FATIMA COLLEGE
(Autonomous)
*Affiliated to Madurai Kamaraj University*
*Re-Accredited with 'A++' by NAAC (Cycle - IV)*
Mary Land, Madurai - 625018, Tamil Nadu

# AQAR – QUALITATIVE METRIC

## 2023 - 2024

## Criterion 1 - Curricular Aspects

**1.1.1 Curricula developed and implemented have relevance to the local, national, regional and global developmental needs which is reflected in Programme outcomes (POs), Programme specific outcomes (PSOs) and Course Outcomes (COs), of the Programmes offered by the Institution.**

**Name of the Programme: B.Sc. ZOOLOGY** **Programme Code: UAZO**

### Programme Outcomes:

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| **PO 1** | Apply acquired scientific knowledge to solve complex issues. |
| **PO 2** | Attain Analytical skills to solve complex cultural, societal and environmental issues. |
| **PO 3** | Employ latest and updated tools and technologies to analyse complex issue. |
| **PO 4** | Demonstrated Professional Ethics that foster Community, Nation and Environment Building Initiatives. |
| **PO 5** | Apply the knowledge and skill to take up higher education, entrepreneurship and employment in government and private sectors. |

## Programme Specific Outcomes:

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| **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. |
| **PSO 6** | Develop environmental concern towards value of economically important plants, Biodiversity promote Bioremediation, Bio fertilizer and vegetative propagation. |

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| **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. |

## Course Outcomes:

| Course Code | Course Title | Nature of the Course (Local/ National/ Regional/ Global) | Course Description | Course Outcomes |
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| 23Z1CC1 | Invertebrata | Local, National, Regional and Global | This course provides an overview of the Invertebrate animals by focussing on the General characters, Classification, Special features and Biology of some selected Invertebrates. | CO 1 Understand the basic concepts of invertebrate animals and recall its structure and functions.<br>CO 2 Illustrate and examine the systemic and functional morphology of various groups of invertebrata.<br>CO 3 Differentiate and classify the animal's mode of life in various taxa and estimate the biodiversity.<br>CO 4 To compare and distinguish the various physiological processes and |

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| | | | | organ systems in lower animals.<br>CO 5 Infer and integrate the parasitic and economic importance of invertebrate animals. |
| 23Z1CC2 | Invertebrata Lab Course | Local, National, Regional and Global | This course provides an overview of Invertebrate animals by focussing on the General characters, Classification, Special features and Biology of some selected Invertebrates. | CO 1 Identify and label the external features of different groups of invertebrate animals.<br>CO 2 Illustrate and examine the circulatory system, nervous system and reproductive system of invertebrate animals.<br>CO 3 Differentiate and compare the structure, function and mode of life of various groups of animals.<br>CO 4 To compare and distinguish the dissected internal organs of lower animals. |

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| | | | | CO 5Prepare and develop the mounting procedure of economically important invertebrates. |
| 23Z1SE1 | Ornamental Fish Farming & Management | Local, National, Regional and Global | This course familiarizes basic principles, themes and steps needed to set-up and maintain an aquarium. | CO 1To recall the basic concepts, Scope and importance of ornamental fish culture<br>CO 2The students will be able to identify, culture, maintain and market the commercially important ornamental fishes.<br>CO 3Explain the process of food preparation.<br>CO 4Identify the symptoms of various diseases prevalent in aquarium fishes.<br>CO 5To analyze the knowledge and skills gained on the different aspects of ornamental fish keeping will enable the students to develop entrepreneurship potential and help in self-employment. |

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| 23Z1FC | Fundamentals of Biology | Local, National, Regional and Global | This course aims to create interest for the subject and instill confidence among students. | CO 1 Recall the biological significance of biomolecules<br>CO 2 Illustrate the structure and functions of cell and its organelles<br>CO 3 Determine the concept of molecular biology and heredity.<br>CO 4 Correlate the different life processes of human<br>CO 5 Infer the concepts of ecology and evolution |
| 23Z2CC3 | Chordata | Local, National, Regional and Global | This course imparts knowledge on the salient features, classification and uniqueness of the Classes of | CO 1 Classify, Identify and recall the name and distinct features of different subphylum belonging to phylum Chordata.<br>CO 2 Explain, and relate the origin, structural organization and evolutionary aspects of vertebrates.<br>CO 3 Analyze, compare and distinguish the developmental |

