FATIMACOLLEGE(AUTONOMOUS), MADURAI–625018

COURSE OUTCOMES

NAME OF THE PROGRAMME: MSc. ZOOLOGY   **PROGRAMMECODE: PSZO**

COURSECODE	COURSETITLE	COURSEOUTCOMES
19PG1Z1	**Animal Diversity**	CO1. Recall the levels of organization among Invertebrates and Chordates CO2. Bring out the General characters of Invertebrates. CO3. Classify the Phyla of Invertebrates and Chordates up to class level. CO4. Distinguish between Invertebrates and Chordates. CO5. Predict the systematic Position of Animals.

19PG1Z2	Microbiology	CO1. Describe the scope of microbiology, taxonomical classification, principle and components of different types of microscopes
		CO2. Classify bacteria based on morphology, biochemical characteristics and growth parameters
		CO3. Discuss the morphology, classification and cultivation of viruses.
		CO4. Explain the microbial genetics and metabolism of bacteria
		CO5. Appraise the role of bacteria in food, industry, medicine, environment and agricultural microbiology
19PG1Z3	Cell & Molecular Biology	CO1. Explain the ultra structure and functions of Cytoskeletons and Plasma membrane
		CO2. Discuss the complexicity of eukaryotic genome organization and its replication in Prokaryotes & Eukaryotes
		CO3. Describe the process of transcription and post transcriptional modification in Eukaryotes
		CO4. Describe the process of transcription and post transcriptional modification in Eukaryotes
		CO5. Assess the events of cell cycle, cell signalling pathways, cell death

		and cancer
19PG1Z4	**Lab in Animal Diversity & Microbiology**	CO1. Identify the diversity of animals. CO2. Explain the fundamental organization of Animals. CO3. Prepare different types of media. CO4. Demonstrate bacterial isolation technique and maintain pure culture. CO5. Identify unknown bacteria by biochemical testing.
19PG1Z5	**Lab in Cell & Molecular Biology**	CO1. Identify and sketch the various microscopy CO2. Recall the preparation of tissues CO3. Estimate the quantity of DNA and RNA CO4. Infer the qualitative estimation of DNA and RNA CO5. Compute the mitotic index

19Z1EDC	Herbal Medicine	CO1. Make use of alternative medicinal methods.
		CO2. Infer the importance of herbs used in day today life.
		CO3. Categorize the usage of herbs for different ailments.
		CO4. Solve the life style disorders with food supplements.
		CO5. Prepare various herbal products.
19PG2Z6	Genetics	CO1. Find the pattern of inheritance of traits by various crosses.
		CO2. Compare the patterns of sex determination in various organisms.
		CO3. Discuss the mechanism of crossing over and linkage
		CO4. Analyse uniqueness of chromosome mapping.
		CO5. Identify the types of variation in chromosome.
		CO6. Assess the process of bacterial transformation, transduction and conjugation.

19PG2Z7	Evolution	CO1. Recall the origin and evolution of life
		CO2. Categorize the evidences and theories of organic evolution
		CO3. Describe the mechanism of evolution
		CO4. Write about the natural selection and speciation
		CO5. Explain the molecular and human evolution
19PG2Z8	Biochemistry	CO1. Summarize the structure, classification and- metabolic pathways of carbohydrates
		CO2. Organize the Structure, Classification and Metabolism of Proteins.
		CO3. Explain the structure, classification, synthesis and metabolism of Lipids
		CO4. Assess the metabolic pathway of nucleic acid.
		CO5. Describe the structure, function and mechanism of enzyme and hormone action.

19PG2Z9	Lab in Genetics & Evolution	CO1. Determine the sex in man by Barr bodies. CO2. Experiment with the simple Mendelian traits. CO3. Examine the process of Sex determination in man and fruit fly. CO4. Construct the Pedigree charts by systematic listing of parents. CO5. Relate the genotypic frequencies by Hardy-Weinberg equilibrium.
19PG1Z10	Lab in Biochemistry	CO1. Acquire skills in handling basic equipments CO2. Calculate the strength of unknown solutions using formula CO3. Estimate the various biomolecules using standard protocols CO4. Demonstrate experiments adopting appropriate procedures CO5. Critically analyze and interpret the results CO6. Design experiments to solve research problems

