PG DEPARTMENT OF ZOOLOGY
Programme Outcomes (PO)

PO No.	Upon completion of B.Sc. Degree programme, the graduates will be able to:	PSO No.
PO-1	Identify different species of fauna in various ecosystems	1,2
PO-2	Ability to use statistical analysis and various experimental techniques.	3,7
PO-3	Obtain knowledge on human physiology, biological metabolism, microbial applications	2,3,7
PO-4	Aware of natural disasters and protective surveillance.	2,5
PO-5	Career oriented courses help to face the future and improve their economical status.	4,8
PO-6	Develop competency skill in recent technology so as to contribute to the needs of the society.	6,7
PO-7	Obtain first hand information with good exposure related to their field of interest.	7,8

Programme Specific Outcomes (PO)

PSO No.	Upon completion of B.Sc. Degree programme, the graduates will be able to:	PO No.
PSO-1	Develop a broad foundational knowledge of the faunal diversity especially local fauna, pattern of evolution, morphological features, adaptation and classification	1
PSO-2	Analyze the relationship between plants, animals, microbes and deal with the local national and global environmental issues in a sustainable manner by realizing the rights of an individual and also the need to conserve the biosphere.	1,3,4
PSO-3	Understand the basic concepts in cell biology, biochemistry, developmental biology, genetics, evolution, microbiology, immunology, research methodology, statistics and physiology.	2,3
PSO-4	Understand the application of biological sciences in aquaculture, apiculture, vermiculture, mushroom culture, sericulture, poultry and dairy science, quail farming and agricultural pest management, there by impart skill as well a source of additional income and self-employment	5

PSO-5	Construct innovative ideas for performing experiments in the areas of biochemistry, physiology, genetics, microbiology, developmental biology, bioinformatics, taxonomy, economic zoology and ecology.	4
PSO-6	Explain the recent developments in genetic engineering, biotechnology, nanobiotechnology, entomology, immunology, general informatics and bioinformatics for research activities in the department research center or in collaboration with other research institutes.	6
PSO-7	Make use of the concepts, tools and techniques related to chemistry and botany to acquire knowledge and its application in Zoology.	2,3.6,7
PSO- 8	Organize and deliver relevant applications of knowledge through effective written, verbal, graphical, virtual communications and interact productively with people from diverse backgrounds.	5,7

COURSE OUTCOMES (CO)

SUBJECT: SYSTEMATICS AND ANIMAL DIVERSITY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the taxonomic classification of animals.	PSO-3,4	U
CO-2	List the various taxonomic tools in classification.	PSO-2, 7	R, An
CO-3	Build the concepts on biodiversity.	PSO-5	Ap, C
CO-4	Distinguish various eco systems in India.	PSO-2,5	An
CO-5	Infer knowledge on diversity of marine and mangrove eco systems.	PSO-1, 2	Ap

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: DEVELOPMENTAL ZOOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the process of gametogenesis.	PSO-3,4	U
CO-2	Explain cleavage and fate maps.	PSO-4,5,6	E,U
CO-3	Organise various stages in organogenesis.	PSO-8	Ap
CO-4	Elaborate the physiology of extra embryonic membrane.	PSO-6	C

CO-5	Interpret the knowledge of application of modern techniques in the field of embryology.	PSO-3,4	E,U

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT : BIOCHEMISTRY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the structure of atoms and molecules.	PSO-3,4	U
CO-2	Classify carbohydrates and demonstrate metabolism.	PSO-2,8	An
CO-3	Explain protein and its functions.	PSO-3,4,6	E, U
CO-4	Organise biosynthesis of lipids.	PSO-8	Ap
CO-5	Apply knowledge on classification, structure and functions of enzymes, vitamins and minerals.	PSO-4,7	AP

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: ECOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Explain animal and marine ecosystem.	PSO-3,4,6	E, U
CO-2	Understand animal adaptations, biotic and abiotic interactions.	PSO-3,4,6	U
CO-3	Classify diversity indices and various conservation practices.	PSO-2,8	An
CO-4	Extend their knowledge on forest, water and energy resources.	PSO- 3,4	U
CO-5	List out various social issues.	PSO-2,7	R, An

