DEPARTMENT OF ZOOLOGY
TEZPUR COLLEGE
TEZPUR-784001

Date: 20/01/2025

ALLOTMENT OF SYLLABUS

FYUGP B. Sc. 4th SEMESTER
COMPULSORY
ANIMAL TAXONOMY, SYSTEMATICS & BIOSTATISTICS
Code: ZOO-2021

Dr. Hridisha Nandana Hazarika

Unit 1:

Animal Taxonomy and Systematics; Taxon and Phenon; Chemotaxonomy and cytotaxonomy and concept of molecular taxonomy Taxonomic categories; concepts of species – typological, nominalistic, biological and evolutionary Taxonomic keys – various types; dichotomous nature of keys Taxonomic characters – morphological, behavioural, ecological, and geographical Zoological Nomenclature – International Code of Zoological Nomenclature (ICZN), Principles, functions, and importance of the Code of nomenclature; principle of priority, homonymy and synonymy, principle of typification and use of types for specimens

Dr. Debashish Khanikar

Unit 2:

Characters (ancestral vs. derived), homology and analogy, parallelism and convergence, monophyly, polyphyly, paraphyly; representing phylogenies – Rooted and unrooted phylogenetic trees; clades; Cladograms and Phenograms

Dr. Ranju Chetri

Unit 3:

Concept, Importance and Application of Biostatistics Collection and Classification of statistical data, Frequency distribution, Types of presentation of statistical data Measures of central tendency - Mathematical average, Average of position Measures of Partition values Measures of Dispersion - Range, Quartile deviation, Mean deviation, Standard deviation, Co-efficient of Variation, Standard errors Testing of Hypothesis; Confidence Intervals; Chi-square test, student's t test, Analysis of variance

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ALLOTMENT OF SYLLABUS

FYUGP B. Sc. 4th SEMESTER
DSE-1
ANIMAL PHYSIOLOGY AND ENDOCRINOLOGY
Code: ZOO-2022

Dr. Debashish Khanikar

Unit 1:

Structure and Function of Epithelial, Connective, Muscular tissues, Characteristics of Muscles, Mechanism of Muscle Stimulation and Contraction Neurons Structure of neurons, Nerve Impulse, physiology of nerve impulse conduction and Propagation, Neuro - Muscular Junction and neurotransmitter in smooth muscle and cardiac muscle. Anatomy of digestive system in mammals, digestive enzymes, digestion and absorption of food stuff.

Dr. Ranju Chetri

Unit 2:

Respiratory Organs in Different Animals, Transport of Oxygen and Carbon dioxide, Respiratory Pigments, Types and structure of heart, Concepts of Neurogenic and Myogenic Hearts, Cardiac cycle, ECG patterns in Mammals, Homeostasis and Blood Clot Formation, Functions of Kidney, Types of Nitrogenous Wastes in Different Animal Groups and their Excretion Urea production – Hans Krebs and Kurt Henseleit cycle, Urine Formation.

Dr. Hridisha Nandana Hazarika

Unit 3:

Endocrine glands of invertebrates and vertebrates, Structure and function of insects' neuroendocrine glands, Hypothalamus and pituitary structures, hormones and its functions. Hypothalamus-hypophyseal blood vessel. Thyroid and parathyroid gland structure in mammal. Endocrine pancreas structure and function Structural Organizations of Adrenals, Functions of Cortical and Medullary Hormones and mechanism of action. Male and female gonads in mammal structure and function.

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ALLOTMENT OF SYLLABUS

FYUGP B. Sc. 4th SEMESTER
DSE 2
PRINCIPLES OF ECOLOGY & EVOLUTION
Code: ZOO-2023

Dr. Hridisha Nandana Hazarika

Unit1: Basic concept of ecology and ecosystem, Autecology, Synecology, Level of organization, Study of physical factors, Laws of limiting factors, Structural components of Ecosystem, Functional attributes of Ecosystem-Trophic structure, food chain, food web, Energy flow, Ecological Pyramids, Ecological Efficiencies; Types of Ecosystems with examples.

Unit3: Theories of origin of life – Chemogenesis, Biogenesis, Experimental evidences Evolutionary theories: Lamarkism, Darwinism and Neo-Darwinism

Dr. Debashish Khanikar

Unit2: Definition, Unitary and Modular populations, Population attributes- Abundance, Density, Natality and Mortality, Life table and survivorship curve, Dispersion, Dispersal, Age distribution, Sex ratio, Biotic potential and Environmental resistance, Population growth form-Exponential and Logistic; Population regulation-density dependent and independent factors. Population interactions, Gauss's principle; Definition of community, Community characteristics, Community structure, Ecological succession and types, Theories pertaining to climax community Ecotone and Edge effect.

Dr. Ranju Chetri

Unit3: Paleontological evidences of evolution, Geological timescale Natural selection – concept of fitness, selection coefficient, kin selection, sexual selection Population genetics –Concept of speciationand Hardy-Weinberg Law (statement and derivation), concept of gene flow, Natura selection and survival of the fittest – sources of variations and role in evolution, Genetic Drift (Founder's and Bottleneck effect), Role of migration and mutation in changing allelic frequencies Evolution of man.

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ALLOTMENT OF SYLLABUS

FYUGP B. Sc. 4th SEMESTER
DSE-4
ANIMAL BEHAVIOUR AND CHRONOBIOLOGY
Code: ZOO-2025

Dr. Debashish Khanikar

Unit 1:

Origin and history of ethology Patterns of behaviour - instinct vs. learned behaviour; Animal orientation- Taxis vs. Kinesis; Navigation; Proximate and ultimate causes of behaviour Methods of studying behaviour.

Dr. Hridisha Nandana Hazarika

Unit 2:

Animal Communication-Dance Language in honey bees; Eusocial organization - honey bee, termite, and ant; Schooling behaviour in fishes; Social behaviour in monkeys.

Dr. Ranju Chetri

Unit 3:

Historical developments; biological oscillations - concept of average, amplitude, phase and period. Biological timekeeping-adaptive significance and importance; Concept of biological rhythms- Circadian, circalunar/infradian and circannual rhythms with example in animal models/humans Phenomenon of bird migration Concept of biological clock: functions in animal systems Concept of zeitgebers; photoperiod and Concept clock genes, sleep-wake cycle.

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