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| | | | Phylum Chordata. | stages and describe the important biological process.<br>CO 4 Correlate the different modes of life and parental care among different vertebrates.<br>CO 5 Summarise the morphology and ecological adaptations in vertebrates and list out the economic importance. |
| 23Z2CC4 | Chordata Lab Course | Local, National, Regional and Global | This Course aims to develop the ability to Identify the salient features of Chordates. | CO 1 Identify and label the external features of different groups Chordate animals.<br>CO 2 Illustrate and examine the circulatory system, nervous system and reproductive system of Chordate animals.<br>CO 3 Differentiate and compare the structure, function and mode of life of various groups of animals.<br>CO 4 To compare and distinguish the dissected |

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| | | | | internal organs of lower animals.<br>CO 5Prepare and develop the mounting procedure of economically important Chordate |
| 23Z2SE2 | Bio composting For Entrepreneurship | Local, National, Regional and Global | This course imparts knowledge on biocomposting methods and hands on experience on the preparation of biocompost and its applications in solid waste management and motivate | CO 1To understand the basic concepts and process of biocomposting<br>CO 2To demonstrate biocomposting techniques for various end applications like solid waste management, industrial waste recycling using sugarcane bagasse, etc..<br>CO 3To foster the skills on the preparation of quality biocompost by recycling the waste<br>CO 4To infer and integrate the applications of biocompost<br>CO 5To design and estimate the economic cost of |

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| | | | the learners to become an entrepreneur | establishing small Biocompost units as a cottage industry. |
| 23Z2SE3 | Aquarium Keeping | Local, National, Regional and Global | This course familiarizes the status and the importance of ornamental fish industry | CO 1 List the types of aquarium.<br>CO 2 Identify the exotic and endemic varieties of ornamental fishes.<br>CO 3 Outline the physico – chemical parameters in setting and management of aquarium Farm.<br>CO 4 Explain the techniques followed in feeding, handling and transport of ornamental fish.<br>CO 5 Identify the common freshwater and marine ornamental fishes based on common characters and sexual dimorphism. |
| 19Z3CC7 | Human Physiology | Global & National | The course focuses on | CO 1 Associate the basic components and functions of |

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| | | | the complex organization of different organ systems and their functions. | the digestive system and their diseases.<br>CO 2 Organise structure and functions of the respiratory and circulatory system and their diseases.<br>CO 3 Recognize the organs and functions of urinogenital system and their disease.<br>CO 4 Identify the organs, theories and functions of neuromuscular system and their diseases.<br>CO 5 Analyze the structure and functions of Endocrine glands and sense organs and their disorder. |
| 19Z3CC8 | Environmental Biology | Local, National, Regional and Global | Review of ecological concepts to the understanding of | CO 1 Paraphrase the structure and function of the Ecosystems<br>CO 2 Identify the characteristics of a population and their interactions. |

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| | | | Environmental biology. | CO3 Categorize community characteristics and value natural resources.<br>C04 Recognize the importance of Biodiversity and its conservation.<br>CO5 Show the consequences of Human actions on global environment. |
| 19Z3CC9 | Lab- Human Physiology & Environmental Biology | Local, National, Regional and Global | The course focuses on the interactions between organisms and the environment, and the consequence of these interactions in natural populations, communities and the | CO 1 Associate the effect of pH and temperature on salivary amylase activity in man.<br>CO 2 Infer the qualitative analysis and estimation of biomolecules.<br>CO 3 Compare the preparation of haemin and haemochromogen crystals.<br>CO 4 Determine the amount of dissolved oxygen and carbon dioxide in the given water samples. |

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| | | | ecosystems through experimental approach. | CO 5Prepare the models for food chain and food web in different ecosystem and identification of spotters. |
| 19Z3SB1 | Vermitechnology | Local, National, Regional and Global | This course imparts knowledge on the culture of earthworms and the preparation of vermicompost by recycling the waste through teaching and fieldtrip and eventually motivate the learners to become an | CO1 Identify the different species of earthworm and elucidate the biology of earthworms<br>CO2 Classify the ecological group of earthworms and discuss the role of earthworm in diverse applications.<br>CO3 Organize the methods of Vermicomposting and identify factors affecting vermicompost.<br>CO4 Analyse the physical, chemical and biological properties and maintenance of vermicompost. |

