Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR01T & ZOOACOR01P

Course Title: Non Chordates I

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recall the characteristic features of Non-Chordates (Protista to Pseudocoelomates). (Level 1: Remember)
CO-2:	Describe the biology and epidemiology of some acoelomate and pseudocoelomate parasites. (Level 2: Understand)
CO-3:	Identify and classify non-chordate specimens (fresh and preserved) along with their life cycle stages. (Level 3: Apply)
CO-4:	Analyze the organization and complexity of non-Chordates along with some special features and their significance. (Level 4: Analyze)
CO-5:	Prepare a project report on diversity/life cycle of some invertebrates. (Level 6: Create)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR02T & ZOOACOR02P

Course Title: Ecology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recollect as well as describe Autecology & Synecology, laws of Limiting Factors, Biosphere; attributes of population; Community characteristics, types of ecosystems, wildlife conservation (Level 1: Remember)
CO-2:	Classify and Estimate as well as Explain Levels of organization, Geometric, exponential, and logistic growth equation and patterns, Vertical stratification,Detritus and grazing food chains, Linear and Y-shaped food chains, Food web, Energy flow through the ecosystem, (Level 2: Understand)
CO-3:	Differentiate between R and K strategies and analyze Gause's Principle with laboratory and field examples, Lotka-Volterra equation for competition and identify ecotone and edge effect. (Level 3: Apply)
CO-4:	Discriminate as well as interpret fecundity tables & survivorship curves, life tables and plotting of survivorship curves of different types from the hypothetical/real data provided. (Level 4: Analyze)
CO-5:	Compose as well as construct ecological pyramids, population density of a natural/hypothetical population, species diversity of a community by quadrat or any other suitable sampling method and calculation of Shannon-Weiner diversity index for the same community. (Level 5: Evaluate)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR03T & ZOOACOR03P

Course Title: Non Chordates II

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recognize and recall the characteristic features of Non-Chordates (Annelida to Hemichordata). (Level 1: Remember)
CO-2:	Identify and classify members of different nonchordate taxa according to relevant systematic and taxonomic principles (Level 2: Understand)
CO-3:	Describe the biology of type specimens of different non chordate taxa; Illustrate the evolutionary relationship between animals of different taxa; Differentiate between animals of same and different taxa of non chordates based on practical specimens and their special features thus being able to categorise various animals in the animal kingdom scientifically (Level 2: Understand; Level 3: Apply; and Level 4: Analyze)
CO-4:	Prepare a project report on diversity/life cycle of some invertebrate larvae. (Level 6: Create)

Course Code: ZOOACOR04T & ZOOACOR04P

Course Title: Cell Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Describe, identify and remember the various cell organelles (Level 1: Remember level).
CO-2:	Distinguish various diseases related to cell structures and functions (Level 2: Understand level).
CO-3:	Know about chromosome, cell division, cell cycle and various staining techniques can relate their understandings to the application level which will help them to think for a new research (Level 3 and level 6: Apply level and create level).
CO-4:	Illustrate and interpretvarious diseases related to cell cycle and cell cycle abnormalities (Level 5: Evaluate level).

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR05T & ZOOACOR05P

Course Title: Chordates

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	To understand characteristics of chordates in relation to the taxonomy. (Level 2: Understand)
CO-2:	To identify and classify chordate specimen (Level 3: Apply)
CO-3:	To be able to identify and classify non-chordate specimen in the field. (Level 4: Analyze)
CO-4:	To create awareness about the harmful parasites and the economic importance of chordates. (Level 5: Evaluate)

Course Code: ZOOACOR06T & ZOOACOR06P

Course Title: Physiology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Characterize and differentiate different tissue structures, bones and cartilage, histology of different types of muscle, Histology of testis and ovary, different endocrine glands (Level 2 understand and level 3 Apply)
CO-2:	Apply the learnt concepts of new and unknown facts about muscle contraction and physiology behind it with practical approach, different histological sections of endocrine glands with their anatomical details (level 3).
CO-3:	Differentiate the control and regulation of different internal systems such as nervous, tissue bone, endocrine system etc (Level 4).
CO-4:	Develop the knowledge on coordination mechanisms of different internal systems with anatomical details in practical mode (level 5)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR07T & ZOOACOR07P

Course Title: Biochemistry

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Understand the basic fundamental of biochemistry of biomolecules like carbohydrates, lipid, proteins, nucleic acids.(Level-2 Understand)
CO-2:	Illustrate the mechanism of enzyme action ,enzyme kinetics and an idea of oxidative phosphorylation and redox reactions.(Level-3 Apply)
CO-3:	Estimate practical analysis of the qualitative test of functional groups in carbohydrates, proteins and lipids.(Level-5 Evaluate)
CO-4:	Explain different techniques like chromatography, electrophoresis, centrifugation, spectrophotometry . (Level -6 Create)

