

Zoology	
Name of Course	Course Outcomes
CC1-1-TH – Non-chordates I & CC1-1-P – Non-chordates I Lab	<p>CO1: Demonstrate a broad understanding of basic animal classification from protozoa to nematoda</p> <p>CO2: Develop a broad sense of basic anatomy, physiology, morphology and behaviour in general of the above various non-chordate phyla</p> <p>CO3: Identify aspects of anatomy, physiology, morphology and behaviour of specific examples of representative animals of the above various non-chordate phyla</p>
CC1-2-TH – Molecular Biology CC1-2-P – Molecular Biology Lab	<p>CO1: Demonstrate a thorough understanding of nucleic acids</p> <p>CO2: Analyze various genetic phenomena that go on at the molecular level of the cell</p> <p>CO3: Develop a basic understanding of certain universal molecular biology techniques</p> <p>CO1: Demonstrate a broad understanding of specific chromosome types</p> <p>CO2: Become technically competent in order to quantify genomic DNA, run agarose gels and histologically stain DNA and RNA</p>
CC2-3-TH – Non-chordates II CC2-3-P – Non-chordates II	<p>CO1: Demonstrate a broad understanding of basic animal classification from annelida to hemichordata</p> <p>CO2: Develop a broad sense of basic anatomy, physiology, morphology and behaviour in general of the above various non-chordate phyla</p> <p>CO3: Identify aspects of anatomy, physiology, morphology and behaviour of specific examples of representative animals of the above various non-chordate phyla</p> <p>CO1: Demonstrate a broad understanding of basic</p>

Lab	<p>animal classification from annelida to echinodermata</p> <p>CO2: Become technically competent in order to do anatomical studies of various organ systems of specific animal model prescribed</p>
<p>CC2-4-TH – Cell Biology</p> <p>CC1-2-P – Molecular Biology Lab</p>	<p>CO1: Demonstrate a thorough understanding at the molecular level of various cell organelles</p> <p>CO2: Analyze various aspects of the cell cycle, apoptosis and cancer</p> <p>CO3: Develop a basic understanding of cell signalling</p> <p>CO1: Demonstrate a broad understanding of various meiotic stages from specific organ system of prescribed animal and plant models</p> <p>CO2: Become technically competent in order to prepare permanent slides in order to identify Barr body, DNA and cell viability from prescribed animal models</p>
<p>ZOOA-CC3-5-TH</p> <p>ZOOA-CC3-5-P</p>	<p>CO1: Classify and place chordates according to their cladistic and phylogenetic positions in the animal world</p> <p>CO2: Draw evolutionary relationships amongst different groups of organisms</p> <p>CO3: Study and understand the anatomies, physiologies, life histories and adaptations of different organisms, and be able to draw an evolutionary conclusion from this from Protochordates to Mammals</p> <p>CO1: Identify and classify Chordates from Protochordates to Mammals</p> <p>CO2: Observe and study different internal organ systems of fish</p> <p>CO3: Study the habit, habitat and behaviour of animals</p> <p>CO4: Observe and study the pecten of fowl</p>

ZOOA-CC-3-6-TH	<p>CO1: Learn about the structure, location, classification and functions of different tissues</p> <p>CO2: Study the structure and classification of bones and cartilage, ossification</p> <p>CO3: Study the structure of nervous system and its function</p> <p>CO4: Learn about histology of different type of muscles, and the molecular and chemical basis of their functions</p> <p>CO5: Know about the histology and physiology of the mammalian reproductive organ</p> <p>CO6: Learn about the histology of different endocrine gland, the classification of hormones and the signaling pathways mediated by different hormones</p>
ZOOA-CC-3-6-P	<p>CO1: Record cardiac and simple muscle twitches with electrical stimulation</p> <p>CO2: Prepare temporary mounts</p> <p>CO3: Study permanent slides of different mammalian tissues</p> <p>CO4: Prepare and process tissues by microtomy</p>
ZOOA-CC-3-7-TH	<p>CO1: Study the structure, significance and metabolism of carbohydrates, lipids and proteins</p> <p>CO2: Learn about nucleic acids in detail</p> <p>CO3: Study enzyme nomenclature, kinetics and inhibition</p> <p>CO4: Study the process of oxidative phosphorylation within the mitochondria</p>
ZOOA-CC-3-7-P	<p>CO1: Qualitative tests for carbohydrates, proteins and lipids</p>

