PROGRAMMESPECIFICOUTCOMES, PROGRAMMEOUTCOMESANDCOURSEOUTCOMES
PG&DEPARTMENTOFZOOLOGY

B.SC., ZOOLOGY, M.Sc. ZOOLOGY., EXTRA-CREDITCOURSES&VALUE-ADDED COURSES

PSO, PO & CO STATEMENTS / 2023 - 2026

	B.SC., ZOOLOGY
PSOs	**PROGRAMME SPECIFI COUTCOMES**
PSO1	**Placement:** To prepare the students who will demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions.
PSO2	**Entrepreneur:** To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations
PSO3	**Research and Development:** Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards growth and development.
PSO4	**Contribution to Business World:** To produce employable, ethical and innovative professionals to sustain in the dynamic business world.
PSO5	**Contribution to the Society:** To contribute to the development of the society by collaborating with stakeholders for mutual benefit
PROGRAMMESOUTCOMES	
POs	**Description of POs**
PO1	**Disciplinary knowledge:** Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate Programme of study
PO2	**Communication Skills:** Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups.
PO3	**Critical thinking:** Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development.
PO4	**Problem solving: Capacity** to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations.
PO5	**Analytical reasoning**: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid conclusions and support them with evidence and examples, and addressing opposing viewpoints.
PO6	**Research-related skills**: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation

PO7	**Cooperation/Team work:** Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team
PO8	**Scientific reasoning**: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.
PO9	**Reflective thinking**: Critical sensibility to lived experiences, with self awareness and reflexivity of both self and society.
PO10	**Information/digital literacy:** Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data.
PO11	**Self-directed learning**: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion.
PO 12	**Multicultural competence:** Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups.
PO 13	**Moral and ethical awareness/reasoning**: Ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demonstrating the ability to identify ethical issues related to one‟s work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work.
PO 14	**Leadership readiness/qualities:** Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way.
PO 15	**Lifelong learning:** Ability to acquire knowledge and skills, including „learning how to learn‟, that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development /reskilling.

B.Sc ZOOLOGY		
PROGRAMMES OUTCOMES		
	Description of CO's	**Bloom's Taxonomy/ Cognitive Domain**
CORE I - INVERTEBRATA		
CO1.	Recall the characteristic features invertebrates and chordates.	Knowledge(LevelK1)
CO2.	Classify invertebrates up to class level and chordates up to order level	Comprehension(LevelK2)
CO3.	Explain and discuss the structural and functional organisation of some invertebrates and chordates	Analysis(LevelK3)
CO4.	Relate the adaptations and habits of animals to their habitat	Synthesis(LevelK6)
CO5.	Analyse the taxonomic position of animals.	Synthesis(LevelK6)
CORE II- INVERTEBRATA LAB COURSE		
CO1.	Identify and label the external features of different groups of invertebrate animals.	Knowledge(LevelK1)
CO2.	Illustrate and examine the circulatory system, nervous system and reproductive system of invertebrate animals.	Comprehension(LevelK2)
CO3.	Differentiate and compare the structure, function and mode of life of various groups of animals.	Application(LevelK3)
CO4.	To compare and distinguish the dissected internal organs of lower animals.	Analysis(LevelK4)
CO5.	Prepare and develop the mounting procedure of economically important invertebrates.	Application (Level K3)
ALLIED ZOOLOGY		
CO1.	Recall the characteristic features invertebrates and chordates.	Knowledge(LevelK1)
CO2.	Classify invertebrates up to class level and chordates up to order level	Comprehension(LevelK2)
CO3.	Explain and discuss the structural and functional organisation of some invertebrates and chordates	Comprehension(LevelK2)
CO4.	Relate the adaptations and habits of animals to their habitat	Comprehension(LevelK2)
CO5.	Analyse the taxonomic position of animals.	Comprehension(LevelK2)
ALLIED ZOOLOGY- LAB COURSE		
CO1.	Compare and distinguish the dissected internal organs of lower and higher animals.	Knowledge(LevelK1)
CO2.	Prepare and develop the mounting procedure of important invertebrate and chordate anatomical parts and to appreciate the structure, function and mode of life.	Application(LevelK3)
CO3.	Identify and label the external features of different groups of invertebrate animals	Synthesis(LevelK6)

CO4.	Identify and label the external features of different groups of chordate animals	Synthesis(LevelK6)
CO5.	Understand and apply the theoretical knowledge. To plan the area of research and to identify different groups of invertebrate and chordate animals.	Evaluation(LevelK5)
SEC I (NME)- FOOD, NUTRITION AND HEALTH		
CO1	Understand the role of food and nutrients in health and disease.	Knowledge(LevelK1)
CO2	Gain knowledge about hygiene, food safety, disease transmission.	Comprehension(LevelK2)
CO3	Perform food system management and leadership functions that consider sustainability in business, healthcare, community and in situational areas.	Application(LevelK3)
FOUNDATION COURSE - FOUNDAMENTALS OF ZOOLOGY		
CO1.	To understand how these cellular components are used to generate and utilize energy in cells.	Knowledge(LevelK1)
CO2.	To provide students about the idea of sex cells, fertilization, cleavage, differentiation and development of organs.	Comprehension(LevelK2)
CO3.	Classify and explain types of immunity, state the significance of antigen and examine their relevance to immunizations.	Comprehension(LevelK2)
CO4	To enable students to learn basic concepts relating to aspect of Respiratory and circulatory system.	Comprehension(LevelK2)
CO5	To understand and recall the basic structure, origin and development of cell organells.	Knowledge(LevelK1)
CORE III -CHORDATA		
CO1.	Classify, Identify and recall the name and distinct features of different subphylum belonging to phylum Chordata.	Knowledge(LevelK1)
CO2.	Explain, and relate the origin, structural organization and evolutionary aspects of vertebrates.	Comprehension(LevelK2)
CO3.	Analyze, compare and distinguish the developmental stages and describe the important biological process.	Application(LevelK3)
CO4.	Correlate the different modes of life and parental care among different vertebrates.	Analysis(LevelK4)
CO5.	Summarize the morphology and ecological adaptations in vertebrates and list out the economic importance.	Evaluation(LevelK5)

