

**Course outcome -Undergraduate
Zoology (Honours)**

CBCS SYSTEM

YEAR OF INTRODUCTION: 2018

CORE COURSES (CC)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 1		
CC-1-TH	Non-Chordates I: Protists to Pseudocoelomates	Imparting knowledge on Classification, Systematics and Taxonomy; introduction to the vast diversity of non-chordates, their general characteristics, classification system, life cycle.
CC-1-P	Non-Chordates I Lab	Hands-on learning to identify of non-chordates specimens, mounting of related specimen and staining of some parasites.
CC-2-TH	Molecular Biology	Introduction of basic concepts of Central Dogma, different post-transcriptional phenomenon and
		molecular techniques.
CC-2-P	Molecular Biology Lab	Hands on learning on DNA isolation, quantification, identification of chromosomes and staining of DNA and RNA from prepared slides.
SEMESTER 2		
CC-3-TH	Non-Chordates II: Coelomates	Exp!ore the concept of coelom and invertebrates' phyla from Annelida to Echinodermata. Basics of Hemi-chordates.
CC3-P	Non-Chordates II Lab	Identification of different categories of specimens from each phyla and anatomical study of different systems of Cockroach.

CC-4-TH	Cell Biology	Developing the concept of cellular structure, intra-cellular organelles, the cellular skeleton, significance of cell division check points and signaling mechanisms.
CC4-P	Cell Biology Lab	Hands on learning using different models to investigate stages of cell divisions. Preparations of human blood and cheek cells Staining of DNA and identification of viable cells
SEMESTER 3		
CC-5-TH	Chordata	Introduction to vast diversity of chordates, their characteristics features, further classifications. Detailed information on taxonomy and systematics.
CC-5-P	Chordata Lab	Identification of different chordate specimen with reasons, hands-on understanding of anatomical details of different systems of vertebrates. Practical field experience on habit, habitat and behaviour of animal species.
CC-6-TH	Animal Physiology: Controlling and Co-ordinating System	Introduction to different types of tissues in our body and a detailed knowledge on each type. Developing the concept of physiology of mammalian reproduction and elaborate understanding of Endocrine System – classification of hormones, histology and function of important endocrine glands and signalling pathways.
CC-6-P	Animal Physiology: Controlling and Co-ordinating System Lab	Understanding the physiology of cardiac and muscle twitch, preparation of temporary mounts, studying the permanent tissue sections and understanding microtomy.
CC-7-TH	Fundamentals of Biochemistry	Introduction to important biomolecules like carbohydrates, proteins, lipids, amino acids etc. Elaboration of enzymes and other metabolic pathways.
CC-7-P	Fundamentals of Biochemistry Lab	Capable of detecting the biomolecules and quantitatively estimating different water soluble proteins.
SEMESTER 4		
CC-8-TH	Comparative Anatomy of Vertebrates	Introduction to the different systems of vertebrates and their comparison.

CC-8-P	Comparative Anatomy of Vertebrates Lab	Idea about the different scales and bones and developing knowledge on comparative study of heart and brain through model and chart.
CC-9-TH	Animal Physiology: Life Sustaining Systems	Physiological aspects of all the important system and study of thermo- and osmoregulation in polar bear and aquatic animals respectively.
CC-9-P	Animal Physiology: Life Sustaining Systems Lab	Learning basic techniques of physiology – Determination of blood group, blood pressure recording, estimation of haemoglobin, preparation of different crystals - haemin and haemochromogen and identifying blood cells from cockroach haemolymph.
CC-10-TH	Immunology	Introducing basic concepts of body defense, antigen and antibody interaction, role of complement and cytokines. Effective role of vaccines in immune system.
CC-10-P	Immunology Lab	Making students capable of identifying important immunological organs of body and learning immunological techniques like ELISA.
SEMESTER 5		
CC-11-TH	Ecology	Introduction to the concept of ecology and applied ecology like population, community, ecosystem etc.
CC-11-P	Ecology Lab	Ability to determine population density, idea of different parameters of aquatic ecosystem and study of animal biodiversity <i>in situ</i> through field experience.
CC-12-TH	Principle of Genetics	Conception of Mendelian genetics and its extension, chromosomal linkage, crossing-over and mapping, mutation, sex-determination mechanisms and idea on extra-chromosomal inheritance, Genetic fine structure and transposable genetic elements.
CC-12-P	Principle of Genetics Lab	Analysis for genetic ratio test, identification of chromosomal aberration in important genetic model- <i>Drosophila</i> and human as well. Understanding inherited traits in animals.

SEMESTER 6		
CC-13-TH	Developmental Biology	Introducing students to the concept of embryonic and post-embryonic development and implications of different concepts of developmental biology.
CC-13-P	Developmental Biology Lab	Identification of different larval stages of chick embryo, developmental stages of and life cycle of <i>Drosophila</i> , sections of Placenta and different larval stages of invertebrates.
CC-14-TH	Evolutionary Biology	Concept development on the origin of life and its theories. Knowledge on evolution, geological time scale and natural selection. Exploring population genetics, extinction, construction and construction of phylogenetic trees.
CC-14-P	Evolutionary Biology Lab	Understanding evolution through different fossil studies, homologous and analogous organs and construction & interpretation of phylogenetic trees.

