

# NEHRU MEMORIAL COLLEGE

(AUTONOMOUS)

NATIONALLY ACCREDITED WITH "A" GRADE BY NAAC

PUTHANAMPATTI, TRICHY – 621007



## Zoology

1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs

<b>Name of the Programme</b>	<b>Course code</b>	<b>Title of Course</b>	<b>Need</b>	<b>Description</b>
B.Sc Zoology	19Z101	CC-I: Invertebrate	Local Needs	The students understand the basic classification and characteristic features and physiology of Invertebrates.
B.Sc Zoology	19Z205	CC:III: Chordata	Local Needs	The students understand the basic classification and characteristic features and physiology of Chordates.
B.Sc Zoology	19XZ21	SKBC-I Agriculture	Local/National Needs	To learn the honey bee rearing techniques and the students will study the medicinal values of honey and bee products.
B.Sc Zoology	19EVS	Environmental studies	National Needs	To create awareness among the students about our environment, its values, and the need for protecting it for the well-being of mankind in the months and years to come
B.Sc Zoology	19Z308	CC-V: Cell Biology	Global Needs	Knowledge and skills about the structure and functions cells
B.Sc Zoology	19Z413L	CC-VI: Animal Physiology	Global Needs	Students will study the functional mechanism of organ systems of animals.
B.Sc Zoology	19XZ32	SKBC-II Poultry Farming and Dairy Farming	Local/National Needs	To learn the techniques of poultry and dairy farming.
B.Sc Zoology	19Z4N	NMEC:I: Entrepreneurial Zoology	Local/National Needs	To impart training on various farming techniques and revenue generation potentials.

B.Sc Zoology	19Z513	CC-IX: Developmental Biology	Global Needs	Knowledge about the processes of early embryonic development.
B.Sc Zoology	19Z514	CC-X: Environmental Biology	Global needs	Understand of scientific basis for working environmental systems, environmental issues, environmental problems, effects and solutions.
B.Sc Zoology	19Z515	CC-XI: Immunology	Global Needs	Understanding how host immune system act against different diseases and pathogens.
B.Sc Zoology	19Z517A	MBEC-1a:Bio- statistic and Bio- instrumentatio n	Global Needs	Scientific understanding of basics of statistics and analytical techniques and detail interpretation of results.
B.Sc Zoology	149Z517B	MBEC-I b: Microbiology	Local Needs	The students understand the basic classification and characteristic features of microbes.
B.Sc Zoology	19Z5N	NMEC-II: Public Health and Hygiene	Local Needs	Awareness about the personal and public health hygiene.
B.Sc Zoology	19Z619	CC-XIV: Biotechnology and Bio- informatics	Local Needs	Knowledge on gene cloning techniques and production of beneficial products, and bio-informatics tools.
B.Sc Zoology	19Z622A	MBEC-III a: Economic Entomology	Local Needs	To provide the concepts of beneficial insects, insects of medicinal and aesthetic value.
B.Sc Zoology	19Z622B	MBEC-II b: Wildlife Biology	Global Needs	Knowledge about the importance of natural resources and wildlife.

B.Sc Zoology	19Z621A	MBEC-11 a: Aquaculture and Fish Farming	Local/ National Needs	Understanding of culture practices of edible fishes in aquaculture to fulfill the national global food demand.
M.Sc., Zoology	19PZ101	CC-I: Invertebrata and Chordata	Local Needs	Students understand in the principles and practice of taxonomy. Students acquire an in-depth knowledge on the diversity and relationships in animal world. To develop a holistic appreciation on the phylogeny and adaptations in animals. To impart the significance of Invertebrate and Chordate organization and their evolving adaptations in organ systems. Also to highlight the importance of minor phyla. Enlighten about the terrestrial vertebrates of amphibians, reptiles, aves and mammals and their evolutionary significance.
M.Sc., Zoology	19PZ102	CC-II: Cell and Molecular Biology	Local Needs	To learn our students about the DNA and its functions. The knowledge in the molecular biology and genetics will provide diagnosis of genetical disorders and treatment. To understand the structure at molecular level and function of