	<p>CO2: Qualitative estimation of Urea & Uric acid</p> <p>CO3: Paper chromatography of amino acids</p> <p>CO4: Quantitative estimation of water soluble proteins following Lowry method</p>
ZOOA-SEC(A)-3-1-TH	<p>CO1: Biology and identification of bees</p> <p>CO2: Rearing of Bees, modern technologies for bee keeping and methods of extraction of honey</p> <p>CO3: Bee diseases and bee enemies and their control and preventive measures</p> <p>CO4: Products of Apiculture Industry and their uses</p> <p>CO5: Entrepreneurship in Apiculture</p>
ZOOA-CC4-8-TH	<p>CO1: Structure, function and derivatives of integumentary system of vertebrates</p> <p>CO2: The comparative anatomy of digestive systems and dentition of mammals</p> <p>CO3: Respiratory organs of vertebrates</p> <p>CO4: General plan and comparative accounts of circulation in vertebrates</p> <p>CO5: Urinogenital system and its evolution</p> <p>CO6: Comparative accounts of nervous system and sense organs of vertebrates</p> <p>CO7: An overview of axial and appendicular skeletons, and jaw suspension in mammals</p>
ZOOA-CC4-8-P	<p>CO1: Identify different kinds of scales in fish</p> <p>CO2: Identify limb bones, vertebrae and girdles in various vertebrates</p> <p>CO3: Make a comparative study of heart and brain of</p>

	<p>vertebrates</p> <p>CO4: Identify skulls of different vertebrates</p>
ZOOA-CC4-9-TH	<p>CO1: Structural organization and function of gastro-intestinal tract, mechanical and chemical digestion of food, and absorption of Carbohydrates, Lipids and Proteins in Human</p> <p>CO2: Physiology of respiration</p> <p>CO3: Physiology of circulation</p> <p>CO4: Physiology of heart</p> <p>CO5: Renal physiology</p> <p>CO6: Thermoregulation and osmoregulation</p>
ZOOA-CC4-9-P	<p>CO1: Determine ABO Blood grouping</p> <p>CO2: Estimate haemoglobin</p> <p>CO3: Identify blood cells from human blood</p> <p>CO4: Prepare haemin crystals and haemo-chromogen crystals</p> <p>CO5: Identify of blood cells from cockroach haemolymph</p> <p>CO6: Demonstrate blood pressure by digital meter</p>
ZOOA-CC4-10-TH	<p>CO1: Overview of Immune System</p> <p>CO2: Innate and Adaptive Immunity</p> <p>CO3: Antigenicity and immunogenicity</p> <p>CO4: Structure and functions of different classes of immunoglobulins, Antigen-antibody interactions, Immunoassays(ELISA and RIA) and Monoclonal antibody production</p>

ZOOA-CC4-10-P	<p>CO5: Major histocompatibility complex</p> <p>CO6: Cytokines</p> <p>CO7: Complement system</p> <p>CO8: Hypersensitivity</p> <p>CO9: Vaccines</p> <p>CO1: Structure, function and histology of different lymphoid organs</p> <p>CO2: ELISA technique</p>
ZOOA-SEC(B)-4-1-TH	<p>CO1: Potential scope of Aquarium fish industry and Exotic and Endemic species of Aquarium Fish</p> <p>CO2: Biology of aquarium fish</p> <p>CO3: Preparation of formulated fish feeds</p> <p>CO4: Fish handling, packing and forwarding techniques</p> <p>CO5: Maintenance of aquarium and budget for setting up an Aquarium fish farm as a Cottage Industry</p>
ZOOA-CC5-11-TH	<p>CO1: Level of organisation of autecology and synecology, about the biosphere</p> <p>CO2: Population: factors, interactions, logistic growth, strategies of regulation, Lotka-Volterra equation for competition etc.</p> <p>CO3: Community</p> <p>CO4: Ecosystems</p> <p>CO5: Biodiversity, Wildlife conservation etc</p>
ZOOA-CC5-11-P	CO1: Study the method and calculation for

	<p>determining population densities</p> <p>CO2: Study an aquatic ecosystem</p> <p>CO3: Know more about how animals live in their natural habitat and their natural behaviour and how they interact with human, through field study</p>
ZOOA-CC5-12-TH	<p>CO1: Mendelian Genetics and its extension</p> <p>CO2: Linkage, Crossing Over and construction of Linkage Maps</p> <p>CO3: Types of gene mutation, chromosomal aberration, molecular basis of mutation and detection of mutation.</p> <p>CO4: Sex determination in Drosophila and man</p> <p>CO5: Extra chromosomal inheritance</p> <p>CO6: Genetic fine structure</p> <p>CO7: Transposable elements</p>
ZOOA-CC5-12-P	<p>CO1: Learn about Pedigree analysis</p> <p>CO2: Carry out genetic ratio tests</p> <p>CO3: Identify chromosomal aberrations</p>
ZOOA-DSE(A)-5-1-TH	<p>CO1: Parasites and parasitism, and host parasitic relationships</p> <p>CO2: Life cycle, Epidemiology, Pathogenicity, Diagnosis, Prophylaxis and Treatment of different types of invertebrate (Platyhelminthes, Nematodes and Arthropods) parasites.</p> <p>CO3: Vertebrate parasites, their parasitic behaviour and effect on hosts</p>
ZOOA-DSE(A)-5-1-P	<p>CO1: Study life stages of different protozoan parasites</p>

