NEHRU MEMORIAL COLLEGE (AUTONOMOUS)

NATIONALLY ACCREDITED WITH "A" GRADE BY NAAC

PUTHANAMPATTI,TRICHY – 621007

DEPARTMENT OF ZOOLOGY

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COURSE OUTCOME (COS)

NAME OF THE COURSE	COURSE OUTCOMES
CC-I: INVERTEBRATA	**CO 1:** Understand the fascinating world of invertebrates and get a concrete idea of classification of invertebrate phyla. **CO 2:** Understand the basics of systematic of various groups of invertebrate phyla. **CO 3:** Describe the structure and physiology of invertebrates with typical examples in each phylum. **CO 4:** Know the economic importance of invertebrates **CO5:** Explain the taxonomic and characteristic features of minor phyla (Rotifer).
CC-II: PRACTICAL-I: INVERTEBRATA	**CO 1:** Familiar with dissection of invertebrates. **CO 2:** Describe the morphological and anatomical structure of invertebrates. **CO 3:** Understand various systems of invertebrates.
CC-III: CHORDATA	**CO 1:** Inculcate the fascinating vertebrate life. **CO 2:** Learn the evolution, hierarchy and classification of different classes of chordates **CO 3:** Get an overview of the morphology and physiology of typical examples of chordates. **CO 4:** Familiarize the adaptations and economic importance of specific vertebrates.
CC-IV: PRACTICAL-II (CHORDATA)	**CO 1:** Familiarize with dissection of vertebrate animals. **CO 2:** Understand various systems of vertebrates.

SKBC-I: APICULTURE	**CO 1:** Explain the morphology, colony organization and life cycle of honey bees. **CO 2:** Identify different species of wild honey bees and suitable species for apiculture. **CO 3:** Familiar with the beekeeping equipments and method of honey harvesting. **CO 4:** Realize the nutritional and medicinal values of honey. **CO 5:** Explain the values and production of bee products. **CO 6:** Apply the knowledge of apiculture to become an entrepreneur.
ENVIRONMENTAL STUDIES	**CO 1:** Develop deeper understanding of what life is and how it functions at cellular level. **CO 2:** Compare the structure of eukaryotic cells with the structure of simpler prokaryotic cells. **CO 3:** Describe cellular membrane structure and function, fine structure and function of cell organelles. **CO 4:** Explain the cell division in somatic and germ cell. **CO 5:** Discuss the mechanisms of cell cycle in normal and cancer cell. **CO 6:** Explain the structure and function of the genetic material and its types. **CO 7:** Describe the structural organization of genes and the control of gene expression. **CO 8:** Understand the protein synthesis.
CC-VI: PRACTICAL-III: CELL BIOLOGY	**CO 1:** Observe chromosomal arrangements during cell division **CO 2:** Distinguish different cells and tissues. Familiarize with conventional and modern cytological techniques.

POULTRY FARMING AND DAIRY FARMING	**CO 1: Poultry Farming:** The student will be able to 1. Identify and selection of breeds of fowl. 2. Plan a housing unit for breeding and rearing of fowls. 3. Describe feed types and feeding of poultry. 4. Analyze the poultry diseases and apply disease management techniques. 5. Understand the nutritive value of eggs and meat. 6. Apply knowledge obtained from poultry science to become an entrepreneur. **CO 2: Dairy farming:** The student will be able to **1.** Identify the breeds of cattle. **2.** Understand the breeding and cattle improvement programme in India. **3.** Analyze the pests and diseases of dairy cattle and apply their management methods. **4.** Understand the byproducts of dairy farming. 5. Apply knowledge obtained from dairy farming to become an entrepreneur.
CC-VII: ANIMAL PHYSIOLOGY	**CO 1:** Understand the importance of Bio molecules. **CO 2:** Familiar with various biochemical pathways. **CO 3:** Analyze structural-functional relationships of proteins. **CO 4:** Understand the structure and function of various systems. **CO 5:** Apply the knowledge to lead a healthy life.

CC-VIII: PRACTICAL-IV: ANIMAL PHYSIOLOGY	**CO 1:** Demonstrate basic principles in physiology. **CO 2:** Develop skill in simple biochemical laboratory procedures. **CO 3:** Analyze blood samples.
NMEC-I: Entrepreneurial Zoology	**CO 1:** Identify various methodology and perspectives of applied branches of zoology for the possibilities of self-employment. **CO 2: Aquaculture:** 1. Plan a set-up of fish farm. 2. Describe basic culture methodologies, common problems and solutions of commercially important fishes. **CO 3: Poultry Farming:** 1. Explain the breeds of fowls and selection of breed. 2. Plan a housing unit for breeding and rearing of fowls. 3. Describe feed types and feeding of poultry. 4. Analyze the poultry diseases and apply disease management techniques. **CO 4: Dairy farming:** **1.** Explain the breeds of cattle. **2.** Understand the breeding and cattle improvement. **CO 5: Apiculture:** 1. Understand the colony organization of honey bees. 2. Describe the beekeeping equipment and method of honey harvesting. 3. Understand the nutritional and medicinal values of honey.