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| | | | entrepreneur . | CO5 Examine the economics and prospects of vermiculture as self – employment avenues. |
| 19Z3ACQ 1 | Plant Diversity & Pathology | Local, National, Regional and Global | To understand the structure & life cycle of Plant groups | CO 1 Recognize the structure, life cycle and economic importance of Algae & Fungi.<br><br>CO 2 Identify the plant diseases & control methods and Lifecycle & uses of Lichens<br><br>CO 3 Show general characters & life cycle of Bryophytes, Pteridophytes and Gymnosperms<br>CO 4 Classify the Angiosperms & list their uses<br>CO 5 Relate the plants to their economic uses |
| 19Z3ACQ 2 | Lab- Plant Diversity & Pathology | Local, National, Regional and Global | To understand the structure and function | CO1 Construct suitable micro preparations |

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| | | | of different plant groups | CO2 Construct sections of given plant materials with illustration and description<br>CO3 Make use of dissection microscope to display the floral parts of Angiosperms<br>CO4 Identify specimens and slides from Algae, Fungi,Lichens,Bryophytes, Pteridophytes and Gymnosperms included in the syllabus<br>CO5 Identify the economically useful plants |
| 19C3ACZ 1 | Animal Diversity, Physiology & Genetics | National | This course is designed for the chemistry student which discusses the branch of Zoology that deals with | CO 1 Outline the general characters with of invertebrate and chordata with reference to organization, symmetry, body cavity<br>CO 2 Explain the digestive system, role of enzymes, digestion and absorption of Carbohydrates, Protein and Fat in Man. |

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| | | | animal diversity, structure and function of various systems, development and inheritance of man. | CO 3 Distinguish between internal and external respiration in context to the mode and transport of gas exchange.<br>CO 4 Summarize the structure and function of heart, Kidney, eye and ear.<br>CO 5 Explain the Mendelian Laws Of Inheritance &Allelism |
| 19C3ACZ 2 | Lab- Animal Diversity, Physiology & Genetics | Local, National, Regional and Global | Students develop laboratory skills with identification of preserved specimen, manipulation of prepared slides, dissections and display | CO 1 Outline the Laboratory biosafety guidelines and good laboratory practices.<br>CO 2 Dissect and mount the Body setae of Earthworm<br>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. |

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| | | | under the microscope | CO 4 Choose the appropriate qualitative test for the analysis of carbohydrates, proteins, lipids, urea and uric acid in the given sample<br>CO 5 Illustrate the structure of human ear, eye and heart. |
| 19Z4CC10 | Microbiology | Global &National | This course deals with the study of microorganisms and its interaction with the environment. | CO 1 Examine the culturing methods and phenotypic identification of microbes<br>CO 2 Examine the taxonomical classification, reproduction and genetic recombination in bacteria<br>CO 3 Elaborate the morphologic properties and cultivation of viruses.<br>CO 4 Determine the role of microbes in the environment.<br>CO 5 Correlate the technology of fermentation with the microbial production industrial products |

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| 19Z4CC11 | Evolution | Global | The Course will provide a comprehensive knowledge on the history of evolutionary theories, evidences for evolution, origin of life, natural selection, speciation and human evolution | CO 1 Recognize the basic concepts of origin of life and evidences of evolution.<br>CO 2 Paraphrase the theories of evolution<br>CO 3 Examine the Modern synthetic theory and the factors causing variation.<br>CO 4 Organize the types and salient features of natural selection and mimicry.<br>CO 5 Interpret the concept of speciation and human evolution |
| 19Z4CC12 | Lab-Microbiology & Evolution | Local, National, Regional and Global | To gain skills in analyzing the clinical and environmental samples and to learn basic techniques | CO 1 Find the working Principle and Applications of instruments.<br>CO 2 Demonstrate the microbiological techniques and water quality analysis |

