BSc Zoology

CBCS (Honours)

Semester I	
ZOO-HC-1016 Non-Chordates I: Protista to Pseudo-coelomates (Theory)	• 1. Understanding the characteristics, Classification, life cycle, physiology, evolutionary significance of non-chordates from Protista to pseudo coelomates.
ZOO-HC-1016 (Practical)	• 1. Practically understanding the morphology, anatomy of non-chordates from Protista to pseudo coelomates.
ZOO-HC-1026 Principles of Ecology (Theory)	• 1. An overview of Ecology and environment.
	• 2.Understanding population attributes, Population dynamics and population interactions
	• 3. Developing knowledge about community characteristics, Ecological Succession.
	• 4. Detailed understanding of ecosystem, about energy flow, Ecological pyramids, biochemical cycles.
	• 5. Application of the knowledge of Ecology in conservation and management of wildlife.
ZOO-HC-1026 (Practical)	• 1. Practical understanding and construction of life tables, survivorship curves.
	• 2. Practically determining population density.
	• 3. Studying aquatic systems, diversity of aquatic organisms, and quality of water of selected aquatic bodies.
	• 4. Enhancing the knowledge and understanding the Ecosystem, community, flora & fauna in in-situ conserved sites like National Parks, Wildlife sanctuary.
Semester II	
ZOO-HC-2016 Non-chordates II : Coelomates (Theory)	• 1. Understanding the evolution of coelom and metamerism in animals.
	• 2. Understanding the characteristics, classification, physiology, metabolism of coelomate animals from Annelida to Echinodermata.
ZOO-HC-2016 (Practical)	• 1. Gaining practical knowledge about the morphology, anatomy of non-chordates.
ZOO-HC-2026 Cell Biology (Theory)	• 1. Developing deeper understanding of structure and functioning of cell and its components.
	• 2. Imparting knowledge of how cell divides and types of cell division
	• 3. Conceptualizing cell signalling.
ZOO-HC-2026 (Practical)	• 1. Students gains practical knowledge for studying various stages of cell cycle and cell division.
	• 2. Practical knowledge about staining DNA, Polysaccharides and proteins.
Semester III	
ZOO-HC-3016 Diversity of Chordata (Theory)	• 1. Understanding the characteristics, Classification, Origin, Physiology and other aspects of phylum Chordata.
	• 2. Developing concept about Zoo-geographical realms,

	distribution of vertebrates.
ZOO-HC-3016 (Practical)	• 1. Familiar with different groups of chordates with representative from each group.
ZOO-HC-3026 Animal Physiology: Controlling and Co-ordinating systems (Theory)	• 1. Developing clear concepts about tissues- their classification structure, location and functions.
	• 2. In depth understanding of Nervous systems and muscles.
	• 3. Understanding the various aspects of Endocrine and Reproductive systems.
ZOO-HC-3026 (Practical)	• 1. Imparting practical knowledge of different types of tissues at microscopic level.
ZOO-HC-3036 Fundamentals of Biochemistry (Theory)	• 1. Understanding the structure, functions & metabolism of biomolecules
	• 2. Familiarisation with various biochemical pathways.
	• 3. Deeper concept of what enzymes are, their classification, & Mechanism of action.
ZOO-HC-3036 (Practical)	• 1. Understanding practically the presence of functional groups in carbohydrates, proteins & lipids.
	• 2. Identification of amino acids using chromatography.
	• 3. Gaining practical knowledge on action of salivary amylase & effect of pH, temperature on its action.
ZOO-SE-3014 Ornamental fish & Fisheries (Theory)	• 1. Knowing ornamental fish diversity of N.E. India, aquarium plant diversity in wetlands of Assam.
	• 2. Enabling construction and management of Home Aquarium, breeding techniques, feed formulation of ornamental fish etc.
ZOO-SE-3014 (Practical)	• 1. Identifying ornamental fishes & their culture in Aquarium.
Semester IV	
ZOO-HC-4016 Comparative Anatomy of vertebrates (Theory)	• 1. In depth knowledge on the anatomy of various vertebrate groups
ZOO-HC-4016 (Practical)	• 1. Practical understanding of structural features of vertebrate tissues and organs.
ZOO-HC-4026 Animal Physiology: Life Sustaining systems (Theory)	• 1. Understanding various aspects of different physiological systems and the organs involved in animals.
ZOO-HC 4026 (Practical)	• 1. Students become able to determine blood groups, estimate haemoglobin, enumeration of RBCs and WBCs.
	• 2. Differentiating various organs.
ZOO-HC-4036 Biochemistry of metabolic processes (Theory)	• 1. Understanding the concept of metabolism of various biomolecules.
	• 2. Gaining concept of oxidative phosphorylation and other metabolic pathways.
ZOO-HC-4036 (Practical)	• 1. Students can estimate total proteins in solutions; can detect SGOT & SGPT in serum tissue.
	• 2. Understanding enzymatic activity of trypsin and lipase.
ZOO-SE-4014 Non-	• 1. Basic conceptualisation of Sericulture.

