ISLAMIAH WOMEN'S ARTS AND SCIENCE COLLEGE
Permanently Affiliated to Thiruvalluvar University
Recognized by UGC under sections 2(f) and 12(B) of the UGC Act 1956
Accredited with "B" Grade by NAAC
Approved by the Government of Tamil Nadu
Phone:04174-235266 Email: principaliwc@gmail.com
www.islamiahwomensartsandsciencecollege.com

DEPARTMENT OF ZOOLOGY

PSOs and Cos

REGULATION 2020-2021

PROGRAM SPECIFIC OUTCOME (PSOs)

PSO1. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology

PSO2. Analyse the relationships among animals, plants and microbes

PSO3. Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology

PSO4. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine

PSO5. Gains knowledge about research methodologies, effective communication and skills of problem solving methods

PSO6. Contributes the knowledge for Nation building.

PSO7. The students will have the knowledge to minimize the environmental issues like global warming, pollution, degradation of natural resources, and helps in conservation endangered species, afforestation etc.

PSO8. The students will able to apply their knowledge of biological sciences in various disciplines like vermiculture, mushroom culture, aquaculture, apiculture, agriculture and medicine. And contribute the knowledge for Nations development.

COURSE OUTCOMES

SEMESTER I

COURSE: INVERTEBRATES **Credit 4**

CO1 Describe general taxonomic rules on animal classification

CO2 Classify Protista up to phylum using examples from parasitic adaptation

CO3 Classify Phylum Porifera to Echinodermata with taxonomic keys

CO4 Imparts knowledge regarding the various Invertebrates species and the regulatory processes.

COURSE: ENVIRONMENTAL STUDIES **Credit 2**

CO1: Imparts knowledge to the student regarding environment and conservation biology.

CO2: Gains knowledge in the areas of responses to Laws of limiting factor, Laws of minimum, Laws of Tolerance and Tragedy of commons

CO3: Types of ecosystem – freshwater, marine and terrestrial,

CO4: Population characteristics and dynamics – conceptual approach

COURSE: PROFESSIONAL ENGLISH FOR LIFE SCIENCE **Credit 3**

CO 1: Students will be enabled to understand the basic objective of the course by being acquainted with specific dimensions of communication skills i.e. Reading, Writing, Listening, Thinking and Speaking.

CO 2: Students would be able to create substantial base by the formation of strong professional vocabulary for its application at different platforms and through numerous modes as Comprehension, reading, writing and speaking etc.

CO 3: Students will apply it at their work place for writing purposes such as Presentation/official drafting/administrative communication and use it for document/project/report/research paper writing.

CO 4: Students will be made to evaluate the correct & error-free writing by being well-versed in rules of English grammar & cultivate relevant technical style of communication & presentation at their work place & also for academic uses

SEMESTER II

COURSE: VERTEBRATES **Credit 4**

CO1: Imparts conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment

CO2: Classify phylum Protochordates to Mammalia

CO3: Gains knowledge of functional anatomy of vertebrates from Fishes to Mammals.

CO4: Students will be able to list out the unique characters of Fishes. Amphibians, Reptiles, Aves and Mammals

COURSE: VALUE EDUCATION **Credit 2**

CO 1: Students will understand the importance of value based living.

CO 2: Students will gain deeper understanding about the purpose of their life.

CO 3: Students will understand and start applying the essential steps to become good leaders.

CO 4: Students will become value based professionals.

COURSE: PROFESSIONAL ENGLISH FOR LIFE SCIENCE **Credit 3**

CO1: Attend interviews with boldness and confidence.

CO2: Adapt easily into the workplace context, having become Communicatively competent.

CO3: Apply to the Research & Development organisations/ sections in Companies and offices with winning proposals.

SEMESTER III

COURSE:CELL AND MOLECULAR BIOLOGY **Credit 4**

CO 1: Acquire knowledge about the history basic techniques in cytology and molecular biology.