B.A./B.SC. (HONOURS): SKILL ENHANCEMENT COURSE (SEC)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 3		
SEC-A-1	Apiculture	Concept building on culture of bees, their biology, artificial rearing, their diseases and enemies and their economic importance.
SEMESTER 4		

SEC-B-1	Aquarium Fish Keeping	Concept building on culture of aquarium fishes, their biology, artificial rearing, their diseases and enemies and their economic .
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B.A./B.SC. (HONOURS): ELECTIVE: DISCIPLINE SPECIFIC (DSE)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 5		
DSE-A-1-TH	Parasitology	Introduction to the different concepts of parasitism. Concept building on different parasitic forms belonging to different species, their life-cycle patterns, pathogenicity etc.
DSE-A-1-P	Parasitology Lab	Ability to identify different stages of parasites through slides. Hands-on training in isolation of parasites from fishes and poultry birds. Overview of vertebrate parasites through literature review.
DSE-B-1-TH	Endocrinology	Introduction to endocrinology. Concept building on role of hormones and their regulatory secretion. Insight into the non-mammalian vertebrate hormone.
DSE-B-1-P	Endocrinology Lab	Hands-on training on dissection of endocrine glands in laboratory bred rat. Ability to prepare, stain and identify histological section of endocrine glands.
SEMESTER 6		

DSE-A-2	Animal Biotechnology	Introducing the concept of genome and different molecular techniques in gene manipulation. Overview of genetically modified organisms, animal cell culture techniques and applications.
DSE-A-2-P	Animal Biotechnology Lab	Hands-on learning on isolation of genomic and plasmid DNA. The basic techniques of molecular biology like PCR, Fingerprinting and Blotting. Learning model based ethical issues on animal cloning.
DSE-B-2	Fish and Fisheries	Detailed study of fisheries, aquaculture and fish in research.
DSE-B-2-P	Fish and Fisheries Lab	Concept building on morphometric and meristic characters of fishes. Ability to identify different fishes, analyze the water quality parameters. Developing the concept of fish farm by paying a visit.

Programme Outcome

- **Providing the students necessary inputs to deal with new, changing and innovative ideas/concepts.**
- **Making students capable to imbibe latest advancements and multi-Disciplinary skills.**
- **Developing broader vision for students so that they deal with different applications of biological sciences.**
- **Train them to develop critical thinking, accuracy and effective communication skill.**
- **The students after the completion of this programme will be able to understand and apply the knowledge of Taxonomy, Systematics, Classifications, Biochemistry, Physiology Ecology, Environmental biology, Toxicology, Microbiology and several applied fields of Zoology like Apiculture, Aquarium Fish Keeping, Aquaculture, Fisheries, Biotechnology, Cell Culture System etc.**

Head, Department of Zoology

Course outcome -Undergraduate Zoology (General)

CBCS SYSTEM

YEAR OF INTRODUCTION: 2018

CORE COURSES (CC)

COURSE CODE	COURSE NAME	COURSE OUTCOME
SEMESTER 1		
CC-1-TH	Animal Diversity	Developing understanding for Taxonomy, Systematics and Classifications. Concept building for identification of different phyla of Animal Kingdom .
CC-1-P	Animal Diversity Lab	Identifying characteristics for different specimens, key for identification of poisonous and non-poisonous snakes and anatomical study of different systems of Cockroach.
SEMESTER 2		
CC-2-TH	Comparative Anatomy & Developmental Biology	Comparative study of different systems of vertebrates. A detailed overview of early and late embryonic development.
CC-2-P	Comparative Anatomy & Developmental Biology Lab	Osteology studies of Pigeon and Guinea Pig. Studies of different larval stages, different types of Placenta and different developmental stages of chick embryo.
SEMESTER 3		
CC-3-TH	Physiology and Biochemistry	Developing knowledge on important physiological phenomenon and different biochemical pathways.
CC-3-P	Physiology and Biochemistry Lab	Histological overview of important organs and qualitative assay of different biochemical pathways.

SEC-A-1-TH	Apiculture	Basic understanding of Bees, their rearing, diseases and enemies. How to boost bee economy and develop entrepreneurship in Apiculture.
SEMESTER 4		
CC-4-TH	Genetics & Evolutionary Biology	Conceptualization of Genetic principles, different theories of inheritance, mutation and sex determining mechanisms. Understanding important theories of Evolution.
CC-4-P	Genetics and Evolutionary Biology Lab	Capable of analysing different ratios of Mendelian crossing, validation using Chi square. Understanding of evolution through classical outcomes and learning to identify different human chromosomal aberrations.
SEC-B-2-TH	Aquarium Fish Keeping	Introduction to Aquarium Fish Keeping, Biology of Aquarium Fishes, their food and feeding, transportation methods and maintenance procedures.
SEMESTER 5		
DSE-A-2-TH	Aquatic Biology	Developing understanding for different biomes of aquatic ecosystem. Understanding marine biology and management of aquatic resources.
DSE-A-2-P	Aquatic Biology Lab	Analysis of aquatic parameters, learning methods for determining areas of a lake and identifying important residents of lake ecosystem.
SEMESTER 6		
DSE-B-2-TH	Ecology and Wild Life Biology	Concept building of ecology, population, community, ecosystem and understanding wild life and its conservation.
DSE-B-2-P	Ecology and Wild Life Biology Lab	Learning to identify flora and fauna. An idea of important equipments used in field study, how to identify different evidences for animal identification in nature and detailed study of aquatic ecosystems – population present and different parameters.

Programme Outcome

- Describe the characteristics common to all animals and distinguish animals from other organisms.
- Describe the structure and function of the animal body – different physiological phenomenon, important life processes and biochemical pathways.
- Describe the main features and evolutionary relationships of the main groups of animals
- Students completing this course will demonstrate competence in critical thinking, skills to interpret, analyse and tackle assignments with reasonings.

Head, Department of Zoology