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| | | | in microbiology and evolution | CO 3 Identify the animals of evolutionary importance, adaptive coloration and in mimicry.<br>CO 4 Identify the morphological evidences and the horse and human evolution model.<br>CO 5 Analyze the Hardy – Weinberg equilibrium using beads. |
| 19Z4SB2 | Mushroom Cultivation | Local, National, Regional and Global | Develop basic knowledge in mushroom cultivation and spawn production | CO 1 State the prospects of mushroom cultivation<br>CO 2 Devise a plan for mushroom production unit<br>CO 3 Outline the techniques in cultivation, grading & processing of edible mushrooms<br>CO 4 Identify and manage Insect-Pests and diseases affecting mushrooms. |

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| 19Z4ACQ 3 | Developmental Botany & Plant Breeding | Local, National, Regional and Global | To study basic functioning of plant life. | CO1 Recall structure & functions of various plant tissue<br>CO2 Paraphrase the mechanism of transpiration, photosynthesis, respiration & plant growth regulators<br>CO3 Identify the structure &development Embryology of plant<br>CO4 Examine techniques in the crop improvement programmes<br>CO 5 Plan a home garden using horticultural techniques |
| 19Z4ACQ 4 | Lab-Developmental Botany & Plant Breeding | Local, National, Regional and Global | To study basic functioning of plant life. | CO1 Illustrate the anatomy of Monocot and dicot stem , root and leaf<br>CO2 Interpret experimental set ups in plant physiology |

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| 19C4ACZ 3 | Cell & Molecular Biology | National | This course is designed for the chemistry student which discusses the branch of Zoology that deals with Cell and Molecular Biology | CO 1 Outline the general structure and function of a prokaryotic and eukaryotic cell.<br>CO 2 Associate the structure and function of plasma membrane, mitochondria and endoplasmic reticulum<br>CO 3 Summarize the structure of chromosome<br>CO 4 Recall the structure and replication of DNA |

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| | | | | CO 5 Organize the events in translation, transcription and gene regulation in Prokaryotes |
| 19C4ACZ 4 | Lab- Cell & Molecular Biology | Local, National, Regional and Global | Students develop laboratory skills with identification of preserved specimen, manipulation of prepared slides, dissections and display under the microscope | CO 1 Identify the squamous epithelial cells<br>Under microscope<br>CO 2 Dissect and mount the Polytene Chromosomes in the Salivary gland of *Chironomus*larva.<br>CO 3 Interpret the mitotic stages from the squash preparation in Onion root tip<br>CO 4 Recognize the features of the given spotters: Stages of Meiosis, Cellular organelles – Mitochondria, Endoplasmic reticulum, Golgi complex, Nucleus<br>CO 5 Recall the structure and replication of DNA |

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| 19Z5CC13 | Fundamentals of Biochemistry | Global &National | To familiarize the students with the structure and role of biomolecules and the physiochemical processes of the living beings | CO 1 Describe the structural, properties, biological significance of carbohydrates, proteins and lipids.<br>CO 2 Classify lipids based on their complexity<br>CO 3 Classify amino acids and proteins based on their structure<br>CO 4 Construct the flow chart to highlight the metabolic pathways of carbohydrates, proteins and lipids.<br>CO5 List down the factors affecting the normal functions of the enzymes and biological functions of the vitamins. |
| 19Z5CC14 | Molecular Biology | Global &National | To understand the molecular processes of cells and the flow of | CO 1 Illustrate the Watson and Crick model of DNA double helix; mechanism of DNA replication and the role of enzymes |

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| | | | genetic information and to appreciate the regulatory mechanisms of gene expression by the complex interactions of biomolecules . | CO 2 Discuss the different types of DNA damages and repair mechanisms<br>CO 3 Describe the transcription and translation in prokaryotes and eukaryotes<br>CO 4 Discuss the post-transcriptional modifications, properties of genetic code and role of repressor in gene regulation<br>CO 5 Employ the appropriate separation technique based on the size, shape, and charge of biomolecules |
| 19Z5CC15 | Lab-Biochemical Analysis | Local, National, Regional and Global | This course introduces the students to the biochemical analytical experiments for Carbohydrat | CO 1 Make use of the knowledge of basic principles of Biochemistry to carry out the biochemical experiments<br>CO 2 Infer the outcome of the qualitative analytical tests of Biomolecules |