Course Code: ZOOACOR08T & ZOOACOR08P

Course Title: Comparative Anatomy

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Describe the comparative account of integument, skeletal components, heart and aortic arches, respiratory organs, stomach, kidney, brain and sense organs and their modifications in different vertebrate groups. (Level 2: Understand)
CO-2:	Identify the parts of the axial and appendicular skeleton of different vertebrate groups. (Level 2: Understand)
CO-3:	Dissect the circulatory system, urinogenital system, brain and pituitary gland of Tilapia. (Level 3: Apply)
CO-4:	Compare the structure and functions of vertebrate systems, which will help to discern the developmental, functional and evolutionary history of vertebrate species. (Level 4: Analyze)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR09T & ZOOACOR09P

Course Title: Animal Physiology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Understanding of different physiology and the interrelations among them. (Level 1: Remember)
CO-2:	Hands-on training of estimating blood group, use of pressure measuring instruments (Level 3: Apply)
CO-3:	Discuss the structure of memory and its components. (Level 2: Understand)
CO-4:	Develop analytical knowledge on animal physiology such as adaptation, respiration, circulation, excretion, osmoregulation, thermoregulation. (Level 4 : Analyze)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR10T & ZOOACOR10P

Course Title: Immunology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recollect as well as describe historical perspective of Immunology, Principle of Innate and Adaptive Immunity, Concept of Antigen, Immunogen, Allergen & Pathogen. (Level 1: Remember)
CO-2:	Classify as well as Explain concept of hematopoiesis and development of progenitor cells of the Immune system, types of Antigen Presenting Cells (APC), structure of Major Histocompatibility Complex (MHC) molecules, structure of T cell receptors, co-stimulatory molecules on T cells concept of synapse between APC & T cells (between MHC≈TCR & between costimulatory molecules) in details, types of Cytokines & Chemokines (Level 2: Understand)
CO-3:	Discover as well as interpret mechanism of antigen presentation and involvement of MHC molecules (both MHC-I & MHC-II) in details. Co-stimulatory molecules on APC, Concept of synapse between APC & T cells (between MHC≈TCR & between Co stimulatory molecules) in details. (Level 3: Analyze).
CO-4:	Discriminate as well as Interpret Malaria, Visceral Leishmaniasis, Filariasis, Dengue and Tuberculosis; Mechanism of antigen presentation and involvement of MHC molecules (both MHC-I & MHC-II) in details (Level 4: Analyze)
CO-5:	Evaluate as well as explain Preparation of stained blood film to study various types of blood cells, ELISA using kit. (Level 5: Evaluate)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR11T & ZOOACOR11P

Course Title: MOLECULAR BIOLOGY

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recall Salient features of DNA and RNA, Watson and Crick Model of DNA, Genetic code.(Level 1- Remember)
CO-2:	Explain Mechanism of DNA Replication, Transcription and protein translation in details and DNA repair mechanisms, Describe post transcriptional modification as well as processing of Eukaryotic RNA, Regulation of Transcription in prokaryotes as well as in eukaryotes, RecBCD model in prokaryotes, nucleotide and base excision repair, SOS repair. (Level 2-Understand)
CO-3:	Demonstrate polytene Chromosome from Drosophila /Chironomid larvae, Isolation of genomic DNA, Apply techniques like PCR, Western and Southern blot, Northern Blot, Sanger DNA sequencing, cDNA technology. (Level 3- Apply)
CO-4:	Differentiate between prokaryotic and eukaryotic transcription as well as translation, Isolate genomic DNA, Analyze DNA using Agarose gel electrophoresis. (Level 4- Analyze)
CO-5:	Evaluate genomic DNA quantity using spectrophotometer (A260 measurement). (Level 5- Evaluate)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR12T & ZOOACOR12P

Course Title: Genetics

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Aquire knowledge on classical genetics and will be able to calculate mathematical problems based on Mendelian ratios as well as will be able to analyze probability statistics, tests for significance assessment. (Level 3)
CO-2:	Differentiate their knowledge on source of mutations for clinical consequence, sex determination patterns both hetero and homogametic, as well as in humans in genetic disease consequence. (Level 4)
CO-3:	Develop and characterize their basic concepts on bacterial genetics and significance of this portion in newer molecular techniques. (Level 5 & 3)
CO-4:	Analyze and categorize importance of genetic mapping in both prokaryotic and eukaryotic system (level 3 and 5)

Course Code: ZOOACOR13T & ZOOACOR13P

Course Title: Developmental Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recall and describe the various concepts of development and growth, cell-cell interaction and differentiation (Level 1: Remember; Level 2: Understand)
CO-2:	Explain and interpret the mechanisms of pre embryonic, embryonic ad post embryonic development (Level 2: Understand; Level 3: Apply)
CO-3:	Analyse the developmental stages of various specimen animals; categorise and evaluate different in vitro fertilization technologies, stem cell technologies and harmful teratogenic substances. (Level 4: Analyze; Level 5: Evaluate)
CO-4:	Prepare a project report on specimen animal development and/ or culture method. (Level 6: Create)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOACOR14T, ZOOACOR14P

Course Title: Evolutionary Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recollect various concepts and processes involved in evolution. (Level 1: Remember)
CO-2:	Explain evolutionary trends in terms of evolutionary processes. (Level 2: Understand)
CO-3:	Show skills in developing evolutionary thinking. (Level 3: Apply)
CO-4:	Illustrate intelligence in understanding evolutionary changes in a population genetics framework. (Level 4: Analyze)
CO-5:	Summarize hand on knowledge about various techniques used to study evolution. (Level 5: Evaluate)