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze; E- Evaluate; C-Create

SUBJECT: VERMICULTURE

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the morphological and ecological characters of earthworm.	PSO-3,4	U
CO-2	Distinguish various breeding techniques in Vermiculture.	PSO-2,5	An
CO-3	Apply knowledge on Vermiculture biotechnology	PSO-4,7	Ap
CO-4	List out marketing techniques in Vermiculture	PSO-2,7	R,An
CO-5	Estimate the potentials and constraints for Vermiculture in India.	PSO-6	E,C

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: CELL AND MOLECULAR BIOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Distinguish prokaryotes and eukaryotes.	PSO-2,5	An
CO-2	Understand the structure and functions of various cell organelles.	PSO-3,4	U
CO-3	Define cell and nucleic acids.	PSO-3,4	R
CO-4	Find out the causes, diagnosis and treatment of cancer.	PSO-3,4	R
CO-5	Organise the mechanism of gene expression.	PSO-8	Ap

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: ANIMAL PHYSIOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the metabolism of carbohydrates, proteins and lipids.	PSO-3,4	U
CO-2	List the blood components and its functions.	PSO-2,7	An, R
CO-3	Apply their knowledge on the physiology and anatomy of kidney and lungs.	PSO-4,7	Ap
CO-4	Classify muscles and various sense organs.	PSO-2,8	An
CO-5	Explain reproductive techniques.	PSO-3, 5,6	U,E

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: GENETICS AND EVOLUTION

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand Mendelian principle.	PSO-3, 4	U
CO-2	Define the inherited genetic disorder and inborn errors.	PSO-3,4	R
CO-3	Predict chromosomal disorders.	PSO-2,3	C
CO-4	Determine the causes of phylogenetic gradualism and punctuated equilibrium.	PSO-6	E
CO-5	Apply knowledge on molecular evolution.	PSO-4,7	AP

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: NANOBIOTECHNOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Organise the applications of nanotechnology in biotechnology.	PSO-8	Ap
CO-2	Analyse nanobiomaterials and its applications.	PSO-2	An
CO-3	Explain the biological synthesis of nanoparticles.	PSO-3,4,6	U,E
CO-4	Apply the various characterization techniques of nanobiomaterials.	PSO-4,7	Ap
CO-5	Elaborate nanotoxicology, environmental and health impacts of nanomaterials.	PSO-6	C

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: WILDLIFE MANAGEMENT

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Define ecosphere and biosphere.	PSO-3,4	R
CO-2	Apply knowledge on population ecology.	PSO-4,7	AP
CO-3	Identify the various threats to biodiversity.	PSO-4,7	Ap
CO-4	Explain the various principles of wild life management.	PSO-3,4,6	U,E
CO-5	List out special projects for endangered species.	PSO-2,7	R,An

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: MUSHROOM CULTURE

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Explain the life cycle and nutritive value of mushroom.	PSO-3,4,6	U,E
CO-2	Identify of various types of mushroom.	PSO-4,7	AP
CO-3	Choose mushroom cultivation techniques.	PSO-2,4,7	R, Ap, C, E
CO-4	List out major pests and its control.	PSO-2,7	R, An
CO-5	Choose the preservative and marketing techniques of mushroom culture.	PSO-2, 4, 7	R, Ap, C,E

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: IMMUNOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Explain the types of immunity.	PSO-3,4,,6	U,E
CO-2	Apply knowledge on humoral immune response.	PSO-4,7	AP
CO-3	Classify types of immunoglobulin.	PSO-2,8	An
CO-4	Elaborate transplantation and tumour immunology.	PSO-6	C
CO-5	Distinguish auto immune diseases.	PSO-2,5	An

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: BIOSTATISTICS AND BIOINFORMATICS