CO 2: Get an in depth knowledge about the cell structure.

CO 3: Learn about the cell organelles and their functions.

CO 4: Understand the cell cycle and learn about cancer biology.

CO 5: Learn about the nucleic acid and protein synthesis.

COURSE: ALLIED BOTANY **Credit 3**

CO 1. To knowledge of cell and cell organelles

CO 2. To know classification and structure of tissues

CO 3. To understand characters and reproduction of bacteria and viruses

CO 4. To acquire knowledge of algae and fungi

CO 5. To study the structure and life cycle of some bryophytes, pteridophytes and gymnosperms.

COURSE: VERMICULTURE **Credit 2**

CO 1: Learn about the characteristics and biology of earthworm.

CO 2: Get an in depth knowledge about the culture techniques.

CO 3: Understand about the methods of composting.

CO 4: Learn the factors for proper maintenance of the vermicomposting beds.

CO 5: Learn about the application and marketing of the compost.

COURSE: FOOD AND NUTRITION **Credit 2**

CO1: Realizing the fact that "Food as medicine", Classify carbohydrates and analyze their sources and functions in the body

CO2: Classify fats and analyze their sources and functions in the body

CO3: Identify and explain proteins in foods and the specific functions in maintaining health.

CO4: Identify the types of vitamins and their biomedical significance of vitamins present in food

CO5: Analyzing the biological importance of major and minor trace elements (Minerals) in the food.

SEMESTER IV

GENETICS AND BIOTECHNOLOGY **Credit 4**

CO1: The student will be able to study effectively, and enable to understand the difference between dominance and epistasis, to enable the students understand types of blood groups in humans.

CO2: The student will be able to describe gene linkage and explain the genetic anomalies caused by changes in chromosome number and structure. To understand the fine structure of

genes and gene regulations.

CO3: The student will be able explain DNA mutation and repair mechanisms and different kinds of mutagens and kinds of mutagens. To understand the animal breeding techniques, population structure and genetic polymorphisms.

CO4: The student will be able to determine the applicability of difference kinds of cloning vectors, techniques of genetic engineering, illustrating the use of genomic libraries in gene detection and characterization.

CO5: The student will be able to analyse the function of applied genetic research in technology, nature and society, understanding the applications of rDNA technology, and identifying the ethical issues related to gene manipulation.

COURSE: ALLIED BOTANY **Credit 3**

CO1: To familiarize range of characters and economic importance of some families.

CO2: To know structure of mature anther and types of ovules

CO3: To understand physiology mechanisms of plant.

CO4: To acquire knowledge of ecosystem and environmental pollution

CO5: To study the Mendel's test of monohybrid and dihybrid, evolutionary theories

COURSE: APICULTURE **Credit 2**

CO1: The students will be able to understand the Basics of beekeeping

CO2: The students will be able to understand the role of Bee hive

CO3: The students will be able to understand the Bee enemies, diseases, pesticide poisoning

CO4: The students will be able to understand the Products of bee keeping

CO5: The students will be able to understand the Economics and Marketing

COURSE: LIFESTYLE DISEASES & PREVENTION **Credit 2**

CO1: Define a Balanced Diet. Understand the importance of vitamins and minerals

CO2: Identify Lifestyle Prone Disorders

CO3: Manage physiological and psychological disorders

CO4: Categorize Communicable and Non-Communicable Disease

SEMESTER V

COURSE: BIOSTATISTICS AND BIOINFORMATICS **Credit 6**

CO1: To Define Biostatistics and list out the Scopes of Biostatistics

CO2: To determine the value of mean, the median, the mode of grouped data, identifying the relationship among the three measures of central tendency for systematical and skewed distributions, advantages and disadvantages of the three measures.

CO3: They could be able to do File Operations New, Save & Print - Editing: Cut, copy, Paste, Find and Replace Insert: Page numbers and Pictures - Format: Font, Bullet & Numbering etc.