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| | | | es, Protein and Lipids by providing familiarization with the preparation of reagents, proper use of instrumentation and interpretation of the properties of the Biomolecules. | CO 3 Estimate the biomolecules using standard protocols<br>CO 4 Develop skills in handling basic equipments<br>CO 5 Develop familiarity with the principles of Laboratory safety |
| 19Z5CC16 | Lab-Molecular Biology | Local, National, Regional and Global | The course intends to provide hands on experience on techniques related to isolation and | CO 1 Estimate the pH of different samples<br>CO 2 Infer the color changes in DNA and RNA estimation<br>CO 3 Compute the Rf value for paper chromatography |

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| | | | estimation of DNA & RNA | CO 4 Demonstrate the genomic DNA isolation, DNA estimation and chromatography<br>CO 5 Solve the presence of nucleic acid in the given sample |
| 19Z5ME1 | Biostatistics | Global &National | To study the statistical significance data and analysis of the Biological aspects in life | CO 1 Outline the importance of data collection and its types.<br>CO 2 Estimate and interpret the data, by various measures including mean, median, and standard deviation.<br>CO 3 Apply the basic numeric and graphical techniques to display and summarize the collected data.<br>CO 4 Interpret statistical results effectively in context to Correlation and Regression.<br>CO 5 Choose and apply appropriate statistical methods for analyzing one or two variables. |

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| 19Z5ME2 | Animal Behaviour | Local, National, Regional and Global | Students gain knowledge on learning, behaviour and biorhythm in animal. | CO 1 Outline the scope and history of Ethology<br>CO 2 Explain the types of learning<br>CO 3 Summarize the methods adopted by the animals in mate selection.<br>CO 4 Discuss the various parameters controlling the behaviour in context to nerve and hormone<br>CO 5 Recall the types and features of biological rhythm |
| 19Z5SB3 | Ornamental Fish Culture | Local, National, Regional and Global | To enable the students to be familiarized with ornamental fishes and to motivate them to become | CO 1 List the types of aquarium.<br>CO 2 Plan the use of common aquarium ornamental fish and aquatic plants to decorate it.<br>CO 3 Outline the physico – chemical parameters of water required for the growth of fish. |

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| | | | entrepreneur | CO 4 Explain the techniques followed in ornamental fish breeding.<br>CO 5 Identify the symptoms of various diseases prevalent in ornamental fish. |
| 19Z5SB4 | Sericulture | Local, National, Regional and Global | To motivate young minds to become an entrepreneur for practicing sericulture as cottage industry. | CO 1 List the importance of sericulture as cottage industry and the support provided by Central Silk Board.<br>CO 2 Explain the different methods of vegetative propagation followed in mulberry cultivation.<br>CO 3 Outline the life cycle of mulberry silkworm and the methods of rearing.<br>CO 4 Organize the steps involved in processing of silk and its marketing.<br>CO 5 Find various diseases that affect silkworm and cocoon formation |

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| 19Z6CC17 | Basic Immunology | Global &National | To understand the immune system and immune response involved in human body. To help students develop the skills necessary for the critical analysis of contemporary on topics related to health and disease. | CO 1 Outline the types of immunity, immunization and origin of immune cells<br>CO 2 Explain the structure and properties of antigen and antibody<br>CO 3 Identify the antigen and antibody interactions and the steps involved in the immunological techniques<br>CO 4 Illustrate the types and mechanism of immune response and events in hybridoma technology<br>CO 5 Describe the types of hypersensitivity reactions and autoimmune diseases |
| 19Z6CC18 | Principles of Biotechnology | Global &National | To familiarize the use of the techniques | CO 1 Identify the principles and applications of Biotechnology biosafety guidelines and IPR for the benefit of mankind |

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| | | | of engineering and technology in Biology for the study of living organisms, to modify products or processes for specific use. Also, to find solution of problems concerning human activities including agriculture, medical treatment, industry an d environment | CO 2 Discuss the tools and Techniques to manipulate DNA using rDNA technology for the development of transgenic plants, animals, and microbes or products for specific use<br>CO 3 Describe basic techniques in animal cell culture and the application of stem cell production.<br>CO 4 Summarize the biotechnology products and applications in the healthcare products, medicine, agriculture<br>CO 5 Analyse the appropriate technology and application of biotechnology in industry and environmental sectors to increase SCP production and sewage management. |