19Z2EDC	Herbal Medicine	CO1. Make use of alternative medicinal methods.
		CO2. Infer the importance of herbs used in day today life.
		CO3. Categorize the usage of herbs for different ailments.
		CO4. Solve the life style disorders with food supplements.
		CO5. Prepare various herbal products.
	Computer Applications For Biologists	CO1. Apply MS-EXCEL for statistical analysis
		CO2. Retrieve nucleotide, protein sequences and protein structure
		CO3. Perform BLAST and FastA
		CO4. Interpret the results obtained through bioinformatic tools
		CO5. Model protein structure using Swisspdb viewer

	SPSS	CO1. Apply the knowledge of research methodology and frame the hypothesis
		CO2. Explains the features of questionnaire
		CO3. Perform Students t test and ANOVA
		CO4. Interpret the results obtained through SPSS analysis tools
		CO5. Analyse the data SPSS
		CO6. Performs Hierarchical Clustering using SPSS software
PG3Z11	**Biophysics**	CO1. Classify the chemical bonds and forces interacting between molecules
		CO2. Summarize the theories involved in acidity and basicity
		CO3. Explain the principles of Thermodynamics and biological oxidation
		CO4. Describe the principle, procedure, components involved and biological applications of Instruments
		CO5. Apply the principles of Photobiology in the Perception and Chemical

		Processing of Vision
		CO6. Assess the principles, properties applications and hazardous nature
		of Radioactive isotopes
		CO7. Interpret the Biophysical aspects of neurophysiology applied to the
		Animals
		CO8. Organize the Biological importance and various domain of physics in
		Biology in the form of flow chart
PG3Z12	**Immunology**	CO1. Compare the innate and adaptive immunity
		CO2. Describe the structure and functions of immune cells and lymphoid organs
		CO3. List the properties of B and T cell epitopes
		CO4. Discuss the structure, types and properties of various Immunoglobulins
		CO5. Differentiate the gene organization and molecular structures of MHC

		class I and class II
		CO6. Discuss the activation and maturation of B-cells and T-cells
		CO7. Relate immunoglobulins and biological consequences of complement activation
		CO8. Summarize the methods, merits and Demerits of different types of vaccines
		CO9. Explain the immune response to infectious diseases
19PG3Z13	**Biostatistics & Research Methodology**	CO1. Find the measures of central tendency and dispersion values
		CO2. Assess the difference between the expected and observed frequencies by Chi-Square test
		CO3. Compute degrees of relationship between two variables with reference to correlation and regression
		CO4. Test the hypothesis of mean of the variables whether significant or not through ANOVA
		CO5. Identify the research problem and generation of raw data through different methods
		CO6. Apply the statistical tools to calculate the data

		CO7. Tabulate the research data inappropriate order
		CO8. Interpret the results and drawconclusion
		CO9. Outline the steps in drafting the thesis
		CO10. Formulate the research work throughdocumentation
PG3ZE1	**Fisheries & Aquaculture**	CO1. Identify the economically importantfishes and fishery products.
		CO2. Plans according to the recent concepts in fisheries management.
		CO3. Distinguish the various aquaculturesystems.
		CO4. Organizes the type of hatchery, brood stock, larval production, feedmanagement water quality and disease management in cultivable species, live feed production.
		CO5. Evaluates the Fisheries and AquaculturePractices in India.

19PG3ZE2	Bioinformatics	CO1. Recall the features of Human Genome Project
		CO2. Compare and contrast Hierarchical and shotgun sequencing
		CO3. List the different web browsers, search engines and biological databases
		CO4. Summarize the information stored in the flatfile of biological databases
		CO5. Prepare the DOTPLOT and identify matching sequence and repeat regions
		CO6. Compute dynamic programming using Needleman-Wunsch Algorithm
		CO7. Explain the development and significance of substitution matrices
		CO8. Relate the usage of different PAM and BLOSUM for closely and distantly related sequences
		CO9. Recall the methods and applications of multiple sequence alignment
		CO10. Model phylogenetic tree based on the distance matrix
		CO11. Discuss the secondary structure prediction methods
		CO12. Summarize the three dimensional

		structure prediction methods
19PG3Z14	**Lab in Biophysics & Biostatistics**	CO1. Recall the principle of centrifuge, pH meter, Chromatography CO2. Determine the maximum absorption and its molar extinction coefficient of sample CO3. Estimate the pH Titration curve, Surface tension and viscosity of sample CO4. Interpret the results for statistical analysis including mean, median, mode and Standard deviation for individual, continuous series CO5. Determine the correlation, regression and significance for the statistical data