Course Code: ZOOADSE01T, ZOOADSE01P

Course Title: Animal Behaviour and Chronobiology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Describe various aspects of animal behaviour and chronobiology. (Level 1: Remember)
CO-2:	Estimate animal behaviour in a quantitative way. (Level 2: Understand)
CO-3:	Apply practical intelligence in solving problems in field and laboratory work. (Level 3: Apply)
CO-4:	Analyze, compare and explain the results of behavioural experiments. (Level 4: Analyze)
CO-5:	Develop an understanding on the importance of chronobiology in governing activity patterns of animals. (Level 6: Create)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOADSE02T, ZOOADSE02P

Course Title: Entomology: Insects and their Biology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recollect as well as Outline General Features of Insects, distribution, and success of Insects on the Earth (Level 1: Remember)
CO-2:	Classify and Describe Arthropods with special reference to Insects, Identify External Features; Head – Eyes, Types of antennae, Mouth parts with reference to feeding habits, Thorax: Wings and wing types, Types of Legs adapted to diverse habitats, Abdominal appendages, and genitalia, (Level 2: Understand)
CO-3:	Demonstrate Structure and physiology of Insect body systems, Photoreceptors, Interpret metamorphosis. Morphological studies of various castes of Apis, Camponotus odontotermes (Level 3: Apply)
CO-4:	Discriminate different types of social insects with brief outlines of their social systems Outline the concept of co-evolution, role of allele-chemicals in host plant mediation, Host-plant selection by phytophagous insects, Major insect pests in paddy (Level 4: Analyze)
CO-5:	Compare as well as Estimate major insect pests of paddy and their damages, Explain the role of Insects as mechanical and biological vectors (Level 5: Evaluate)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOADSE03T, ZOOADSE03P

Course Title: Endocrinology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Define Hormones, list their types, actions &; disorders. Memorize various hypothalamic nuclei with their functions. (Level1: Remember)
CO-2:	Explain the neuroendocrine system and predict its function with peripheral endocrine glands through feedback. Describe estrous cycle in rat & menstrual cycle in human (Level 2: Understand)
CO-3:	Differentiate various endocrine glands of white rat, distinguish mechanism of action of steroidal & non-steroidal hormone. (Level 4: Analyze)
CO-4:	Prepare permanent slides through microtomy, estimate plasma level using ELISA (Level 3: Apply)
CO-5:	Evaluate multifaceted role of VP and Oxytocin (Level 5: Evaluate)
CO-6:	Design primers of any hormone (Level 6: Create)

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOADSE04T, ZOOADSE04P

Course Title: Fish and Fishery

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Outline the classification of fish upto subclass. Memorize various aquaculture methods with their advantages & disadvantages. Define various fishing crafts & gears. Recall different fish diseases with their causative agents and control measures. (Level 1: Remember)
CO-2:	Identify various types of fish scales and different Chondrichthyes & Osteichthyes fishes(preserved specimens) with their morphometric characters. Explain the function of swim bladder & gills and describe the process of respiration, osmoregulation & Bioluminescence. (Level 2: Understand)
CO-3:	Interpret the application of GIS and remote sensing (Level 3: Apply)
CO-4:	Predict the causes of Fisheries resource depletion. (Level 4: Analyze)
CO-5:	Compose project report on any fish farm/ pisciculture unit/Zebrafish rearing Lab. (Level 6: Create)

Course Code: ZOOADSE05T, ZOOADSE05P

Course Title: Parasitology

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Remember the fundamentals of parasite and parasitic diseases which have significant impact on human health (Level 1: Remember level)
CO-2:	Recognize and distinguish the causative agents of those diseases (Level 2: Understand level).
CO-3:	Illustrate and interpret various parasitic diseases (Level 5: Evaluate level).
CO-4:	Prepare plan and design the preventive and prophylactic measures for controlling the diseases (Level 6: Create level).

Department of Zoology
Sarojini Naidu College for Women

Name of the Academic Program: B.Sc. Honours with Zoology

Course Code: ZOOADSE06T, ZOOADSE06P

Course Title: Wildlife and Conservation

Course Outcome (COs)

After completion of this course successfully, the students will be able to

CO-1:	Recall the importance of wildlife conservation with emphasis on the conservation strategies and practices in India, protected areas, human-wildlife conflicts and eco-tourism. (Level 1: Remember)
CO-2:	Demonstrate different field techniques for flora and fauna and basic equipments (compass, binocular, range finder, GPS, camera and lenses) needed in wildlife studies. (Level 3: Apply)
CO-3:	Identify common local flora and fauna and point out animal evidences in the field through pug marks, hoof marks, scats, pellet groups, nest, antlers etc. (Level 4: Analyze)
CO-4:	Estimate diversity, density and abundance of populations of mammals, birds and butterflies through Quadrat and Transect monitoring and estimate forest cover through remote sensing and GIS. (Level 5: Evaluate)