vectors and cloning strategies hybridisation techniques and mapping methods.

CO4: overview of developmental biology gametogenesis spermatogenesis oogenesis fertilization and types of cleavages.

CO5: organogenesis metabolic events gastrulation concepts of organizers and inducer's role of hormones and metamorphosis of insects and tetrapods.

LABORATORY: Karyotyping of human chromosomes, isolation and estimation of DNA & RNA in tissue,
Identification of chick embryo.

SEMESTER:2 (PAPER 4)

CO1: evolution of life theories of evolution speciation patterns of evolution.

CO2: Evolution of vertebrates of agnata Gnathostomata Teleostei tetrapod's amniotes.

CO3: functional anatomy 1: integumentary system cranial skeletal system digestive system respiratory system.

CO4: functional anatomy 2 excretory system nervous system invertebrates censored guns placenta and its types.

LABORATORY: identification of specimens & dissection of fish webarian ossicle & identification of scales.

SEMESTER :3 (PAPER:1)

CO1: Chemical and neural integration role of endocrines in the healthy disease's neuro hormones and neurotransmitters neuroendocrine mechanism and hormones as chemical messengers' regulation of hormone secretion.

CO2: endocrine glands and their hormones of invertebrates and vertebrates and hypothalamus and its secretion.

CO3: chemistry of hormones and mechanisms of hormone action and its classification along with biosynthesis of amino acids peptides and steroid hormones.

CO4: clinical and applied endocrinology about obesity and hormones in IVF pregnancy testing and amniocentesis and pheromones and hormones.

LABORATORY: endocrine glands of rat, identification of gonadotropin.

SEMESTER: 3 (PAPER: 2)

CO1: Introduction to animal behaviour and their history developmental behaviour.

CO2: TO know about the hormones and early developmental taxi's introduction and importance of motivation scales and its uses.

CO3: displacement activities and whitening conflict stimulation pheromones and biological rhythms.

CO4: ecological aspects habitat selection and predator defences importance and aggression territoriality the relationship between host parasite male and selection female and maternal behaviour.

CO5: introduction to cercarias migration type importance and advantage of examples

CO6: social organization insert primed to and their importance.

CO7: which hormones are importance in insects of metamorphosis.

LABORATORY: geotaxis, photo, chemo and hydro taxis. Habituation in snail, nesting behaviour, migration in birds.

SEMESTER:3 (PAPER:3)

CO1: To know about history of fisheries and its classification fisheries institutes and the role in economic development.

CO2: ecology of water bodies ecosystem and productivity and water quality and population dynamics along with reservoir and reservoir management.

CO3: cultural system of fish poultry and Paddy horticulture and sewage culture and composite fish culture.

CO4: fish harvesting technology and fish biotechnology and types of fishing crafts and gears and also preservation methods and waxing developmental of fishes.

LABORATORY: pH estimation, dissolved oxygen, identification of planktons & benthos. fishing gear & craft models.

SEMESTER: 3 (PAPER :4)

CO1: introduction and diversity of fishes and integumentary system.

CO2: fish habits and habitats Beyond locomotion osmoregulation and fish migration.

CO3: fish biology skeletal system digestive system respiratory mechanism circulatory system and excretory system embryogenesis nervous system sensor organ endocrine system and reproductive system.

LABORATORY: Morphometric identification of fishes, preparation of scales of fishes, dissection of digestive system & reproductive system of fishes.

SEMESTER:4 (PAPER:1)

CO1: introduction and animal improvement gametogenesis cryopreservation in vitro fertilisation introduction to biotechnology.

CO2: invitro culture of cells and tissues cell culture mammalian cell lines tissue culture system scaling up of animal cell culture production of recombinant organisms and transgenic animals cloning of mammals.

CO3: production of other transgenic animals genetically engineered animal cell culture recombinant microorganisms.

CO4: application of biotechnology medical biotechnology environmental biotechnology insecticides development biotechnology of aquaculture and bioreactors.

LABORATORY: preparation of culture media & cultivation of bacteria & animal cells. Staining techniques.

SEMESTER:4 (PAPER:2)

CO1: biodiversity and its concepts productivity use and genetic diversity and specific diversity ecosystem diversity.

CO2: status of biodiversity Biodiversity at local level hotspots of biodiversity threats to biodiversity conservation of biodiversity and biodiversity technology.

CO3: biodiversity and loss and about legislation and conventions and conservations GMOs and legislation of Indian biodiversity laws.

CO4: biodiversity management organization associated with biodiversity management IUCN UNEP UNESCO and bioprospecting and about strategies and success story.

LABORATORY: conservation projects, report on national parks & sanctuaries in India, Report on endangered rare vulnerable animals of India.

SEMESTER :4 (PAPER :3)

CO1: criteria for selection of fish species and techniques in seed production like induced breeding methods and types of hatcheries with fishermen cooperative society.

CO2: biology of cultivable fish's prawns and crabs' Indian major carps and exotic major cups air breathing fishes and cultivable prawns.

CO3: fishpond management site selection design and pre stocking pond management nurse management stocking and rearing pond management and broad pond.

CO4: management diseases management and post harvesting technology and infectious and non-infectious diseases of fish prawns and their preventive and control measures and processing and preservation of fishes and prawns and their byproducts.

LABORATORY: identification of prawns & fish & their developmental stages, symptomatic identification of diseased fish prawns. Separation of pituitary glands from fish.