CORE IV - CHORDATA LAB COURSE		
CO1.	Identify and recall the name and distinct external and internal features of animals belonging to phylum Chordata.	Knowledge(LevelK1)
CO2.	Explain the structural organization of various organs and systems in different classes of vertebrates.	Comprehension(LevelK2)
CO3.	Analyse, compare and distinguish the morphological features and developmental stages of chordates	Application(LevelK3)
CO4.	Dissect and explain various organs and internal systems in different vertebrates and correlate its function.	Analysis(LevelK4)
CO5.	Summarise the morphology and ecological adaptations in vertebrates and list out the economic importance.	Evaluation(LevelK5)
ALLIED ZOOLOGY - II		
CO1.	Recall the parts and working of body organs and developmental stages, name the patterns of inheritance and list different types of animal behaviour	Application(LevelK3)
CO2.	Analyse the different developmental stages	Analysis(LevelK4)
CO3.	Analyse the working of body and immune systems	Evaluation(LevelK5)
CO4.	Analyse the different patterns of inheritance	Evaluation(LevelK5)
CO5.	Relate the behaviour of animals to physiology. Analyse the different types of behaviour	Analysis(LevelK4)
ALLIED ZOOLOGY **LAB COURSE- II**		
CO1.	To enhance the knowledge on basic of various physiological system in relation to their structure.	Knowledge(LevelK1)
CO2.	Identification of developmental stages of Frog	Comprehension(LevelK2)
CO3.	To understand the Mendelian Law's experiments.	Application(LevelK3)
CO4.	To apply the concepts of behavioural patterns in studying the behaviour of animals	Analysis(LevelK4)
SEC II (NME)- RADIATION BIOLOGY		
CO1.	To describe the various types of ionizing radiation.	Knowledge(LevelK1)
CO2.	To define the radiation units used in measurement/calculations of "dose".	Comprehension(LevelK2)
CO3.	To describe the biological impact of radiation on living cells and tissues	Application(LevelK3)
CO4.	To highlight the applications of radiation in different fields	Analysis(LevelK4)
CO5.	To create awareness about safety precautions when using radioactive isotopes	Evaluation(LevelK5)

SEC III – ORNAMENTAL FISH FARMING & MANAGEMENT		
CO1.	The students will be able to identify culture, maintain and market the commercially important ornamental fishes.	Knowledge(LevelK1)
CO2.	The knowledge and skills gained on the different aspects of ornamental fish keepingwillenablethestudentstodevelopentrepreneurshippotentialandhelpinself-employment.	Comprehension(LevelK2)
CO3	The student's to develop Entrepreneurship potential and help in self employment	Application(LevelK3)
CORE -V CELL BIOLOGY		
CO1.	To understand and recall the basic structure, origin and development of cell organelles.	Knowledge(LevelK1)
CO2.	To integrate and assess the biochemical, cytological and histological tools to infer cellular basis of organization.	Comprehension(LevelK2)
CO3.	To analyze and differentiate organisms based on structure, composition and inter and intra cellular interactions.	Application(LevelK3)
CO4.	To explain the role of cells and cell organelles in various biological processes.	Analysis(LevelK4)
CO5.	To construct and simulate the role of different cytological tools to explain the structure and complexity of cells and cell organelles.	Evaluation(LevelK5)
CORE – VI GENETICS		
CO1.	Understand the basis of inheritance and expression of genes.	Knowledge(LevelK1)
CO2.	Correlate changes in genetic makeup and phenotypic changes in progeny.	Comprehension(LevelK2)
CO3.	Analyse the causes of variations in genetic material and predict the effect in a population using different techniques.	Application(LevelK3)
CO4.	Explain the role of cellular processes and different genetic elements in the expression of genes.	Analysis(LevelK4)
CO5.	Compile the factors which contribute to changes in gene expression and specify the changes which contribute to evolution.	Evaluation(LevelK5)
SEC IV-BIOCOMPOSTING FOR ENTREPRENEURSHIP		
CO1.	The students will gain knowledge about the process of Bio composting.	Knowledge(LevelK1)
CO2.	Students will be able to demonstrate Bio composting techniques for various end applications like solid waste management, industrial waste recycling using sugarcane bagasse, etc.	Comprehension(LevelK2)
CO3.	To gain knowledge about the economic cost of establishing small Bio compost units as a cottage industry	Application(LevelK3)