	CO 6: Sericulture: 1. Enlighten the rearing methods of silk. 2. Explain the storage of cocoon and cocoon marketing. 3. Apply the knowledge to become an entrepreneur.
CC-IX: DEVELOPMENTAL BIOLOGY	**CO 1:** Explain the structure and function of gonads, and understand the process of spermatogenesis and oogenesis. **CO 2:** Explain the mechanism of fertilization and familiar with various stages involved in the developing embryo. **CO 3:** Understand the initial developmental procedures involved in frog and chick. **CO 4:** Relates the process of regeneration and asexual reproduction. **CO 5:** Understand various contraceptive methods and familiar with applications of Assisted Reproductive Technology.
CC-X: ENVIRONMENTAL BIOLOGY	**CO 1:** Understand on the basic theories and principles of ecology and learn current environmental issues based on ecological principles. **CO 2:** Explain the effects of light and temperature on animals. **CO 3:** Explain and identify the role of the organism in energy transfers. **CO 4:** Create general awareness on pollution and their impacts. **CO 5:** Gain critical understanding on human influence on environment

CC XI: IMMUNONOLGY	The students will be able to **CO 1:** Understand the importance of Immune system **CO 2:** Explain the structure and function of lymphoid organs and types of immunity. **CO 3:** Distinguish innate immunity and Acquired Immunity. **CO 4:** Familiarize with antigen – antibody reactions. **CO 5:** Analyze and apply hypersensitivity reactions and immunological techniques.
CC-XII: PRACTICAL-V: DEVELOPMENTAL BIOLOGY, ENVIRONMENTAL BIOLOGY AND IMMUNOLOGY	**CO 1:** Familiarize with the embryo development. Develop observational, analytical and evaluation skills related to environmental biology. **CO 2:** Familiarize with immunological techniques.
MEC-1A: BIOSTATISTICS AND BIOINSTRUMENTATION	**CO 1:** Understand the importance of classification and tabulation of data. **CO 2:** Analyze and apply the sampling methods. **CO 3:** Test the hypotheses using *chi-square* test and 't' test. **CO 4:** Explain the principles and applications of bio instruments **CO 5:** Get an idea on equipments available for studying biochemical and biophysical nature of life.

MEC-I b: MICROBIOLOGY	**CO 1:** Recognize the scope of Microbiology. **CO 2:** Distinguish the structure and replication of animal, and plant virus. **CO 3:** Explain the nutrition for bacterial growth and the factors affecting the growth. **CO 4:** Produce fermented products using bacteria and yeast. **CO 5:** Identify disease causing pathogenic microbes.
NMEC –II: PUBLIC HEALTH AND HYGIENE	**CO 1:** Understand home as a health centre. **CO 2:** Analyze the importance of micro and macronutrients and their sources. **CO 3:** Explain the importance of balance diet. **CO 4:** Identify food toxicants and food additives. **CO 5:** Comprehend the maternal health care, antenatal care and congenital malformation.
CC-XIII: GENETICS AND EVOLUTION	**CO 1:** Describe the genetic variation through linkage and crossing over, chromosomal aberrations and sex determination. **CO 2:** Analyze the genetic defects and inborn errors of metabolism. **CO 3:** Explain the molecular structure of genetic materials and the mechanism of gene expression and regulation character formation. **CO 4:** Enable the students to understand the evolution of universe and life. **CO 5:** Understand the process and theories in evolutionary biology. **CO 6:** Develop an interest in the debates and discussion taking place in the field of evolutionary biology. **CO 7:** Explain the theories of evolution and highlighted the role of evidences in support of evolution.

CC-XIV: BIOTECHNOLOGY AND BIOINFORMATICS	**CO 1: Biotechnology:** The student will be able to 1. Understand the modern biotechnology practices and approaches with an emphasis in technology application. 2. Apply the knowledge on gene cloning techniques and production of beneficial products **CO 2: Bioinformatics:** The student will be able to 1. Apply the knowledge to collect biological data from various Biological data. 2. Familiar with various Applications of Bioinformatics tools. 3. Analyze and apply the bioinformatics tools.
CC-XV: PRACTICAL-VI: GENETICS; EVOLUTION; BIOTECHNOLOGY AND BIOINFORMATICS	**CO 1:** Distinguish different chromosomal aberrations in man. **CO 2:** Ability to identify blood group. **CO 3:** Familiarize knowledge of conventional biotechnological procedures. **CO 4:** Familiar with various Applications of Bioinformatics tools. **CO 5:** Analyze and apply the bioinformatics tools.
MEC-II A: AQUACULTURE AND FISH FARMING	**CO 1:** Describe water quality management techniques. **CO 2:** Explain how to set-up and maintain aquarium systems. **CO 3:** Ability to setup the pond layout, construction and preparation, hatchery and nursery operations.

	CO 4: Describe basic culture methodologies, common problems and solutions of commercially important species. **CO 5:** Identify the pathogens, diseases and their treatments in fishes. **CO 6:** Employ scientific techniques, practical skills and business management strategies to improve aquatic resource management.
MEC-II B: ENDOCRINOLOGY	**CO 1:** Explain the endocrine secretion and their mechanism of action. **CO 2:** Describe the structure and hormones of pituitary gland, and their function. **CO 3:** Differentiate and explain the structure, function, dysfunction of thyroid, and parathyroid hormones. **CO 4:** Explain the structure and function of pancreatic, and adrenal gland secretions. **CO 5:** Relate the major endocrine hormones and their disorders.
MEC-III a: ECONOMIC ENTOMOLOGY	**CO 1:** Describe classification, biology and control of insect vector and control. **CO 2**: List the types of pesticides, modes of actions, and efficacy. **CO 3:** Identify the insect pests of crops, vegetables, fruits, stored grains and household pests. **CO 4:** Enhance the productivity of agricultural crops through insect pest management. **CO 5:** Explain the IPM

MEC-III b: WILDLIFE BIOLOGY	**CO 1:** Explain the depletion of wildlife and its importance. **CO 2:** Discuss the rare and endangered wildlife. **CO 3:** Explain the wildlife protection Act (1972) **CO 4:** Explain the national parks and sanctuaries. **CO 5:** Describe the age and sex determination in birds
SKBC-III: SERICULTURE	**CO 1:** Compare the non-mulberry and mulberry silk worms. **CO 2:** Understand the rearing methods of silk. **CO 3:** Explain the storage of cocoon and cocoon marketing.