				prokaryote and eukaryote cell.
M.Sc., Zoology	19PZ103	CC-III: Genetics	Local Needs	To know information about the structure and function of nucleic acids. To help the students in understanding how mutations cause genetic disorders. To explain history and evolution of human genome and mapping to treat genetic diseases. To give knowledge about DNA and mapping of genome. To study human gene structure and function in elaborate manner.
M.Sc., Zoology	19PZ104	CC-IV: Biochemistry	Local/National Needs	Students understand basic approach about Biochemistry and equips about system and their surroundings; thermodynamics and its laws; the structure of the atom and molecules. Understand composition, structure and function of biomolecules. Help the students about bioenergetics and enzymes. Acquire knowledge on pH and Buffer and to understand the structure and functions of biomolecules.

M.Sc., Zoology	19PZ105L	CC-V: Practical (Covering CC-I to CC-IV)	Local/National Needs	To obtain knowledge about the identification and classification of animals. To impart training on the technique of dissection of invertebrate and vertebrate animals and to understand the various systems present in the body. To get the information of animal population and – to know the fossil forms in the title of animal diversity.
M.Sc., Zoology	19PZ206	CC-VI: Immunology	Local/National/ Global development	Understand theoretical concepts of Immunology and to understand the structure and functions of lymphoid organs. Acquire knowledge on structure and properties of antigens and immunoglobulins. Understand and analyses the structure, types and organization of MHC and understand the immune response to tumor. To analyse the process of immune tolerance, autoimmunity, hypersensitivity and immune response to microbial infection. Acquire skills and competence in specialized immunological techniques in the diagnosis and

				management of health related disorders.
M.Sc., Zoology	19PZ207	CC-VII: Animal Physiology	Local Needs	To create awareness among students about the structure and function of body organs and helps the students in understanding how the body functions adapts with respect to its external and internal environment, related to nervous integration, sensation, metabolism and reproduction.
M.Sc., Zoology	19PZ208	CC-VIII: Developmental Biology	Local Needs	Students able to learn experimental science, understanding of the process of early embryonic development, manipulation of developing embryos and to review the current development in the field of embryology. It provides knowledge about formation of embryo and also provides embryological disorders and treatment methodology. To know about artificial fertilization and preservation of germs.

M.Sc., Zoology	19PZ209L	CC-IX: Practical II: (Covering CC- VI to CC-VIII)	Local/Nation al/Global development	Knowledge of various techniques and to impart training on the technique of various biochemical works.
M.Sc., Zoology	19PZ210a	EC-I: Microbiology	Local/Nation al/Global development	Obtain fundamental knowledge about microbes and to understand the role of microbes in different spheres of life. To enlighten the students with the new information related to microbes. To teach the students understanding of development of antibodies responses to a vaccine. To give the idea about environmental microbes which hamper the life in society in various ways and to give knowledge about preventive measures on microbes attach on various stages.
M.Sc., Zoology	19PZ210b	EC-I: Wildlife and Conservation Biology	Local/Nation al/Global development	To create awareness about the status of wild animals, contribution of NGOs and also importance of sanctuaries and national parks. To deal with conservation and management issues.
M.Sc., Zoology	19PZ211a	OEC: Medical Zoology	Local/Region al/National Needs	To give information about life cycle and diseases caused by parasites (viral, bacterial, fungal, helmenths) in human being and also their



