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Re-Accredited with 'A++' (CGPA 3.61) by NAAC (Cycle- IV)
College with Potential for Excellence (2004 - 2019)
101 - 150 Rank Band in India Ranking 2021 (NIRF)
Mary Land, Madurai - 625 018, Tamil Nadu.



FATIMA COLLEGE (AUTONOMOUS), MADURAI – 625018 2020 - 2021

NAME OF THE PROGRAMME: B. Sc., ZOOLOGY

PROGRAMME CODE: UAZO

PROGRAMME OUTCOMES (PO)

On completion (after two years) of B.Sc., ZOOLOGY, the graduates would be able to

PO 1	Acquire knowledge on the concepts of various branches of Zoology	
PO 2	Understands the complex interactions in among various living organisms	
PO 3	Acquire basic skills in the fundamentals of animal sciences and biological techniques through hands on training	
PO 4	Apply the knowledge and skill to take up higher education, entrepreneurship and employment in government and private sectors.	
PO 5	Develop the quest for research for the betterment of environment and mankind with ethical responsibilities	



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PROGRAMME SPECIFIC OUTCOMES (PSO)

PSO 1	Gain comprehensive knowledge in different branches of Zoology – Invertebrata, Chordata, Cell biology, Physiology, Environmental Biology, Biochemistry, Microbiology, Immunology, Embryology, Entomology, Genetics, Molecular Biology, Biotechnology, Biostatistics, Bioinformatics and Evolution	
PSO2	Acquire technical skills in performing experiments in the field of Microbiology, Cell Biology, Biochemistry, Plant Physiology, Human Physiology, Molecular Biology, Environmental Biology, Developmental Biology, Biostatistics, Immunology, Evolution, Genetics, Clinical Laboratory Techniques, Biotechnology and Bioinformatics.	
PSO 3	Develop empathy and instill love towards conserving plants and animals.	
PSO 4	Express ideas and concept through seminar and assignments.	
PSO 5	Solve the environmental problems by applying the biological principles for minimizing pollutants in air, water and land.	



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PSO 6	Develop environmental concern towards value of economically important plants, Biodiversity promote Bioremediation, Bio fertilizer and vegetative propagation.	
PSO 7	Adopt Good Laboratory Practice, bioethics and biosafety guidelines to ensure minimal use of animals during experiments.	
PSO 8	Exhibit the holistic growth by developing subject proficiency, interpersonal skills, and show vertical mobility in taking up PG courses and horizontal mobility by enrolling in B.Ed institution, clinical laboratory course and seek employment in schools, Medical coding and IT companies.	
PSO 9	Make them self employed/ Entrepreneur in the field of Sericulture, Vermitechnology, Ornamental fish culture, Dairy farming, Apiculture, Mushroom cultivation and Horticulture.	
PSO 10	Use of computers for Power point presentation, Virtual Dissection, analysis of bio- molecules using bioinformatics tools and computing biological data.	
PSO 11	Healthy diet pattern for combat life style disorder.	



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COURSE CODE	Course Title	Course Outcomes
19Z1CC1	Invertebrata	CO 1 Recall the levels of organization of animal kingdom and describe the origin of metazoan. CO 2 Elaborate the general characteristics, Classes and general topics of Acoelomate unicellular and multicellular organisms CO 3 Determine the general characteristics, Classes and general topics of Coelomate Multicellular organism. CO 4 Analyse the general characteristics, Classes and general topics of Coelomate (Annelida and Arthropoda) Multicellular organisms.



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		CO 5 Assess the general characteristics, classes and general topics of Coelomate (Mollusca and Echinodermata) multicellular organisms.
19Z1CC2	Cell Biology	 CO 1 Identify the techniques involved in Cytology. CO 2 Outline the structural organization of plasma membrane and endoplasmic reticulum. CO 3 Determine the structural and functional significance of Ribosomes, Golgi Complex, Lysosomes, centrioles and Mitochondria. CO 4 Analyze the structural organization and functional significance of nucleus and nucleic acids. CO 5 Correlate the dynamics of cell division with cancer invasion.
19Z1CC3	Lab- Invertebrata & Cell Biology	CO 1 Recognizes the levels of organization among Invertebrates. CO 2 Illustrate the Skill of Dissection of Organisms



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		CO 3 Recalls the Structure and Functions of Cellular Organelles.CO 4 Summarize the unique features of different Phyla among Invertebrates.CO 5 Demonstrate skill of handling Microscopes.
19Z1NME	Maternity & Child Health	 CO 1 Recall the reproductive systems and women health problems. CO 2 Discuss the care taken during pregnancy and family planning methods. CO 3 Select the nutrition and immunization pattern for pregnant woman and children. CO 4 Describe the causes, symptoms, diagnosis and treatment of six killer diseases. CO 5 Analyze the causes, symptoms, diagnosis and treatment of urinary tract infection and sexually transmitted diseases.