SEC –V MEDICAL LABORATORY TECHNIQUES		
CO1.	Understand protocols and procedures to collect clinical samples for blood analysis and to study human physiology.	Knowledge(LevelK1)
CO2.	Explain the characteristics of clinical samples.	Comprehension(LevelK2)
CO3.	Demonstrate skill in handling clinical equipment	Application(LevelK3)
CO4.	Evaluate the hematological and histological parameters of biological samples.	Analysis(LevelK4)
CO5.	Elaborate the role of medical laboratory techniques in health care industry.	Evaluation(LevelK5)
CORE – VII DEVELOPMENTAL BIOLOGY		
CO1.	To describe and illustrate the significance of cellular processes in embryonic development.	Knowledge(LevelK1)
CO2.	To relate the factors that contribute to the developmental process, construct fate maps and illustrate the steps in morphogenesis and organogenesis.	Comprehension(LevelK2)
CO3.	To correlate the involvement of specific cell types in the formation of specific organs and explain the importance of morphogens.	Application(LevelK3)
CO4.	To distinguish between the different types of developmental mechanisms in various organisms and appraise the species-based differences in development.	Analysis(LevelK4)
CO5.	To justify and validate the role of environment and genetics in influencing embryonic development	Evaluation(LevelK5)
CORE – VIII DEVELOPMENTAL BIOLOGY LAB COURSE		
CO1.	To understand the basic stages of developmental biology, process of Gametogenesis and fertilization	Knowledge(LevelK1)
CO2.	To describe the knowledge of developmental biology in laboratory condition	Comprehension(LevelK2)
CO3.	To understand the events of early developmental stages.	Application(LevelK3)
SEC VI- BIOPHYSICSAND BIOSTATISTICS		
CO1.	Understand and recall the basic biophysical concepts, statistical data and formula.	Knowledge(LevelK1)
CO2.	Apply suitable physical techniques and statistical methods to solve biological problems.	Comprehension(LevelK2)
CO3.	Identify and relate the bio analytical techniques and statistical principles for the application of biological experiments.	Application(LevelK3)

CO4.	Select suitable biophysical techniques to study the biological process and statistical approach to assess the experimental results.	Analysis(LevelK4)
CO5.	Integrate the bio analytical techniques and statistical methods to validate research investigations.	Evaluation(LevelK5)
SEC VII- ECONOMIC ZOOLOGY		
CO1.	To identify the breeds and varieties of poultry, fish, bees, and cattle and understand the basic aspects of farming and marketing strategies of products.	Knowledge(LevelK1)
CO2.	To assess and integrate the available tools and techniques to increase the productivity in farms.	Comprehension(LevelK2)
CO3.	To analyse the pros and cons of different methods of farming	Application(LevelK3)
CO4.	To evaluate the use of available resources in improving the breeds, vermicomposting, farm products etc.	Analysis(LevelK4)
CO5.	To design new methods to improve farm animals with increased productivity and disease resistance and to construct new methods in vermicomposting.	Evaluation(LevelK5)
CORE IX -EVOLUTIONARY BIOLOGY		
CO1.	To understand the Primordial earth and theories on origin of life	Application(LevelK3)
CO2.	To integrate and assess Lamarckism - Neo Lamarckism – Darwinism	Analysis(LevelK4)
CO3.	To analyse various fossil records of man and fossil records of horse, various types of rocks - Geological time scale.	Evaluation(K5)
CO4.	To explain the Nature of fossils- Dating of fossils, evidences of evolution, Adaptive radiation in reptiles and mammals,	Evaluation(K5)
CO5.	To construct and compile the role of Human Genome Project, Evolution in the diagnosis, and treatment of diseases.	Evaluation(K5)
CORE X-ANIMAL PHYSIOLOGY		
CO1.	Be able to explain how the various organ systems are coordinated and controlled.	Knowledge(LevelK1)
CO2.	Be able to list the functions of various organs in relation to physiological process.	Comprehension(LevelK2)
CO3.	Be able to develop the idea of multilevel controlling and feedback mechanism in relation to various physiological functions.	Application(LevelK3)
CO4.	Be able to understand the basic physiological process related to adaptation, metabolism and major requirements.	Analysis(LevelK4)
CO5.	Be able to correlate and understand human physiology.	Evaluation(LevelK5)

CORE XI -ENVIRONMENTAL BIOLOGY		
CO1.	Understand the fundamental structure and functions of the ecosystem.	Comprehension(LevelK2)
CO2.	Assess the inter-relationship between organisms and between biotic and abiotic factors in an ecosystem.	Comprehension(LevelK2)
CO3.	Analyze the factors that cause pollution, climate change, loss of biodiversity and depletion of resources.	Application(LevelK3)
CO4.	Evaluate the impact of human population growth and socio-economic development on the structure and function of the ecosystem.	Evaluation(LevelK4)
CO5.	Design plans to scientifically solve environmental problems using biological tools, technologies and government policies.	Evaluation(LevelK4)
CORE XII -ECO-PHYSIOLOGY LAB COURSE		
CO1.	List and recall the basic equipment used in physiology and ecology lab and develops skill about quantitative determination of biomolecules and quantitative analysis of blood.	Application(LevelK3)
CO2.	Demonstrate the instruments, discuss the clinical importance and its applications, and explain the principle of bioinstruments.	Analysis(LevelK4)
CO3.	Understand and identify the chemical composition of major and minor nutrients and analyse Physio -chemical parameters that regulate metabolism.	Evaluation(K5)
CO4.	Evaluate and examine the various parameters of haematology and biochemistry and identify the nitrogenous waste products of animals.	Evaluation(K5)
CO5.	Summarise the effect of various physical and chemical factors on enzyme activity/. Compile the changes in various physiological parameters in man and other animals using various tools and techniques.	Evaluation(K5)
ELECTIVE IX- ANIMAL BEHAVIOUR		
CO1.	Re call and record genetic basis and evolutionary history of behaviour.	Application(LevelK3)
CO2.	Classify movement and migration behaviours and explain environmental influence upon behaviour.	Analysis(LevelK4)
CO3.	Analyze and identify innate, learned and cognitive behaviour and differentiate between various mating systems.	Comprehension(LevelK2)
CO4.	Assess complexity involved in behavioural traits and evaluate hormones and their role in aggression and reproduction.	Comprehension(LevelK2)
CO5.	Discuss the rhythmicity of behavioural expressions and the scientific concepts in behaviour and behavioural ecology.	Application(LevelK3)