CO4: To get introduced to the basic concepts of Bioinformatics

CO5: They could able to outline the application areas for multiple sequence Pair wise sequence Alignment

COURSE: DEVELOPMENTAL BIOLOGY & IMMUNOLOGY Credit 6

CO1: The student will be able to study ontogenesis, the development of animals including parthenogenesis.

CO2: The student will be able to study embryonic adaptations, human reproduction and reproductive technology in man.

CO3: The student will be able to study the process of immune response and mechanism.

CO4: The student will be able to understand the advances in Immunology.

CO5: The student will be able to understand the role of development in defining biological process.

COURSE: ANIMAL PHYSIOLOGY Core Paper – 7 Credit 5

CO1: The student will be able to understand macromolecules of food and their importance, understand the digestion and metabolism.

CO2: The student will be able to understand important and mechanism-respiration,

CO3: The student will be able to understand Excretion and Osmoionoregulation

CO4: To acquire the knowledge about nervous system muscles and muscle contraction

CO5**:** The student to acquire the knowledge about Receptors Endocrine system and disorders,

INTERNAL ELECTIVE

COURSE: NANOTECHNOLOGY IN LIFE SCIENCE Credit 3

CO 1: Understand the basics of nanotechnology.

CO 2: Get knowledge about the levels and devices in nanotechnology.

CO 3: Acquire knowledge about Nano techniques at molecular level.

CO 4: Learn the evaluation of nanomaterial.

CO 5: Learn about the application of nanomaterial in various fields.

SKILL BASED SUBJECT

COURSE: ANIMAL BEHAVIOUR Credit 2

CO1: Student should be capable of understanding and identify behaviour in a variety of taxa.

CO2: Competently discuss the evolutionary origins of various behaviours.

CO3: Designing and implementing experiment to test hypothesis relating to animal behaviour.

CO4: To demonstrate knowledge of key concepts in animal behaviour.

CO5: To exhibit quantitative research skills.

SEMESTER VI

COURSE: ENVIRONMENTAL BIOLOGY Core paper – 8 Credit 5

CO1: The student will be able to understand Scope, concept, Branches in ecology and Environmental factors (soil, light, temperature, water and air).

CO2: The student will be able to understand fundamental units of ecosystem, Tropic levels of ecosystem and Food chain.

CO3: The student will be able to understand Bio geochemical cycles and importance of inter relationship between every organism and environment

CO4: To acquire the knowledge about population and community ecology, ecological succession, aims of wild life conservation and Natural resources.

CO5: The student will acquire the knowledge environmental hazards, Environmental ethics and laws.

COURSE: ECONOMIC ZOOLOGY Core paper – 9 Credit 5

CO1: Understanding the role of worm farming in modern farming, potential of vermicompost, maintaining health of the soil, economic importance of Vermiculture and role of Vermiculture in protecting the environment.

CO2: They could able to understand Techniques of induced breeding, Commercial culture of catla & cat fish

CO3: They could understand about area of poultry production including nutrition, health welfare and product quality

CO4: To provide basic input to students about production, planning and management of dairy farms Milch breeds. Draught breeds, Dual purpose breeds and New Cross breeds of Cows and Buffaloes in India.

CO5: The students could able to learn the Future strategies for Livestock Development

INTERNAL ELECTIVE

COURSE: EVOLUTION **Credit 3**

CO1: The students will understand the basic concepts of evolution

CO2: The students will understand various theories of evolution

CO3: The students will have a comprehensive knowledge regarding various Sources of Variations and their role in evolution

CO4: The student will have an adequate knowledge about Micro- evolutionary changes. Speciation and Adaptive Radiation.

CO5: The students will have a descriptive knowledge regarding Origin and Evolution of Man.