mulberry Sericulture	• 2. Understanding the Biology of Eri & Muga Silkworm & rearing of silkworm.
	• 3. Utilisation of the concept of Sericulture for Entrepreneurship
Semester V	
ZOO-HC-5016 Molecular Biology (Theory)	• 1. Understanding the structures, functioning, expression and regulation of Nucleic acids.
ZOO-HC-5016 (Practical)	• 1. Practical knowledge about polytene chromosomes, preparation of culture medium for bacteria.
	• 2. Conducting quantitative estimation of DNA and RNA.
ZOO-HC-5026 Principles of Genetics (Theory)	• 1. Enhancing concepts of Mendelian Genetics; Principles of inheritance and variation.
	• 2. Gaining knowledge about non-Mendelian genetics.
	• 3. Conceptualization of linkage, crossing-over, chromosome mapping, mutations, sex-determination, polygenic inheritance etc.
ZOO-HC-5026 (Practical)	• 1. Students gain knowledge about Mendelian inheritance & gene interactions.
	• 2. Knowing linkage mapping, karyotyping, Chi-square test & Pedigree analysis.
ZOO-HE-5016 Computational Biology and Biostatistics (Theory)	• 1. Knowing basics of bioinformatics, Bioinformatics, Biological databases, Data generation and retrieval, sequence alignment and application of bioinformatics.
	• 2. Developing basic concept & application of Biostatistics.
ZOO-HE-5016 (Practical)	• 1. Students come to know how to access biological databases, performing BLAST, structure prediction of proteins.
	• 2. Students can perform statistical analysis & interpretation
	• 3. Developing skills to computer application in Biostatistics.
ZOO-HE-5026 Animal Biotechnology (Theory)	• 1. Understanding the concept & scope of Biotechnology.
	• 2. Understanding facts and basic concepts of molecular techniques in gene manipulation.
	• 3. Understanding, application, analyze & evaluation of genetically modified organisms, animal cell culture techniques and applications.
ZOO-HE-5026 (Practical)	• 1. Application, analyze, evaluation and developing skills in Biotechnological techniques like genomic DNA, Plasmid isolation, Southern blotting, PCR etc.
ZOO-HE-5036 Endocrinology (Theory)	• 1. Understanding concepts of the Endocrine System.
	• 2. Understanding the structure, function & other aspects of Endocrine glands.
	• 3. Conceptualisation of regulation of hormone action.
ZOO-HE-5036 (Practical)	• 1. Practical understanding of endocrine glands and enhancing knowledge of castration and ovariectomy.
Semester VI	
ZOO-HC-6016 Developmental Biology	• 1. Basic concepts of Developmental Biology like phases of development, cell-cell interaction etc. shall be known.

(Theory)	• 2. Insight into early embryonic development, late and post embryonic development and implications of developmental Biology.
ZOO-HC-6016 (Practical)	• 1. Understanding developmental stages of chick embryo, *Drosophila*.
ZOO-HC-6026 Evolutionary Biology (Theory)	• 1. Understanding and analyze the origin and evolution of various kinds of organisms.
	• 2. Knowing sources behind evolution, population genetics, origin & evolution of men etc.
	• 3. Basic concepts of phylogenetic analysis shall be gained.
ZOO-HC-6026 (Practical)	• 1. Students will be able to analyse, evaluate and apply knowledge of evolution to understand population genetics.
	• 2. Construction, analyze and interpreting phylogenetic trees using appropriate softwares.
ZOO-HE-6016 Biology of Insecta (Theory)	• 1. Understanding the general features, distribution and evolution of insects.
	• 2. Gaining knowledge about taxonomy, morphology, physiology of insects.
	• 3. Knowing about social behaviour of insects, co-evolution of insects & their host and insects as vectors.
ZOO-HE-6016 (Practical)	• 1. Analysation, evaluation & application of knowledge regarding insect morphology & anatomy, economic importance of insects.
ZOO-HE-6026 Fish & Fisheries (Theory)	• 1. Understanding and analysation of classification, morphology and physiology of fishes.
	• 2. Gaining in-depth knowledge about fisheries and aquaculture.
	• 3. Using fish in research.
ZOO-HE-6026 (Practical)	• 1. Analysis & interpretation morphometric and meristic characters of fishes.
	• 2. Practical understanding of induced breeding in fishes & pisciculture.
Z00-HE-6036 Reproductive Biology (Theory)	• 1. Basic concepts in Reproductive Endocrinology, male & female reproductive system, reproductive health & techniques associated with assisted reproductive technology.
ZOO-HE-6036 (Practical)	• 1. Knowing how to setup and maintain animal house, breeding techniques etc.
	• 2. Analyse histological sections of different reproductive organs.
	• 3. Understanding of modern contraceptive devices.
ZOO-HE-6056 Dissertation	• 1. Understanding and performing basic Research on Zoology specific topics
CBCS (General)	
Semester I	
ZOO-HG-1016 Animal diversity (Theory)	• 1. Understanding the characteristics, Classification, life cycle, physiology, evolutionary significance of animals.
ZOO-HG-1016 (Practical)	• 1. Practically understanding the morphological aspects of animals.

Semester II	
ZOO-HG-2016 Comparative anatomy and Developmental Biology of Vertebrates (Theory)	• 1. In depth knowledge on the anatomy and development of various vertebrate groups.
ZOO-HG-2016 (Practical)	• 1. Practical knowledge on the osteology and developmental stages of representative vertebrates
Semester III	
ZOO-HG-3016 Physiology and Biochemistry (Theory)	• Understanding various aspects of different physiological systems and the organs involved in animals. • 2. Understanding the concept of metabolism of various biomolecules.
ZOO-HG-3016 (Practical)	• 1. Enabling identification, estimation etc of various molecules in biological samples.
Semester IV	
ZOO-HG-4016 Genetics and Evolutionary Biology (Theory)	• Enhancing concepts of Mendelian Genetics; Principles of inheritance and variation. • 2. Understanding and analyze the origin and evolution of various kinds of organisms.
ZOO-HG-4016 (Practical)	• Students gain knowledge about Mendelian inheritance & gene interactions. • 2. Knowing linkage mapping, karyotyping, Chi-square test, Pedigree analysis and phylogeny.