ELECTIVE – IX AQUARIUM KEEPING		
CO1.	Students to learn about different ornamental fishes and identify the diseases of them	Comprehension(LevelK2) Application(LevelK3)
CO2.	To development repreneur potential in the field of aquarium and get self-employment.	Comprehension(LevelK2) Application(LevelK3)
ELECTIVE -X NANO BIOLOGY		
CO1.	Understand basics of Nano-science and Nano-biology.	Knowledge(LevelK1)
CO2.	Gain knowledge on nano materials and nano particles.	Comprehension(LevelK2)
CO3.	Know the biological applications of nano materials and nano particles.	Application(LevelK3)
CO4.	Apply their knowledge in their career development in higher education, research and development.	Analysis(LevelK4)
CO5.	Understand basics of Nano-science and Nano-biology.	Evaluation(LevelK5)
ELECTIVE –X BASICS OF MARINE BIOLOGY		
CO1.	Define marine ecosystem, recognize and describe the inter relationship between biology and ocean technology.	Knowledge(LevelK1)
CO2.	Articulate and classify the dynamics and the physical attributes of the ocean, interpret the factors which affect the global climate.	Application(LevelK3), Synthesis(LevelK6)
CO3.	Identify and analyze the physical and biological factors of marine environments, and focus life in the open sea.	Comprehension(LevelK2)
CO4.	Evaluate the impact of variations in abiotic factors in marine productivity and justify the role of human activities in the degradation of marine ecosystems.	Analysis(LevelK4)
CO5.	Categorize marine pollutants and develop controlling measures in collaboration with the institutions for ocean management.	Application(LevelK3), Synthesis(LevelK6)
CORE - XIII BIOTECHNOLOGY		
CO1.	To describe the methodologies for handling animal cells based on their diverse characteristics and identify the correct biotechnological tools to obtain the desired products from the cells.	Application(LevelK3)
CO2.	To develop and explain the protocols for genetically manipulating cells and produce transgenic animals	Analysis(LevelK4)

CO3.	To select the apt molecular techniques to evaluate and analyze animal traits and diseases at the genomic level and devise methods for easy taxonomical identification and classification for biodiversity and environmental studies.	Analysis(LevelK4)
CO4.	To choose the correct methods of transgenesis and to consider their use in improving animal husbandry nationally and globally	Evaluation(LevelK5)
CO5.	To speculate on the environmental implications of animal biotechnological methods and design responsible, ethical solutions to livestock production and health issues.	Application(LevelK3)
CORE XIV - IMMUNOLOGY		
CO1.	Understand and recall the basic structural and functional components of the immune system compare and contrast cells with respect to origin and maturation.	Comprehension(LevelK2)
CO2.	Classify and explain types of immunity state the significance of antigen and examine their relevance to immunizations.	Comprehension(LevelK2)
CO3.	Describe and differentiate the biological characteristics of the antibodies, analyze and formulate the procedure for antibody production	Application(LevelK3)
CO4.	Compare and rate the mechanism of various types of hypersensitivity reactions, assess and identify the different types of autoimmune diseases.	Knowledge(LevelK1)
CO5.	Summarize immune responses against pathogens	Application(LevelK3)
CORE XVI - BIOTECHNOLGY LAB COURSE		
CO1.	To describe, examine and interpret the organization of genomic material and to research theories of genetic inheritance.	Application(LevelK3)
CO2.	To prepare samples of genetic molecules and to determine their purity, structure and characteristics.	Knowledge(LevelK1)
CO3.	To experiment with genomic preparations and devise techniques to distinguish genetic material in different organisms to survey biodiversity.	Analysis(LevelK4)
CO4.	To assess the changes in genetic material and to predict and consider the consequences of those changes.	Comprehension(LevelK2)
CO5.	To report and justify the results of molecular and genetic experiments in an accurate and meaningful manner.	Comprehension(LevelK2)