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Apply the mathematical tools in the biological systems.	PSO-4,7	Ap
CO-2	Compare the measures of dispersion.	PSO-7	An
CO-3	Apply knowledge on correlation.	PSO-4,7	Ap
CO-4	Elaborate various databases in bioinformatics.	PSO-6	C
CO-5	Classify sequence alignment in proteins and nucleic acids.	PSO-2,8	An

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: ANIMAL BIOTECHNOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Apply knowledge on the principles and methods of recombinant DNA technology.	PSO-4,7	AP
CO-2	Understand the techniques of DNA.	PSO-3,4	U
CO-3	Elaborate on genetic engineering, gene therapy, pharmacogenetics and pharmacogenomics.	PSO-6	C
CO-4	Perceive on industrial microbiology.	PSO-6, 8	E
CO-5	Utilize the genetically engineered microbes.	PSO-4,7	Ap

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: SERICULTURE

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the nuances of sericulture.	PSO-3,4	U
CO-2	List out various diseases of mulberry.	PSO-2,7	R, An
CO-3	Explain the life cycle of silkworm.	PSO-3,4,6	U,E
CO-4	Demonstrate the process of reeling and marketing.	PSO-3,4, 6	U
CO-5	Distinguish various silkworm diseases.	PSO-2,5	An

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: APICULTURE

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the scope and significance of apiculture.	PSO-3,4	U
CO-2	Create an interest in the rearing of honey bees.	PSO-4,5	C
CO-3	Apply the various apiculture techniques and list honey bee products.	PSO-4,7	Ap
CO-4	Identify various diseases and enemies in a bee colony.	PSO-4,7	Ap
CO-5	Analyse the role of swarming in bee colony.	PSO-1,2	An

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: POULTRY AND DAIRY SCIENCE

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Classify the fowls based on its usage.	PSO-2,8	An
CO-2	Elaborate brooding and feeding in broilers.	PSO-6	C
CO-3	List daily breeds in India.	PSO-2,7	R,An
CO-4	Understand various diseases, transmission, treatment and management in poultry.	PSO-3,4	U
CO-5	Build self employment opportunities in poultry.	PSO-1,4,7	Ap, C

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: MICROBIOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Classify and understand morphology of microorganisms.	PSO-2,8	An
CO-2	Apply knowledge on isolation and identification of microbes.	PSO-4,7	Ap
CO-3	Infer the salient features of microbial growth and genetics.	PSO-1,2	U
CO-4	Categorize various microbial diseases.	PSO-2,8	An
CO-5	Elaborate fermentation and bioremediation process.	PSO-6	C

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: AQUACULTURE

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Determine the scope and importance of aquaculture at National and International levels.	PSO-4,6	E
CO-2	Apply their knowledge on the classification of cultivable fishes.	PSO-4,7	Ap
CO-3	Choose the method for the preparation of artificial fish feed and their storage techniques.	PSO-4, 5,6	R, Ap, C,E
CO-4	List the various diseases its diagnosis and management of fishes.	PSO-1,2,7	R, An
CO-5	Elaborate the post harvest process and marketing of fishes.	PSO-6	C

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: ENTOMOLOGY

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Understand the taxonomy of insects.	PSO-3,4	U
CO-2	Explain the structure and functions of different organ systems.	PSO-3, 5,6	U,E
CO-3	Define the fine structure of receptor organs of insects.	PSO-3,4	R
CO-4	Classify the harmful and beneficial insects.	PSO-2,8	U,An
CO-5	Analyse the various principles and methods of pest control.	PSO-1,2	AN

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

SUBJECT: POULTRY SCIENCES

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Define poultry in India.	PSO-3,4	R
CO-2	Apply knowledge on poultry manure.	PSO-4,7	AP
CO-3	Explain poultry requirements.	PSO-3,4, 5,6	U, E
CO-4	List agro-industrial products.	PSO-2,7	R, Ap, C,E
CO-5	Understand various diseases, transmission, treatment and management in poultry.	PSO-3,4	U

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

PRACTICALS

P-1	Systematics and Animal diversity and Developmental Zoology Practicals	18PCZO1P1