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19Z2CC4	Chordata	CO 1 Recall the levels of organization among Chordates.
		CO 2 Bring out the general characters and classification of
		Chordates.
		CO 3 Distinguish between the Classes of Chordates.
		CO 4 Identify the Systematic Position of Animals.
		CO 5 Evaluate the unique features of each Class of Chordat
19Z2CC5	Genetics	CO 1 Recall the Mendelian laws and highlight the different types
		of genetic interactions.
		CO 2 Illustrate the multiple gene inheritance and the mechanism
		of Linkage and Crossing over.
		CO 3 Determine the concept of sex determination and the patterns of inheritance.
		CO 4 Correlate the types of mutations with chromosomal abnormalities.



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		CO 5 Infer the concepts in genetics to improve the livelihood.
19Z2CC6	Lab- Genetics & Chordata	CO 1 Recognizes the levels of organization among Chordates.
		CO 2 Classify Chordates upto class level.
		CO 3 Distinguish the Mendelian Traits as Dominant and
		Recessive.
		CO 4 Develops the skill of dissecting organisms and displaying.
		CO 5 Interprets the Pedigrees.
19Z2NME	Maternity & Child Health	CO 1 Recall the reproductive systems and women health problems.
		CO 2 Discuss the care taken during pregnancy and family planning methods.
		CO 3 Select the nutrition and immunization pattern for pregnant woman and children.



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		CO 4 Describe the causes, symptoms, diagnosis and treatment of six killer diseases.CO 5 Analyze the causes, symptoms, diagnosis and treatment of urinary tract infection and sexually transmitted diseases.
19Z3CC7	Human Physiology	 CO 1 Associate the basic components and functions of the digestive system and their diseases. CO 2 Organise structure and functions of the respiratory and circulatory system and their diseases. CO 3 Recognize the organs and functions of urinogenital system and their disease. CO 4 Identify the organs, theories and functions of neuromuscular system and their diseases. CO 5 Analyze the structure and functions of Endocrine glands and sense organs and their disorder.



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19Z3CC8	Environmental Biology	 CO 1 Paraphrase the structure and function of the Ecosystems CO 2 Identify the characteristics of a population and their interactions. CO3 Categorize community characteristics and value natural
		resources. C04 Recognize the importance of Biodiversity and its conservation. C05 Show the consequences of Human actions on global environment.
19Z3CC9	Lab- Human Physiology & Environmental Biology	 CO 1 Associate the effect of pH and temperature on salivary amylase activity in man. CO 2 Infer the qualitative analysis and estimation of biomolecules. CO 3 Compare the preparation of haemin and haemochromogen crystals.



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		CO 4 Determine the amount of dissolved oxygen and carbon dioxide in the given water samples.CO 5 Prepare the models for food chain and food web in different ecosystem and identification of spotters.
19Z3SB1	Vermitechnology	 CO1 Identify the different species of earthworm and elucidate the biology of earthworms CO2 Classify the ecological group of earthworms and discuss the role of earthworm in diverse applications. CO3 Organize the methods of Vermicomposting and identify factors affecting vermicompost. CO4 Analyse the physical, chemical and biological properties and maintenance of vermicompost. CO5 Examine the economics and prospects of vermiculture as self – employment avenues.