ELECTIVE – XI WILDLIFE CONSERVATION AND MANAGEMENT		
CO1.	To understand and recall the importance of wildlife, extinction and Conservation Approaches of wildlife.	Comprehension(LevelK2)
CO2.	To integrate and assess the National, international approaches for biodiversity conservation.	Analysis(LevelK4)
CO3.	To analyse and differentiate threats to wildlife, various action plans, conservation strategies on wildlife of India to turn conflict into tolerance and coexistence.	Application(LevelK4)
CO4.	To explain the role PVA models, Wildlife conservation approaches, and limitations.	Evaluation(LevelK5)
CO5.	To construct and simulate National and International strategies for Conservation, Wild life laws and ethics.	Application(LevelK4)
ELECTIVE XI - AGRICULTURAL ENTOMOLOGY		
CO1.	Examine and identify the systemic and functional morphology of various group of agricultural insect pests.	Knowledge(LevelK1)
CO2.	List the economic importance of agricultural insect species.	Comprehension(LevelK2)
CO3.	Explain the pest status in agriculture and control measures.	Comprehension(LevelK2)
CO4.	To compare the methods and outcomes of integrated pest management.	Knowledge(LevelK1)
CO5.	Differentiate and classify the various groups of insects and estimate the biodiversity.	Application(LevelK4)
ELECTIVE XII - HUMAN REPRODUCTIVE BIOLOGY		
CO1.	Recall the structure and functioning of the male and female reproductive system, associated endocrinology, causes for infertility and assisted reproductive technology	Knowledge(LevelK1)
CO2.	Describe the structure and physiology functions of male and female reproductive systems.	Application(LevelK3)
CO3.	Explain the role of structures, accessory glands and hormones associated with the reproductive tracts and their control	Analysis(LevelK4)
CO4.	Explain the mechanism of sex determination.	Evaluation(LevelK5)
CO5.	Discuss age-associated physiological changes in the reproductive tract	Synthesis(LevelK6)

ELECTIVE XII – BASICS COURSE IN ORNITHOLOGY		
CO1.	Recall the taxonomic position of birds, their external morphology and internal parts, types of bird behaviour, sampling methods and types of avian diseases.	Knowledge(LevelK1)
CO2.	Identify the external parts of the bird, internal structures of the bird and different types of bird behaviour.	Comprehension(LevelK2)
CO3.	Differentiate birds based on their morphology, foraging strategies and other behaviour	Comprehension(LevelK2)
CO4.	Explain and discuss how birds evolved, bird adaptations to flight, different aspects of bird behaviour, threats to birds and the role of citizen science in ornithology	Knowledge(LevelK1)
CO5.	Discuss and analyse case studies relating to bird conservation.	Application(LevelK4)
PROFESSIONAL COMPETENCY COURSE: INTELLECTUAL PROPERTY RIGHTS		
CO1.	Claim the rights for the protection of their invention done in their project work.	Knowledge(LevelK1), Application(LevelK3)
CO2.	Identify criterias' to fit one's own intellectual work in particular form of IPRs	Application(LevelK4), Evaluation(LevelK5)
CO3.	To get registration in our country and foreign countries of their invention, designs and thesis or theory written by students during their project.	Knowledge(LevelK1), Comprehension(LevelK2), Application(LevelK3)

M.Sc., ZOOLOGY	
PROGRAMME OUTCOMES	
PSOs	**Description of PSOs**
PSO1	**Placement** To prepare the students who will demonstrate respectful engagement with others' ideas, behaviours, beliefs and apply diverse frames of reference to decisions and actions.
PSO2	**Entrepreneur** To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate start ups and high potential organizations.
PSO3	**Research and Development** Design and implement HR systems and practices grounded in researches that comply with employment laws, leading the organization towards growth and development.
PSO4	**Contribution to Business World** To produce employable, ethical and innovative professionals to sustain in the dynamic business world.
PSO5	**Contribution to the Society** To contribute to the development of the society by collaborating with stakeholders for mutual benefit.

M.SC., ZOOLOGY PROGRAMME OUTCOMES	
POs	**Description of POs**
PO1	**Problem Solving Skill** Apply knowledge of Management theories and Human Resource practices to solve business problems through research in Global context.
PO2	**Decision Making Skill** Foster analytical and critical thinking abilities for data-based decision-making.
PO3	**Ethical Value** Ability to incorporate quality, ethical and legal value-based perspectives to all organizational activities.
PO4	**Communication Skill** Ability to develop communication, managerial and interpersonal skills.
PO5	**Individual and Team Leadership Skill** Capability to lead themselves and the team to achieve organizational goals.

PO6	**Employability Skill** Inculcate contemporary business practices to enhance employability skills in the competitive environment.
PO7	**Entrepreneurial Skill** Equip with skills and competencies to become an entrepreneur.
PO8	**Contribution to Society** Succeed in career endeavors and contribute significantly to society.
PO9	**Multicultural competence** Possess knowledge of the values and beliefs of multiple cultures and a global perspective.
PO10	**Moral and ethical awareness/reasoning** Ability to embrace moral/ethical values in conducting one's life.

