Department of Zoology
Liberal College, Luwangsangbam
I/E Manipur

Program outcomes of B.Sc. Zoology:

A graduate with Zoology programme will be able to:

PO1: Students gain knowledge and skill in the fundamental of animal science, understands the complex interactions among various living organisms.

PO2: Understands the complex evolutionary process and relationship of organ systems.

PO3: Gain knowledge of agro based small scale industries like sericulture, Apiculture and fish farming.

PO4: Apply the knowledge and understanding of Zoology to one's own life and work.

PO5: Understanding of environmental conservation processes and its important, pollution control and biodiversity and protection of endangered species.

PO6: The programme has been designed to provide in-depth knowledge of applied subject ensuring the inculcation of employment skill so that students can make a career and becomes entrepreneur we in diverse fields

Program outcomes of B.Sc. Zoology:

PSO1: Analyses the relationship among animals and microbes

PSO2: Understand the nature and basic concept of cell biology, genetics taxonomy, physiology, ecology and applied zoology.

PSO3: Performs procedures as per laboratory standards in the areas of physiology, ecology, cell biology, Applied Zoology, Biochemistry, Animal biotechnology and sericulture.

PSO4: Elucidation of animal- animal, animal- plant, animal-microbes interactions and their consequences to animals, humans and the environment.

PSO5: Development of theoretical and practical knowledge in handling and using them as model organism.

PSO6: To explain the important of genetics, biotechnology role and impact of different environment conservation programme and to identify various potential risk factors to health of human

PSO7: Contribute the knowledge for nation building

B. SC. 1st Semester

Course outcomes: ZOO-101, Principles of classification, Zoology and palaeozoology .

CO1: To give a thorough understanding the fundamental principles of systematic in which the animals are how to classify according to their characters and what are theories which have to follow for classification is studied.

CO2: International rules of nomenclature and classification is studied.

CO3: Identify Zoogeographical realms, endemic species, distribution patterns of animals in each realm and types of continents.

Co4: Well ideas of approaches in taxonomy with morphometric and cytological technique

CO5: Understand the classification system in Biological systematic which deals with the grouping by numerical methods of taxonomic units based on the character states.

CO6: Understand continental landmasses were drifting across the earth.

CO7: Gain knowledge about when and how different species lived millions of years ago.

CO8: Concept of geological time scale to illustrate the order in which events on earth happened.

CO9: Well ideas of Morphometric and meristic, data sheets and data entry.

B. SC. 2nd Semester

Course outcomes: ZOO-202: Functional anatomy of Non-chordata.

After the completion of this course the students will be able to understand the following concept.

CO1: The students will have learning about the basic taxonomy, characters and classification of protozoa.

CO2: Knowledge about the basics of life cycles, epidemiology, pathology and even the symptoms and treatments.

CO3: Students will be understanding the various aspects of the origin of metazoan and also economic importance of porifera groups.

CO4: Imparting knowledge regarding life cycle and parasitic adaptation in Fasciola hepatica and Taenia solium.

CO5: Gain in knowledge about the characters, life cycles, pathogenicity and treatment of Ascaris lumbricoides species.

CO6: A detail understanding of characters, Classification, and structure and affinities in trochophore larva.

CO7: The student to understand what are the requirement of each kind of environment and how can a living organism develop structural features to adjust with each way of life.

CO8: The students could be able to know about minor phyla in spite of their inconspicuous habits, these animals are important as members of food chains, or as parasites of medicinal importance.

B. SC. 3rd Semester

Course outcomes: ZOO-303 Functional Anatomy of Chordata.

CO1: Students will understand the classification, structure and biology of chordates of different taxonomic classes

CO2: Improved knowledge about the Morphology, digestive system respiratory system and reproduction of petromyzon and scoliodon.

CO3: Gain the specific knowledge of accessory respiratory organ of fishes as well as characters and distribution of lung fishes in the world.

CO4: Identify the distinction between poisonous and non poisonous snakes and also biting mechanism in snakes.

CO5: Obtained knowledge about the outline evolution of Reptiles and impacts of climate changes.

CO6: The students could be able to know about origin of Birds and general characters of Aves class.

CO7: Understanding about the kinds of feathers, digestive, respiratory, circulation, urinogenital and skeletal systems of Pigeon.

CO8: Illustration of distinctive characters of ratitae and cranitae with origin of birds and its perching mechanism.

CO9: Maintenance of high standards of learning in animal science.

CO10: Understanding the general characters and classification of prototheria, metatheria and Euthera.

CO11: Description of dentition, and types of placenta in mammals as well as the function of placenta.

CO12: Study of skeletal, excretory and reproductive systems of mammals.

CO13: Learn to analyze and critically evaluate the structure and functions of vertebrate systems.

CO14: Learn the comparative accounts of integument Digestive, skeletal, Nervous system, endocrine components their function and modification in different vertebrates.

B. SC. 4th Semester

Course outcomes: ZOO-404: Biodiversity, environmental biology, Applied Zoology, wildlife and computer application.

CO1: Student will be learning the various issues related to biodiversity loss and conservation as well as status, conditions and conservation of wildlife.

CO2: Students would be able to know the concept of biodiversity hot spots and IUCN redlist categories

CO3: Knowledge about the different sanctuaries, National parks and Ramsar site.

CO4: Understand the captive breeding.

CO5: Gains knowledge in the area of responses to laws of minimum and laws of tolerance and tragedy of commons.