INTERNAL ELECTIVE

COURSE: BIOCHEMISTRY **Credit 3**

CO1: To learn and understands the various properties of water

CO2: To understand the bioenergetics

CO3: To know about classification, metabolism and biological significance of carbohydrate, protein and lipids

CO4: To learn properties, classification, nomenclature and action of enzymes

CO5: To learn biochemistry of antibiotics

CO6: To learn about principles and application of instruments

SKILL BASED SUBJECT

COURSE: MEDICAL LABORATORY TECHNOLOGY **Credit 2**

CO1: The student will be able to understand the sterilization techniques.

CO2: The student will be able to apply and analyse the haematalogical parameters.

CO3: The student will be able to diagnose different diseases.

CO4: The student will be able to analyse the physical examination of urine and faeces.

CO5: The student will be able to get a thorough knowledge about cerebro-spinal fluid.

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DEPARTMENT OF ZOOLOGY

REGULATION 2022-2023

PROGRAM SPECIFIC OUTCOME (PSOs)

PSO1: Students enrolled in B.Sc. degree program in Zoology will study and acquire complete knowledge of disciplinary as well as allied biological sciences.

PSO2: At the end of graduation, they are likely to possess expertise, which will provide them competitive advantage in pursuing higher studies from India or abroad; and seek jobs in academia, research or industries.

PSO3: Students will be able to define and explain major concepts in the biological sciences.

PSO4: They are able to correctly use biological instrumentation and proper laboratory techniques. Students will be able to communicate biological knowledge in oral and written form.

PSO5: Students will be able to identify the relationship or synchronization between structure and function at all levels: molecular, cellular, and organismal. Students should be able to identify, classify and differentiate diverse chordates and nonchordates based on their morphological, anatomical and systemic organization.

PSO6: They will also be able to describe economic, ecological and medical significance of various animals in human life.

PSO7: This will create a curiosity and awareness among them to explore the animal diversity and take up wild life photography or wild life exploration as a career option.

PSO8: Students undertaking skill enhancement courses like aquaculture, sericulture and apiculture will inculcate skills involved in rearing fish, bees and silk moth which would help them in starting their own ventures and generating self-employment making them successful entrepreneurs

PSO9: Acquire skills in diagnostic testing, haematology, histopathology, staining procedures etc. used in clinical and research laboratories will provide them opportunity to work in diagnostic or research laboratory.

PSO10: Candidates find opportunities in government departments, environmental agencies,

universities, colleges, biotechnological, pharmaceutical, environmental/ecological fields.

PSO11: There are numerous career opportunities for candidates completing their B.Sc., M.Sc. and Ph.D. in Zoology in public and private sector. Candidates may find jobs as Animal Behaviourist, Conservationist, Wildlife Biologist, Zoo Curator, and Wildlife Educator.

SEMESTER I

COURSE: INVERTEBRATA **Credit 4**

CO1: Students will be able to summarise the general characters, classify the animals of the phylum Protozoa. Understand and illustrates life history of Protozoans parasites.

CO2: Students will be able to summarise the general characters, classify the animals of the phylum Porifera and Coelenterata. Understands and illustrates life history of Sycon and Obelia. Narrates Polymorphism in Coelenterata.

CO3: Students will be able to summarise the general characters, Classify the animals of the phylum Helminthes and Annelida. Understands and illustrates parasitic adaptations and life history of Taenia solium - able to explains all the systems in Neries.

CO4: Students will be able to summarise the general characters,classify the animals of the phylum Arthropoda. Narrates all the systems of Prawn. Illustrate the affinities of Peripatus.

CO5: Students will be able to summarise the general characters, classify the animals of the phylum Mollusca and Echinodermata. Understands and illustrates life history of Freshwater mussel and Sea star. Illustrate the larval forms of Echinodermata and their significance.

ALLIED CHEMISTRY **Credit 3**

CO1: Students will be able to gain knowledge about Foundational understanding of metallurgical principles, including the extraction of metals from minerals and ores.

CO2: Student will able to be Proficiency in organic chemistry concepts, including the preparation of cycloalkanes

CO3: Student will able to analyse the Comprehension of Chemical Kinetics and Catalysis

CO4: Student will able to understand the Application of Molecular Structure and Fuels Knowledge.