M.Sc., ZOOLOGY
COURSE OUTCOMES

	Description of CO's	Bloom's Taxonomy/ Cognitive Domain
CORE I: STRUCTURE AND FUNCTION OF INVERTEBRATES		
CO1.	Remember the general concepts and major groups in animal classification, origin, structure, functions and distribution of life in all its forms.	Remember (LevelK1), Understand(LevelK2)
CO2.	Understand the evolutionary process. All are linked in a sequence of life patterns.	Understand(LevelK2), Analyze (LevelK4)
CO3.	Apply this for pre-professional work in agriculture and conservation of life forms.	Apply(LevelK3), Evaluate (LevelK5)
CO4.	Analyze what lies beyond our present knowledge of life process.	Analyze (LevelK4), Create (Level K6)
CO5.	Evaluate and to create the perfect phylogenetic relationship in classification.	Evaluate (LevelK5), Create (Level K6)
CORE II: COMPARATIVE ANATOMY OF VERTEBRATES		
CO1.	Remember the general concepts and major groups in animal classification, origin, structure, functions and distribution of life in all its forms.	Remember (LevelK1), Understand(LevelK2)
CO2.	Understand the evolutionary process. All are linked in a sequence of life patterns.	Understand(LevelK2), Analyze (LevelK4)

CO3.	Apply this for pre-professional work in agriculture and conservation of life forms.	Apply(LevelK3), Evaluate (LevelK5)
CO4.	Analyze what lies beyond our present knowledge of life process.	Analyze (LevelK4), Create (Level K6)
CO5.	Evaluate and to create the perfect phylogenetic relationship in classification.	Evaluate (LevelK5), Create (Level K6)
COREIII: LAB COURSE IN INVERTEBRATES & VERTEBRATES		
CO1.	Understand the structure and functions of various systems in animals	Understand(LevelK2),Analyze (LevelK4))
CO2.	Learn the adaptive features of different groups of animals	Remember (LevelK1), Understand(LevelK2)
CO3.	Learn the mounting techniques	Understand(LevelK2), Apply(LevelK3),
CO4.	Acquire strong knowledge on the animal skeletal system	Understand(LevelK2),Analyze (LevelK4)
ELECTIVE I : MOLECULES AND THEIR INTERACTION RELEVANT TO BIOLOGY		
CO1.	Learn the structure, properties, metabolism and bioenergetics of bio molecules	Remember (LevelK1), Apply(LevelK3),
CO2.	Acquire knowledge on various classes and major types of enzymes, classification, their mechanism of action and regulation	Remember (LevelK1), Understand(LevelK2)
CO3.	Understand the fundamentals of biophysical chemistry and biochemistry, importance and applications of methods in conforming the structure of biopolymers	Understand(LevelK2), Apply(LevelK3),
CO4.	Comprehend the structural organization of and proteins, carbohydrates, nucleic acids and lipids	Understand(LevelK2), Analyze (LevelK4)
CO5.	Familiarize the use of methods for the identification, characterization and conformation of biopolymer structures	Evaluate (LevelK5), Create (Level K6)

ELECTIVE I:ANIMAL BEHAVIOUR		
CO1.	Recall and record genetic basis and evolutionary history of behaviour.	Remember (LevelK1), Understand(LevelK2)
CO2.	Analyse and identify innate, learned and cognitive behaviour and differentiate between various mating systems.	Understand(LevelK2)Analyze (LevelK4)
CO3.	Classify movement and migration behaviours and explain environmental influence upon behaviour.	Remember (LevelK1), Analyze (LevelK4), Evaluate (LevelK5)
ELECTIVE II: BIOSTATISTICS		
CO1.	Clear understanding of design and application of biostatistics relevant to experimental and population studies.	Understand(LevelK2), Apply(LevelK3),
CO2.	Acquired skills to perform various statistical analyses using modern statistical techniques and software.	Apply(LevelK3), Analyze (LevelK4)
CO3.	Knowledge on the merits and limitation of practical problems in biological/ health management study as well as to propose and implement appropriate statistical design/ methods of analysis.	Apply(LevelK3), Create (Level K6)
ELECTIVE II: BIO-COMPOSTING		
CO1.	Gained knowledge on the process of bio composting	Remember (LevelK1), Understand(LevelK2), Apply(LevelK3)
CO2.	The ability to demonstrate bio composting techniques for various end applications like solid waste management, industrial waste recycling using sugarcane biogases, etc.	Apply(LevelK3), Analyze (LevelK4), Create (Level K6)
CO3.	Knowledge, gain on the economic cost of establishing small bio compost units in the cottage industry.	Apply(LevelK3), Create (Level K6), Evaluate (LevelK5)
CORE IV: CELLULAR AND MOLECULAR BIOLOGY		
CO1.	Understand the general concepts of cell and molecular biology.	Understand(LevelK2),
CO2.	Visualize the basic molecular processes in prokaryotic and eukaryotic cells, especially relevance of molecular and cellular structures influencing functional features.	Remember (LevelK1), Understand(LevelK2),
CO3.	Perceive the importance of physical and chemical signals at the molecular level resulting in modulation of response of cellular responses.	Apply(LevelK3), Analyze (LevelK4)
CO4.	Updated the knowledge on the rapid advances in cell and molecular biology for a better understanding of onset of various diseases including cancer.	Evaluate (LevelK5)