				effects and control measures.
M.Sc., Zoology	19PZ211b	OEC: Human Health and Hygiene	Local/National/Global development	To create awareness about human health and diseases and preventive measures. The structure and function of microbes and parasites would be understood and the mode of transmission also informed.
M.Sc., Zoology	19PZ312	CC-X: Research Methodology and Biotechniques	Local/National Needs	To give information about how to write/publish a thesis and its basic steps. The students understand the techniques of microtechniques, immunotechniques and tissue culture techniques, and cryotechniques.
M.Sc., Zoology	19PZ313	CC-XI: Evolution	Local/Regional/National Needs	To enlighten details and knowledge about evolution. To provide basic information of evolution of various kinds. To know the pattern of evolution. To know various theories of origin of evolution. To find out DNA bar coding system of various taxa.
M.Sc., Zoology	19PZ314	CC-XII: Entomology	Local/National Needs	The students understand harmful insects and their biology, nature of damage and management measures and to know about various invertebrate pests which attack our crops and belongings

				and their management measures. To know information about useful insects.
M.Sc., Zoology	19PZ315	CC-XIII: Biotechnology	Regional/National/Global development	Familiarize on the molecular and genetic tools used to analyze genomes, modify genetic material and techniques for modifying organisms to produce desired products. Plan for and manage formulation and execution of protocols and innovative technologies and/or products. Enlighten issues of forensic and genetic identity with case studies. Educate basic philosophical and ethical considerations regarding genetic data, genetic manipulation and Bio-safety issues. Demonstrate knowledge of essential facts of biotechnology and description of key scientific events of biotechnology
M.Sc., Zoology	19PZ316L	CC-XIV: Practical -III: (Covering CC-X to CC XIII)	Regional/National/Global development	The students understand basic information about collection of Index cards, instrumentation, various assays, statistical tools and applications, isolation of protein.

<p>M.Sc., Zoology</p>	<p>19PZ317a</p>	<p>EC-II: Clinical Analysis and Laboratory Techniques</p>	<p>Local/National/Global development</p>	<p>Physical, mental, social and positive health, quality of life, determinants of health. Motherhood – pregnancy confirmation test – Prenatal care – Intra natal care – problems during pregnancy – Miscarriage and stillbirth – premature birth – labor and delivery - Family planning, child health, Care of the newborn – Feeding – Nutritional guidelines - Care of the under-five (Toddler and Preschool) Mental health: Characteristics – Types: Schizophrenia – Manic depressive psychoses – Paranoia – Neurosis – Personality and character disorders. Environmental health: health in the home environment – pollution at home – diseases.</p>
<p>M.Sc., Zoology</p>	<p>19PZ317b</p>	<p>EC-II: Aquaculture</p>	<p>Local/Regional Needs</p>	<p>To understand the culture of fishes and crabs with different procedures. It gives an idea for the self-employment opportunities to the students. To understand role of different research organizations and funding agencies on aquaculture.</p>

M.Sc., Zoology	19PZ418a	EC-III: Ecology and Eco- toxicology	Local/Nation al/Global development	Apply and integrate knowledge of species' biology, interactions among species, and environmental variation to predict the structure and functioning of ecosystems. To make the students to understand about the toxicological effects of heavy metals, pesticides, and their biotransformation and also to know about toxicity testing techniques. The students should learn about the strategies of toxicity and their impact on the environment, exposure of toxicants, management strategies, biomagnifications and toxicity testing.
M.Sc., Zoology	19PZ418b	EC-III: Nanobiotechno logy	Local/Nation al/Global development	Students understand information about Nano-biotechnology and it provides ample scope for bright feature. And the students learn about synthesis of nonmaterial in different ways.
M.Sc., Zoology	19PZ419b	EC-IV: Cancer and Stem cell Biology	Local/Nation al/Global development	To motivate students to learn the fundamentals of cancer. To enable the students to know how the stem cells are functioning. To get knowledge about

				different types of molecular techniques.
M.Sc., Zoology	19PZ419b	EC-IV: Endocrinology	Local/Regional Needs	To create awareness among students about whole body control mechanism by hormones and also provides diseases caused due to hypo and hyper secretion of hormones and treatment options for imbalanced hormonal functions.
M.Sc., Zoology	19PZ420 P	CC-XV: Project Work	Regional/National/Global development	The students understand about various laboratory as well as field study. To learn about thesis writing, manuscript preparation, statistical analysis and publications, getting patent.