CO5: Students will able to understand the Nuclear Chemistry and Petroleum

CO6: Students will able to Familiar with Semiconductor Materials.

COURSE: ENVIRONMENTAL STUDIES **Credit 2** CO1:

Imparts knowledge to the student regarding environment and conservation biology.

CO2: Gains knowledge in the areas of responses to Laws of limiting factor, Laws of minimum, Laws of Tolerance and Tragedy of commons

CO3: Types of ecosystem – freshwater, marine and terrestrial,

CO4: Population characteristics and dynamics – conceptual approach

COURSE: PROFESSIONAL ENGLISH FOR LIFE SCIENCE **Credit 3**

CO 1: Students will be enabled to understand the basic objective of the course by being acquainted with specific dimensions of communication skills i.e. Reading, Writing, Listening, Thinking and Speaking.

CO 2: Students would be able to create substantial base by the formation of strong professional vocabulary for its application at different platforms and through numerous modes as Comprehension, reading, writing and speaking etc.

CO 3: Students will apply it at their work place for writing purposes such as Presentation/official drafting/administrative communication and use it for document/project/report/research paper writing.

CO 4: Students will be made to evaluate the correct & error-free writing by being well-versed in rules of English grammar & cultivate relevant technical style of communication & presentation at their work place & also for academic uses.

SEMESTER II

COURSE: CHORDATA **Credit:4**

CO1: Student will be able to facilitate the students to understand basics of Phylum Chordata uptoorders.

CO2: Student will be able to learn the General characters and classification of Pisces up to orders

CO3: Student will be able to make the students Familiar with General Characters and classification up to order level

CO4: Student will be able learn the General characters and classification of Aves up to orders.

CO5: Student will be able to make the students Familiar with General Characters and classification of Mammals up to order level.

CORE PRACTICAL I: INVERTEBRATA AND CHORDATA Credit: 2

CO1: Student will be able to dessect and display various systems of invertebrates an chordates

CO2: Student will be able to mount the mouth parts, appendages of prawn, boy setae of earthworm an placoid scales of shark.

CO3: Student will be able to understand the adaptations of animals to their respective modes of life

CO4: Student will be able to understand the biological significance of animals

CO5: Student will be able to understand theoesteology.

ALLIED CHEMISTRY Credit 3

CO1: Students will able to understand the nomenclature of coordination compounds and identify ligands, central metal ions, and complex ions.

CO2: Students will able to analyse the preparation, properties, and uses of cellulose derivatives, amino acids, and proteins in industries such as leather tanning and textile manufacturing.

CO3: Students will able to understand the concept of pH, pH determination methods, and the importance of buffer solutions in living systems.

CO4: Students will able to identify the components of paints and classify pigments and dyes based on their colour and constitution.

CO5: Students will able to understand the principles of electrochemical corrosion, its prevention methods, and applications of electroplating in various industries.

COURSE: VALUE EDUCATION Credit 2

CO 1 Students will understand the importance of value based living.

CO 2 Students will gain deeper understanding about the purpose of their life.

CO 3 Students will understand and start applying the essential steps to become good leaders.

CO 4 Students will become value based professionals.

COURSE: PROFESSIONAL ENGLISH FOR LIFE SCIENCE Credit 3

CO1: Attend interviews with boldness and confidence.

CO2: Adapt easily into the workplace context, having become communicatively competent.

CO3: Apply to the Research & Development organizations/ sections in Companies and offices with winning proposals.

PRACTICAL

COURSE: CORE PRACTICAL - I **Credit: 2**

CO1. The student will be able to dessect and display various systems of invertebrates an chordates

CO2.The student will be able to mount the mouth parts, appendages of prawn,boy setae of earthworm an placoid scales of shark.