	<p>CO2: Study adult and life stages of different invertebrate parasites</p> <p>CO3: Study fish parasites</p> <p>CO4: Study fowl and goat parasites</p>
ZOOA-DSE(B)-5-1-TH	<p>CO1: Endocrine systems, classification, characteristics and transport of hormones</p> <p>CO2: Hypothalamo-Hypophyseal Axis</p> <p>CO3: Peripheral endocrine glands</p> <p>CO4: Regulation of hormone action and techniques for bioassay of hormones</p> <p>CO5: Functioning of non-mammalian vertebrate hormones</p>
ZOOA-DSE(B)-5-1-P	<p>CO1: Dissect and display Endocrine glands in vivo</p> <p>CO2: Study permanent slides of endocrine glands</p> <p>CO3: Fix endocrine tissue sections, embed them in paraffin and section them by microtomy</p> <p>CO4: Stain endocrine histological slides</p>
ZOOA-CC6-13-TH	<p>CO1: Comprehend about the early, late and post embryonic development in depth.</p> <p>CO2: Learn about the implications of developmental biology like IVF, potential of stem cells and its therapy.</p>
ZOOA-CC6-13-P	<p>CO1: Study the different developmental stages of chick embryos at different incubation hours.</p> <p>CO2: Understand the different developmental stages and life cycle of Drosophila.</p> <p>CO3: Study structure, functions and classification of placenta.</p> <p>CO4: Identify different invertebrate larvae.</p>

<p>ZOOA-CC6-14-TH</p>	<p>CO1: Learn about the Origin of life, and about the historical review of evolutionary concepts like Lamarkism, Darwinism and Neo Darwinism.</p> <p>CO2: Know about the Geological time scale, Fossil types, about the age determination of fossil, evolution of horse and different modes of natural selection.</p> <p>CO3: Learn about the species concept, speciation, mode of speciation, adaptive radiation</p> <p>CO4: Understand origin and evolution of Man and learn about population genetics.</p> <p>CO5: Understand extinction and the causes for it.</p> <p>CO6: Learn about the construction and interpretation of phylogenetic tree.</p>
<p>ZOOA-CC6-14-P</p>	<p>CO1: Study the fossils from the models/pictures</p> <p>CO2: Learn about homolog and analogy</p> <p>CO3: Study, construct and interpret phylogenetic tree using parsimony and dendrogram following the principle of phenetics and cladistics from a data table.</p>
<p>ZOOA-DSE(A)-6-1-TH</p>	<p>CO1: Understand about the concept and scope of biotechnology.</p> <p>CO2: Know about the techniques of gene manipulation.</p> <p>CO3: Learn about the animal cell culture.</p> <p>CO4: Study about the fermentation and downstream process.</p> <p>CO5: Know the application of biotechnology in health.</p>
<p>ZOOA-DSE(A)-6-1-P</p>	<p>CO1: Perform sterilization of plastic and glass wares of animal cell culture.</p>

	<p>CO2: Prepare animal cell culture media.</p> <p>CO3: Learn the preparation of genomic DNA, isolation of plasmid DNA and agarose gel electrophoresis.</p> <p>CO4: Learn the basic molecular biology techniques.</p>
ZOOA-DSE(B)-6-1-TH	<p>CO1: Pattern of behavior</p> <p>CO2: Social and sexual behavior</p> <p>CO3: Chronobiology and biological rhythm</p>
ZOOA-DSE(B)-6-1-P	<p>CO1: Study nests and nesting habits of the birds and social insects.</p> <p>CO2: Study the behavioural responses of wood lice to dry and humid conditions.</p> <p>CO3: Learn about the geotaxis behaviour in earthworm.</p> <p>CO4: Know about the phototaxis behaviour in insect larvae.</p> <p>CO5: Study behavioural activities of animals in their natural habitat.</p> <p>CO6: Study of circadian functions in humans.</p>