CO6: Imparts knowledge to the student regarding the population characteristics and conceptual approach.

CO7: Imparts knowledge to the student regarding Ecological succession, and biological cycles of water, oxygen, carbon and nitrogen.
CO8: Strengthening of toxic effect of pesticides and industrial wastes and also gain the knowledge of Biomagnifications
CO9: Knowledge about the culture and capture of fishes.
CO10: Concept of commercial value of fishes.
CO11: Defining key strategies to express the different pisciculture technique.
CO12: Fish Biology is one of the small scale industry which can provide the student employment opportunity.
CO13: Provide Knowledge of rearing methods, economic utility of Bees, tasar worms and Mulberry silkworm which is highly Professional Avenue for youth.
CO14: Students feel confident in teaching apiculture and sericulture as well as excepting research project.
CO15: Students gain knowledge about various systems of the study of silkworm and establishment of rearing house other defective cocoons.
CO16: Students gain knowledge about in natural ecosystems there tends to be more niche and a higher diversity of species compared to most managed agro ecosystems that are simpler.
CO17: Capability to perform the estimation of oxygen and carbon dioxide of pond water.
CO18: Understand the basic concept of computer and its operating systems.
CO19: Learning computer application in Biological science.
CO20: Imparting knowledge of Bioinformatics E-learning and programmer used in Biostatistics like Phylogenetic study.

SEMESTER-V (HONOURS ZOOLOGY)

Course outcomes: ZOO-505: CELL BIOLOGY AND GENETIC

C01: Obtain knowledge of the structure and function of basic component of prokaryotic and eukaryotic cells, especially macro-molecular, membranes and organelles.
C02: Understanding the cellular component underlying cell division.
C03: Explain the communication of cells with other cells and to the environment.
C04: Students learn compare and contrast the events of all cycle and its regulation.
C05: To make aware of different cell organelles, their structure and role in living organisms.
C06: To emphasize the central role that genetics in the life of all organisms.
C07: To develop critical thinking skill and research aptitude among students by introducing the frontier areas of the biological science.
C08: Application of DNA technology and molecular biology for research.
C09: Provides students insight into maintaining healthy relationship with their opposite gender and allows them to make right choice about their life partner thus preventive congenital diseases.
C010: Knowledge about the important of blood grouping as well as Human genome project.

SEMESTER-V (HONOURS ZOOLOGY)

Course outcomes: ZOO-506: Evolution, Ethology : Biotechnology and Bioinstrumentation

CO1: Impart knowledge regarding the various theories of evolution, Evolutionary process such as variation, Natural selection and disruption types.

CO2: Gain knowledge of Isolating mechanism and their role in evolution, origin of Primates and Man.

CO3: Students will acquire knowledge about pattern of behaviour survival stralagies, social and cooperative behaviour and design of signals and chromobiology. They will also know to construct ethograms.

CO4: Will gain knowledge about the basic concept of adaptation of animals to different habitat.

CO5: To get a clear concept of the basic principles and application of Biotechnology.

CO6: Acquire knowledge of the basic preparation and handling required for cell culture.

CO7: Students will clear the idea of health care biotechnology such as production of human insulin.

CO8: Development of an understanding of in-vitro-fertilization in human and ART.

CO9: Gain knowledge about the role of virus, bacteria and fungi in Biotechnology.

CO10: Development of theoretical and practical knowledge in handling the type of microscopy Electrophoresis, Chromotography and Centrifugation.

SEMESTER-VI (HONOURS ZOOLOGY)

Course outcomes: ZOO-508: Animal Physiology, Endocrinology and Immunology

CO1: Students know how their body function what are the chemical change taking place in their body during any action.

CO2: They also know how their heart lungs kidney and other glands work.

CO3: Student gain knowledge about the molecular mechanism of muscle contraction integrative function of CNS.

CO4: A detail understanding of different sense organism in human being.

CO5: Understand the molecular basis of complex humoral (Cytokines, complement) and cellular processes involved in inflammation and immunity in state of health and disease.

CO6: Students will develop knowledge about structure and functions of immune cells, immunoglobuline antigen and their interaction with antibodies.

CO7: Students came to know the relationship of Nervous system with Endocrine system in Man.

CO8: An overview of the function of different hormones with which secreted from various Endocrine glands.

CO9” Gain knowledge about the hormones secreted by gastrointestinal system as well as kidney, Placenta, heart and their functions.

CO10: Learning the preventive measure of HIV and immune mechanisms in disease control.

SEMESTER-VI (HONOURS ZOOLOGY)

Course outcomes: ZOO-509: Developmental Biology, Histology and Biological Chemistry

CO1: Students with learn the different aspect of early late and post embryonic development.

CO2: They will also understand the gametogenesis and parthenogenerous in theoretically.

CO3: The students will learn the fundamental organogenesis, of CNS heart and kidney.

CO4: Came to know the knowledge about metamorphosis in Amphibian and Insects.

CO5: To develop technical knowledge and histological techniques and detail microscopic anatomy of the organs of a mammal.

CO6: Understanding the nature of classification and function of Enzymes.

CO7: Development of concept of Interrelationship of metabolic pathway.

CO8: Defining and explaining the basic principles of biochemistry and bioenergetics useful for biological studies for illustrating different their structure, function and metabolism.

CO9: Understanding the interaction of Carbohydrate and lipids.

Co10: Gain knowledge of trans-animations TCA cycle and biological oxidation with special reference to the role of the electron transport system.

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