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19Z3ACQ1	Plant Diversity & Pathology	CO 1 Recognize the structure, life cycle and economic importance of Algae & Fungi. CO 2 Identify the plant diseases & control methods and Lifecycle & uses of Lichens CO 3 Show general characters & life cycle of Bryophytes, Pteridophytes and Gymnosperms CO 4 Classify the Angiosperms & list their uses CO 5 Relate the plants to their economic uses
19Z3ACQ2	Lab- Plant Diversity & Pathology	CO 1 Prepare suitable sections of Algal & fungal specimens CO 2 Compare the structure of Algae, Fungi, Bryophytes, Pteridophytes & Gymnosperms CO 3 Analyze the plant diseases and control methods CO 4 Identify flowering plants & their taxonomical position CO 5 Recall the economically useful plants



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19C3ACZ1	Animal Diversity, Physiology & Genetics	CO 1 Outline the general characters with of invertebrate and chordata with reference to organization, symmetry, body cavity
		CO 2 Explain the digestive system, role of enzymes, digestion and absorption of Carbohydrates, Protein and Fat in Man.
		CO 3 Distinguish between internal and external respiration in context to the mode and transport of gas exchange.
		CO 4 Summarize the structure and function of heart, Kidney, eye and ear.
		CO 5 Explain the Mendelian Laws Of Inheritance & Allelism
19C3ACZ2	Lab- Animal Diversity, Physiology & Genetics	CO 1 Outline the Laboratory biosafety guidelines and good laboratory practices.
		CO 2 Dissect and mount the Body setae of Earthworm



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		 CO 3 List out the features of the given spotters Amoeba, Taenia solium, Nereis, Amphioxus (entire), Anguilla (Eel), Toad (Bufo), Cobra, Chamaeleon, Pigeon and various Syndromes. CO 4 Choose the appropriate qualitative test for the analysis of carbohydrates, proteins, lipids, urea and uric acid in the given sample CO 5 Illustrate the structure of human ear, eye and heart.
19Z4CC10	Microbiology	 CO 1 Examine the culturing methods and phenotypic identification of microbes CO 2 Examine the taxonomical classification, reproduction and genetic recombination in bacteria. CO 3 Elaborate the morphologic properties and cultivation of viruses. CO 4 Determine the role of microbes in the environment.



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		CO 5 Correlate the technology of fermentation with the microbial production industrial products
19Z4CC11	Evolution	 CO 1 Recognize the basic concepts of origin of life and evidences of evolution. CO 2 Paraphrase the theories of evolution CO 3 Examine the Modern synthetic theory and the factors causing variation. CO 4 Organize the types and salient features of natural selection and mimicry. CO 5 Interpret the concept of speciation and human evolution
19Z4CC12	Lab-Microbiology & Evolution	CO 1 Find the working Principle and Applications of instruments.



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		 CO 2 Demonstrate the microbiological techniques and water quality analysis CO 3 Identify the animals of evolutionary importance, adaptive coloration and in mimicry. CO 4 Identify the morphological evidences and the horse and human evolution model. CO 5 Analyze the Hardy – Weinberg equilibrium using beads.
19Z4SB2	Mushroom Cultivation	CO 1 State the prospects of mushroom cultivation CO 2 Devise a plan for mushroom production unit CO 3 Outline the techniques in cultivation, grading & processing of edible mushrooms CO 4 Identify and manage Insect-Pests and diseases affecting mushrooms.



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		CO 5 Prepare a business plan for small scale enterprise
19Z4ACQ3	Developmental Botany & Plant	CO1 Recall structure & functions of various plant tissues
	Breeding	 CO2 Paraphrase the mechanism of transpiration, photosynthesis, respiration & plant growth regulators CO3 Identify the structure & development Embryology of plan CO4 Examine techniques in the crop improvement programmes
		CO 5 Plan a home garden using horticultural techniques
19Z4ACQ4	Lab-Developmental Botany &	CO1 Illustrate the anatomy of plants
	Plant Breeding	CO2 Prepare experimental set ups in plant physiology
		CO3 Recall the structure & functions of stomata
		CO4 Apply emasculation & horticultural technique in plant improvements
		CO 5 Compare the stages of dicot embryo



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19C4ACZ3	Cell & Molecular Biology	CO 1 Outline the general structure and function of a prokaryo and eukaryotic cell.	otic
		CO 2 Associate the structure and function of plasma membra mitochondria and endoplasmic reticulum	ne,
		CO 3 Summarize the structure of chromosome	
		CO 4 Recall the structure and replication of DNA	
		CO 5 Organize the events in translation, transcription and gen regulation in Prokaryotes	ne
19C4ACZ4	Lab- Cell & Molecular Biology	CO 1 Identify the squamous epithelial cells Under microscope	e
		CO 2 Dissect and mount the Polytene Chromosomes in Salivary gland of <i>Chironomus</i> larva.	the
		CO 3 Interpret the mitotic stages from the squash preparation Onion root tip	in in