CO5.	Understand the general concepts of cell and molecular biology.	Understand(LevelK2)
COREV: DEVELOPMENTAL BIOLOGY		
CO1	Define the concepts of embryonic development	Remember (LevelK1),
CO2	Observe various stages of cell divisions under microscope	Understand(LevelK2), Apply(LevelK3),
CO3	Understand the formation of zygote	Analyze (LevelK4)
CO4	Differentiate the blastula and gastrula stages	Analyze (LevelK4), Evaluate (LevelK5)
CO5	Learn the distinguishing features of three different germ layers and formation of various tissues and organs	Analyze (LevelK4)
CORE VI: LAB COURSE IN CELLULAR BIOLOGY AND DEVELOPMENTAL BIOLOGY		
CO1	Acquire knowledge to differentiate the cells of various living organisms and become aware of physiological processes of cells e.g. cell divisions, various stages of fertilization and embryo development.	Understand(LevelK2),
CO2	Understand and observe as well as correctly identify different cell types, cellular structures using different microscopic techniques.	Apply(LevelK3)
CO3	Develop handling - skills through the wet-lab course.	Create (Level K6),
CO4	Learn the method of culturing of *Drosophila* and identification of their wild and mutant strains	Understand(LevelK2), Remember (LevelK1)
CO5	Acquire skills to perform human karyotyping and chromosome mapping to identify abnormalities	Understand(LevelK2), Remember (LevelK1),
ELECTIVE III: APICULTURE		
CO1.	Clear understanding of morphology, life cycle, characteristics of honey bees and bee keeping.	Understand(LevelK2), Remember (LevelK1), Apply(LevelK3)
CO2.	Acquired skills to perform bee keeping from managing colonies of bees in order to harvest honey and other Bee related by-products in different setups and as an Entrepreneurial venture.	Apply(LevelK3), Analyze (LevelK4), Evaluate (LevelK5)
CO3.	Knowledge on the harvesting, preserving and processing of bee products and identification of the appropriate markets to sell the produce.	Create (Level K6), Evaluate (LevelK5)

ELECTIVE III: ECONOMIC ENTOMOLOGY		
CO1.	Understand taxonomy, classification and life of insects in the animal kingdom.	Understand(LevelK2), Remember (LevelK1)
CO2.	Know the life cycle, rearing and management of diseases of beneficial insects.	Apply(LevelK3), Understand(LevelK2)
CO3.	Know the type of harmful insects, life cycle, damage potential and management of pests including natural pest control	Apply(LevelK3), Understand(LevelK2)
CO4.	Recognize insects which act as vectors causing diseases in animals and human.	Analyze (LevelK4), Understand(LevelK2)
CO5.	Overall understanding on the importance of insects in human life.	Understand(LevelK2), Create (Level K6)
ELECTIVE IV: RESEARCH METHODOLOGY		
CO1.	Understand the implications of GLP	Remember (LevelK1)
CO2.	Learn the working principles of different instruments	Understand(LevelK2)
CO3.	Gain the knowledge on techniques of histology and histochemistry	Analyze (LevelK4), Understand(LevelK2)
CO4.	Acquire knowledge on the basic principle and application of various modules of light and electron microscopy	Apply(LevelK3), Evaluate (LevelK5)
ELECTIVE IV: ECOLOGY		
CO1.	Learn about the ecosystem, biotic communities and utilizing the energy processing	Understand(LevelK2),
CO2.	Study the various community and population and population control	Understand(LevelK2), Apply(LevelK3)
CO3.	Understand the fundamentals of climatic conditions and its impact on environment	Understand(LevelK2), Create (Level K6)
CO4.	Realizing the nature of pollution and the ways for its control/reduction	Analyze (LevelK4), Evaluate (LevelK5)
CO5.	Impact of environmental studies on solid waste management	Understand(LevelK2), Create (Level K6)

SKILL ENHANCEMENT COURSE (SEC- I) - POULTRY FARMING		
CO1.	To understand the various practices in Poultry farming. To know the needs for Poultry farming and the status of India in global market.	Understand(LevelK2), Apply(LevelK3)
CO2.	To be able to apply the techniques and practices needed or Poultry farming.	Understand(LevelK2), Apply(LevelK3), Remember (LevelK1)
CO3.	To know the difficulties in Poultry farming and be able to propose plans against it.	Evaluate (LevelK5), Create (Level K6)
CORE VII: GENETICS		
CO1.	Explain the organization and functions of genetic material in the living system.	Understand(LevelK2), Remember (LevelK1)
CO2.	Understand various sequential processes in protein synthesis	Understand(LevelK2), Remember (LevelK1)
CO3.	Explicate the structures and functions of chromosomes and identify the diseases caused by the chromosomal abnormalities.	Analyze (LevelK4), Understand(LevelK2)
CO4.	Able to distinguish lytic and lysogenic cycle and explain the mechanisms of genetic recombination of the microbes.	Understand(LevelK2), Evaluate (LevelK5)
CO5.	Understand the principle and application of rDNA technology for the welfare of human being.	Understand(LevelK2), Apply(LevelK3)
CORE VIII: EVOLUTION		
CO1.	To understand the concept of evolution. It provides a comprehensive account of evidences to support concept of evolution and different theories for exploring the mechanism of evolution.	Remember (LevelK1), Apply(LevelK3)
CO2.	Study the origin of eukaryotic cells; Evolution of unicellular eukaryotes; Anaerobic metabolism, photosynthesis and aerobic metabolism.	Understand(LevelK2), Remember (LevelK1)
CO3.	Understand the major events in the evolutionary time scale; Origins of unicellular and multi-cellular organisms.	Understand(LevelK2), Apply(LevelK3)
CO4.	Comprehend the origin of new genes and proteins; Gene duplication and divergence.	Analyze (LevelK4), Understand(LevelK2)
CO5.	Appreciate the concepts and rate of change in gene frequency through natural selection, migration and random genetic drift	Analyze (LevelK4), Evaluate (LevelK5)