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Find biodiversity indices	PSO-3,4	R
CO-2	Identify planktons in fresh water	PSO-4,7	Ap
CO-3	Label and mount various stages of onion root tip	PSO-5,7	R
CO-4	Label and mount male or female gamete in fish	PSO-5,7	R
CO-5	Show and mount the stages of chick embryo	PSO-6	R,U

*PSO-Program Specific outcome; CO-Course Outcome;

Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

P-II	Biochemistry and Cell and Molecular biology Practicals	18PCZO1P2

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Estimate salivary amylase on substrate concentration.	PSO-4,6	E,C
CO-2	Estimate salivary amylase on enzyme concentration.	PSO-4,6	E,C
CO-3	Estimate carbohydrate and protein.	PSO-4,6	E,C
CO-4	Dissect giant chromosomes in chironomous larva.	PSO-2	An
CO-5	Show and mount squamous epithelial cells in human.	PSO-3,4	R,U

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

P-III	Animal Physiology Practicals	18PCZO2P1

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Find the effect of temperature on opercular movement of fish.	PSO-3,4	R
CO-2	Estimate rate of oxygen consumption in a fish.	PSO-4,6	E,C
CO-3	Estimate total haemoglobin in human.	PSO-4, 6	E,C
CO-4	Show haemin crystals in human blood.	PSO-3,4	U,R
CO-5	Analyse quantitatively the nitrogenous waste products.	PSO-2	An

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

P- IV	Genetics and Evolution Practicals	18PCZO2P2

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Experiment with Mendel's law.	PSO-7	Ap
CO-2	Find human traits.	PSO-3,4	R
CO-3	Identify ABO blood group.	PSO-4, 7	Ap
CO-4	Estimate gene and genotype frequencies.	PSO-4,6	E,C
CO-5	Find density dependent selection in animal population.	PSO-3,4	R

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

P-V	Immunology Practicals	18PCZO3P1

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Find interaction of antigen and antibody.	PSO-3,4	R
CO-2	Demonstrate ELISA.	PSO-4,7	U
CO-3	Dissect lymphoid organs in fish.	PSO-2	An
CO-4	Identify WBC in blood sample.	PSO-3,4	Ap
CO-5	Label and isolate monocytes from blood.	PSO-5,7	R

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

P- VI	Biostatistics and bioinformatics and Animal biotechnology Practicals	18PCZO3P2

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Analyse mean, median, mode, SD, SE.	PSO-2	An
CO-2	Estimate correlation- length and width of leaves.	PSO-4,6	E, C
CO-3	Estimate height and weight among students.	PSO-4,6	E,C
CO-4	Examine DNA and RNA.	PSO-2,7	An
CO-5	Examine DNA by PAGE.	PSO-2,7	An

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

P_VII	Microbiology Practicals	18PCZO4P1

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Select culture media.	PSO-1	Ap, E
CO-2	Examine viable cells by serial dilution.	PSO-2,7	An
CO-3	Find differential staining.	PSO-3,4	R
CO-4	Plan, preserve and maintain culture.	PSO-4,7	Ap, C
CO-5	Examine nitrogen fixing symbiotic bacteria.	PSO-2,7	An

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create

P-VIII	Aquaculture Practicals	18PCZO4P2

CO No.	Upon completion of this course, students will be able to:	PSO addressed	Blooms taxonomy classification
CO-1	Analyse morphometry of a pond.	PSO-2,4	An
CO-2	Estimate hydrobiological parameters.	PSO-4,6	E,C
CO-3	Identify eggs, spawn, fry and fingerlings of a fish.	PSO-4, 7	Ap
CO-4	Identify sex in fishes.	PSO-4, 7	Ap
CO-5	Choose and identify aquatic weeds.	PSO-3,5,6	R, E, Ap, C

*PSO-Program Specific outcome; CO-Course Outcome;
Cognitive Level: R- Remember; U-Understanding; Ap-Apply; An-Analyze;E- Evaluate; C-Create