19PG3Z16	Lab in Immunology, Fisheries & Aquaculture and Bioinformatics	CO1. Identify and sketch the different lymphoid organs
		CO2. Recall the properties of soluble and particulate antigen
		CO3. Estimate the lymphocytes from peripheral blood
		CO4. Demonstrate the various bleeding techniques
		CO5. Demonstrate the separation of serum and plasma
		CO6. Identify immunoelectrophoresis and rocket immunoelectrophoresis
		CO7. Estimate the concentration of test antigen by single/double immunodiffusion
		CO8. Experiment the complement mediated lysis
		CO9. Infer the formation of precipitin line and button formation
19PG4Z16	Environmental Biology	CO1. Develop an understanding of ecological key interactions and processes
		CO2. Elaborate how minerals enter, used and exit an ecosystem

		CO3. Explain the factors that affect population size, Density, Distribution and dynamics
		CO4. Compare Ecological niche and habitat
		CO5. Agree significance of Biodiversity, consequences on loss of Biodiversity and conservation Strategies
		CO6. Design novel mechanism for the sustainable utilization of natural resources
		CO7. Criticize various kinds of pollution in the environment, their impact on the ecosystem
		CO8. Analyze causes of climatic change and its effects
19PG4Z17	**Biotechnology**	CO1. Find the enzymes in RDNA technology
		CO2. Compare the cloning vehicles with their specific advantages.
		CO3. Criticize the boon technology of *in-vitro* fertilization
		CO4. Analyse the technique of tissue culture
		CO5. Identify the importance of artificial blood

19PG4Z18	**Developmental Biology**	CO1. Recalls the basic concepts of Developmental Biology. CO2. Explain how fertilization, cleavage and Gastrulation occur. CO3. Compares the basic concepts of organogenesis in different organisms. CO4. Understand the development of egg into a foetus, then into adult. CO5. Associate the embryo development with Phylogeny.
19PG4ZE3	**Economic Zoology**	CO1. Compare the morphological adaptation in bees in relation to their social behaviour. CO2. Plan for a sericulture unit as a cottage industry. CO3. Analyse the rearing methods of prawn and pearl oysters. CO4. Discuss the rearing methods of chick. CO5. Find the feed formulations for chick. CO6. Assess the commercial importance of dairy farm

| 19PG4ZE4 | Ethology | CO1.Classify different patterns of genetic, environmental, neural and hormonal animal behavior

CO2. Explains the role of visual, auditory communication with respect to learning and instincts mechanism

CO3. Discuss the various reproductive and social behaviours in context to pair selection.

C04. Summarizes the ecological condition such as hunger, thirst, territories etc., in influencing the animal behaviour.

C05. Compare the circadium and cirannual behaviour

CO6. Elaborate the molecular regulation of circadian rhythm |

19PG4Z19	**Lab In Environmental Biology & Developmental Biology**	CO1. Find the primary productivity CO2. Demonstrate the estimation of various components of soil and water. CO3. Identify the zoo planktons in water sample. C04. Analyse the various developmental stages of chick embryo. C05. Compare the diversity of species by quadrat method.
19PG4Z20	**Lab In Biotechnology, Economic Zoology & Ethology**	CO1. Demonstrate the plant tissue culture technique CO2. Experiment with DNA isolation CO3. Estimate DNA quantitatively C04. Analyse Newton's bee hive C05. Relate nest building in different birds

19PGSLZ1	Vector Borne Diseases	CO1. Describe the biology and lifecycle of various vectors
		CO2. Discuss the genome and proteins ofvirus transmitted by vectors
		CO3. Relate the environmental factors that Increase the prevalence of vector borne diseases
		C04. Summarize the various vector control methods and prevention of the disease
		C05. Examine the anthropogenic factors that cause high incidence of vector-borne disease