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		CO 4 Recognize the features of the given spotters: Stages of Meiosis, Cellular organelles – Mitochondria, Endoplasmic reticulum, Golgi complex, Nucleus CO 5 Recall the structure and replication of DNA
Z5CC11	Biochemistry	 CO 1 Describe the properties and biological significance of Biomolecules CO 2 Classify amino acids based on the nature of their functional group. CO 3 Discuss the metabolic pathways of carbohydrates, proteins and lipids. CO4 Describe the factors affecting the normal functions of the enzymes
Z5CC12	Molecular Biology	CO 1 Illustrate the Watson and Crick model of DNA double helix



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		CO 2 Describe the mechanism of DNA replication and the role of enzymes CO 3 Describe the transcription and translation in prokaryotes and eukaryotes
Z5CC13	Biophysics & Instrumentation	CO 1- Describe the principles of physics involved in the structure of biomolecules, energy transformation in living systems CO 2- Relate the use of modern physical instruments for the exploration of knowledge in Biology.
Z5ME1	Embryology	CO 1 Recall the basic concepts of developmental biology. CO 2 Tell how fertilization, cleavage and gastrulating occur. CO 3 Relate the development of egg into a foetus, then into adult, among Vertebrates.
Z5ME2	Entomology	CO 1 Compare the morphological features of different orders.



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		CO 2 Summarize the beneficial aspects of insects. CO 3 Identify the agricultural pests and the economic damage caused.
Z5SB3	Ornamental Fish Culture	 CO1 List the types of aquarium. CO2 Plan the use of common aquarium ornamental fish and aquatic plants to decorate it. CO3 Explain the techniques followed in ornamental fish breeding. CO4 Compare the symptoms of various diseases prevalent in ornamental fish.
Z5SB4	Sericulture	CO 1 List the importance of sericulture as cottage industry and the support provided by Central Silk Board. CO 2 Explain the different methods of vegetative propagation followed in mulberry cultivation.



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		CO 3 Outline the life cycle of mulberry silkworm and the methods of rearing. CO 4 Find various diseases that affect silkworm and cocoon formation
Z6CC14	Immunology	 CO 1 Outline the types of immunity, immunization and origin of immune cells CO 2 Explain the structure and properties of antigen and antibody CO 3 Identify the immunological technique CO 4 Describe the types and mechanism of immune response
Z6CC15	Biotechnology	CO 1 Identify the principles and applications of Biotechnology for the benefit of mankind



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		CO 2 Outline the development of transgenic plants, animals, and microbes or products for specific use CO 3 Discuss the solutions to problems concerning human activities in the field of Agriculture, Medicine. Industry and Environment
Z6ME3	Biostatistics	CO 1 Outline the importance of data collection and its types. CO 2 Estimate and interpret the data, by various measures including mean, median, and standard deviation.
Z6ME4	Clinical Laboratory Technique	 CO 1 Identify the different sterilization methods followed in clinical laboratory. CO 2 Explain the collection method and techniques used in laboratory for urine analysis. CO 3 Find the way to process clinical specimens safely according to established procedures.



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Z6ME5	Bioinformatics	CO 1 Enumerate the applications of bioinformatics CO 2 List web browsers and search engines CO 3 Classify biological databases
Z6ME6	Human Genetics	Co 1Classify the types of genetic disorders Co 2 Explain the mode of inheritance of congenital disorders
Z6SB5	Apiculture	CO 1 Explain the scope of apiculture in India CO 2 List the equipment's used in bee keeping CO 3 Outline the types of bee diseases
Z6SB6	Dairy Farming	CO 1 Recall the scope of Dairy Farming and Dairy Technology. CO 2 Identify the features of various indigenous and exotic breeds of dairy cattle's.



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		CO 3 Develop an idea regarding the formulation of value added dairy products.CO4 Describe the clinical findings, treatment and control measures of livestock diseases.
Z6CC16	Major Practical III	 CO 1 Develop skills in handling basic equipment's CO 2Relate the chemical properties biomolecules with the qualitative analytical tests of Biomolecules CO 3 Demonstrate the genomic DNA isolation, DNA estimation and chromatography CO 4 Identify the spotters