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| 19Z6CC19 | Lab-Immunology | Local, National, Regional and Global | The overall objective of this course is to provide the undergraduate students of Zoology an experience of exploring immunological principles through experimentation and to introduce the procedures, basic techniques and instruments used in the clinical | CO 1 Relate the knowledge of basic principles of immunology to carry out the related experiments<br>CO 2 Acquire skills in handling basic equipments<br>CO 3 Infer the outcome of the experiments of Immunology<br>CO 4 Relate the biochemical properties of Glucose, Albumin & Ketone bodies while performing the qualitative analytical tests for their detection in urine sample<br>CO 5 Develop familiarity with the principles of Laboratory safety |

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| | | | laboratories. | |
| 19Z6CC20 | Lab-Biotechnology | Local, National, Regional and Global | Students gain hands-on experience and learn the theoretical basis of lab techniques common to a variety of biological disciplines such as biotechnology, Bioinformatics and Entomology experiments. | CO 1 Acquire skills in handling basic equipments<br>CO 2 Identify the insects<br>CO 3 Estimate the various biomolecules using standard protocols<br>CO 4 Identify and comment on the spotters Agarose gel electrophoresis, SDS-PAGE, pBR322, Spirulina and Insulin and Bioinformatics tools<br>CO 5 Examine the features in mouth parts of Cockroach & Honey bee, Pests of Agricultural Importance – Rice Weevil, Rhinoceros Beetle |
| 19Z6ME3 | Embryology | Global &National | This course imparts knowledge on the | CO 1 Recall the basic concepts of developmental biology. |

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| | | | development al process of egg to the formation of organism. | CO 2 Tell how fertilization, cleavage and gastrulating occur.<br>CO 3 Compare the basic concepts of organogenesis in different organisms.<br>CO 4 Relate the development of egg into a foetus, then into adult, among Vertebrates.<br>CO 5 Associate the embryo development with Phylogeny. |
| 19Z6ME4 | Clinical Laboratory Technique | Local, National, Regional and Global | Job oriented course provides current knowledge and upgraded skills in clinical laboratory techniques on the | CO 1 List the different sterilization methods followed in clinical laboratory.<br>CO 2 Explain the collection method and techniques used in laboratory for urine analysis.<br>CO 3 Outline the method of blood collection and related analysis. |

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| | | | methods of testing the clinical samples | CO 4 Find the way to process clinical specimens safely according to established procedures.<br>CO 5 Utilize the knowledge of karyotyping in detection of congenital malformations. |
| 19Z6ME5 | Bioinformatics | Global &National | To enable the students to appreciate the significance of computational programs in the development and analysis of biological database | CO 1 Enumerate the applications of bioinformatics, web browsers and search engines and biological databases<br>CO 2 Describe the flat file of UniProtKB, secondary and tertiary structure prediction<br>CO 3 Employ the appropriate substitution matrices and global and local alignment and BLAST<br>CO 4 Summarize the methods of multiple sequence alignment and phylogenetic tree |

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| 19Z6ME6 | Entomology | Local, National, Regional and Global | To learn about the classification , biology and control of insects and to appreciate the importance of insects | CO 1 List the different methods of insect collection.<br>CO 2 Find the morphological modifications of insects with different functions.<br>CO 3 Summarize the beneficial aspects of insects.Lect<br>CO 4 Explain the harmful effects of insects.<br>CO 5 Identify the agricultural pests and the economic damage caused. |
| 19Z6SB5 | Apiculture | Local, National, Regional and Global | To enable the students to be familiarized with Bee keeping techniques and to | CO 1 Explain the scope of apiculture in India<br>CO 2 Recall the structure of honey bee<br>CO 3 List the equipments used in bee keeping |

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| | | | motivate them to become entrepreneur | CO 4 Explain the extraction, Preservation and storage of honey<br>CO 5 Outline the types of bee diseases |
| 19Z6SB6 | Dairy Farming | Local, National, Regional and Global | To enable the students to be familiarized with management of high yielding cow species, preparation of value-added products using milk and to motivate them to become an entrepreneur | CO 1 Identify the features of various indigenous and exotic breeds of dairy cattles.<br>CO 2 Discuss the management of new born calf, Heifer and milk cow.<br>CO 3 Summarize the significance of Pasteurization in the preservation of the nutritive value of milk.<br>CO 4 Develop an idea regarding the formulation of value added dairy products.<br>CO 5 Describe the clinical findings, treatment and control measures of livestock diseases. |