CORE IX: ANIMAL PHYSIOLOGY		
CO1.	Understand the functions of different systems of animals	Remember (LevelK1)
CO2.	Learn the comparative anatomy of heart structure and functions	Understand(LevelK2)
CO3.	Know the transport and exchange of gases, neural and chemical regulation of respiration	Analyze (LevelK4), Understand(LevelK2)
CO4.	Acquire knowledge on the organization and structure of central and peripheral nervous systems	Apply(LevelK3), Evaluate (LevelK5),
CORE X: INDUSTRY MODULE- MEDICAL LABORATORY TECHNIQUES		
CO1.	Understand protocols and procedures to collect clinical samples for blood analysis and to study human physiology.	Understand(LevelK2), Apply(LevelK3)
CO2.	Explain the characteristics of clinical samples and demonstrate skill in handling clinical equipment.	Apply(LevelK3), Analyze (LevelK4), Evaluate (LevelK5)
CO3.	Evaluate the haematological and histological parameters of biological samples.	Apply(LevelK3), Analyze (LevelK4), Evaluate (LevelK5), Create (Level K6)
ELECTIVE V:SERICULTURE		
CO1.	To understand the various practices in sericulture. To know the needs for sericulture and the status of India in global market.	Understand(LevelK2), Apply(LevelK3)
CO2.	Able to apply the techniques and practices needed for sericulture.	Understand(LevelK2), Apply(LevelK3), Remember (LevelK1)
CO3.	To know the difficulties in sericulture and be able to propose plans against it.	Evaluate (LevelK5), Create (Level K6)
ELECTIVE V:STEM CELL BIOLOGY		
CO1.	Understand the basic knowledge of stem cells and their origin	Understand(LevelK2), Remember (LevelK1)
CO2.	Differentiating the embryonic and adult stem cells	Apply(LevelK3), Analyze (LevelK4),
CO3.	Understand and apply the current stem cell therapies for their research	Evaluate (LevelK5)

SKILL ENHANCEMENT COURSE (SEC- II) - DAIRY FARMING		
CO1.	To understand the various practices in Dairy farming. To know the needs for Dairy farming and the status of India in global market.	Understand(LevelK2), Apply(LevelK3)
CO2.	To be able to apply the techniques and practices needed for Dairy farming.	Understand(LevelK2), Apply(LevelK3), Remember (LevelK1)
CO3.	To know the difficulties in Dairy farming and be able to propose plans against it.	Evaluate (LevelK5), Create (Level K6)
CORE XI: IMMUNOLOGY		
CO1.	Various basic concepts in immunology and organization of immune systems.	Understand(LevelK2)
CO2.	Mechanisms of immune response in health and their defects in various diseases.	Understand(LevelK2), Analyze (LevelK4),
CO3.	The application of immunological principles in biomedical sciences including blood transfusion, tissue grafting and organ transplantation.	Apply(LevelK3), Evaluate (LevelK5)
CO4.	Vaccinology and its importance in disease management	Apply(LevelK3)
CORE XII: LAB COURSE IN IMMUNOLOGY		
CO1.	Acquire ability to perform/ demonstrate various basic concepts in immunology as well as applications of research methods for quantitative/ qualitative analysis of biochemical components.	Analyze (LevelK4), Apply(LevelK3)
CO2.	Learn the technique of Immunoglobulin separation by the process of Electrophoresis	Understand(LevelK2), Analyze (LevelK4),
CO3.	Know about the analyze of antigen and antibody reaction in blood and understand the Lymphocytes by antigen presenting T and B cells.	Evaluate (LevelK5),
ELECTIVE VI: AQUACULTURE		
CO1.	To develop knowledge on the fish farm and their maintenance. Understand the methods of fish seed and feed production and develops knowledge on hatchery techniques	Remember (LevelK1), Understand(LevelK2)
CO2.	To apply the knowledge about different culture methods in aquaculture and gain knowledge on fish and shrimp breeding techniques and larval culture	Analyze (LevelK4), Apply(LevelK3)
CO3.	Identifies the different fishes diseases, diagnosis and their management strategies. Understands Ornamental fishes and central aquaculture organizations	Evaluate (LevelK5), Create (Level K6)
ELECTIVE VI: VERMICULTURE		
CO1.	To understand the various practices in vermiculture. To know the needs for Vermiculture and the status of India in global market.	Understand(LevelK2), Apply(LevelK3),
CO2.	Able to apply the techniques and practices needed for vermiculture.	Remember (LevelK1), Understand(LevelK2),

		Analyze (LevelK4)
CO3.	To know the difficulties in Vermiculture and be able to propose plans against it.	Evaluate (LevelK5), Create (Level K6)
SKILL ENHANCEMENT COURSE (SEC- III) **PROFESSIONAL COMPETENCY COURSE: INTELLECTUAL PROPERTY RIGHTS**		
CO1.	Claim the rights for the protection of their invention done in their project work.	Remember (LevelK1), Apply(LevelK3),
CO2.	Identify criteria's' to fit one's own intellectual work in particular form of IPRs	Analyze (LevelK4), Evaluate (LevelK5)
CO3.	To get registration in our country and foreign countries of their invention, designs and thesis or theory written by students during their project.	Understand(LevelK2), Apply(LevelK3), Remember (LevelK1)