CO 3. The student will be able to understand the adaptations of animals to their respective modes of life

CO4. The student will be able to understand the biological significance of animals

CO5.The student will be able to understand theoesteology

SEMESTER III

COURSE: CELL AND MOLECULAR BIOLOGY **Credit :4**

CO 1: the student will be able to understand the Principles of microscopes ,Cytological techniques and to describe theCell theory, Ultra structure of animal cell .

CO2: the student will be able to recognize the properties of cytoplasm ,cell cycle , cell division, Ultra structure andfunctions cell organelles.

CO3: After studied unit-3, the student will be able to get knowledge on biochemical and cell culture techniques

COE: the student will be able to understand the structure and function of chromosomes,giant chromosomes, DNA andtypes of RNA.

CO5: the student will be able to describe the mechanism of DNA replication and Protein synthesis.

COURSE: ALLIED BOTANY **Credit 3**

CO 1. To knowledge of cell and cell organelles

CO 2. To know classification and structure of tissues

CO 3. To understand characters and reproduction of bacteria and viruses

CO 4. To acquire knowledge of algae and fungi

CO 5. To study the structure and life cycle of some bryophytes, pteridophytes and gymnosperms.

COURSE: FOOD AND NUTRITION **Credit 2**

CO1: Realizing the fact that "Food as medicine", Classify carbohydrates and analyze their sources and functions in the body

CO2: Classify fats and analyze their sources and functions in the body

CO3: Identify and explain proteins in foods and the specific functions in maintaining health.

CO4: Identify the types of vitamins and their biomedical significance of vitamins present in food

CO5: Analyzing the biological importance of major and minor trace elements (Minerals) in the food.

COURSE: VERMICULTURE **Credit :2**

CO 1: The Student Will Be Able To Learn About The Characteristics And Biology Of Earthworm.

CO2. After Studied Unit-2, The Student Will Be Able To Get An In Depth Knowledge About The Culture Techniques.

CO3: The Student Will Be Able To Understand About The Methods Of Composting.

CO4: The Student Will Be Able To Learn The Factors For Proper Maintenance Of The Vermicomposting Beds.

CO5: The student will be able to Learn about the application and marketing of the compost.

SEMESTER IV

GENETICS AND BIOTECHNOLOGY **Credit 4**

CO1: The student will be able to study effectively, and enable to understand the difference between dominance and epistasis, to enable the students understand types of blood groups in humans.

CO2: The student will be able to describe gene linkage and explain the genetic anomalies caused by changes in chromosome number and structure. To understand the fine structure of genes and gene regulations.

CO3: The student will be able explain DNA mutation and repair mechanisms and different kinds of mutagens and kinds of mutagens. To understand the animal breeding techniques, population structure and genetic polymorphisms.

CO4: The student will be able to determine the applicability of difference kinds of cloning vectors, techniques of genetic engineering, illustrating the use of genomic libraries in gene detection and characterization.

CO5: The student will be able to analyse the function of applied genetic research in technology, nature and society, understanding the applications of rDNA technology, and identifying the ethical issues related to gene manipulation.

COURSE: ALLIED BOTANY

Credit 3

CO1: To familiarize range of characters and economic importance of some families.

CO2: To know structure of mature anther and types of ovules

CO3: To understand physiology mechanisms of plant.

CO4: To acquire knowledge of ecosystem and environmental pollution

CO5: To study the Mendel's test of monohybrid and dihybrid, evolutionary theories

COURSE: LIFESTYLE DISEASES & PREVENTION **Credit 2**

CO1: Define a Balanced Diet. Understand the importance of vitamins and minerals

CO2: Identify Lifestyle Prone Disorders

CO3: Manage physiological and psychological disorders

CO4: Categorize Communicable and Non-Communicable Disease

PRACTICAL

COURSE: CORE PRACTICAL - II **Credit: 3**

CO1. The student will be able to do cytometrical analysis

CO2. The student will be able to perform blood smear prepapration

CO3.The student will be able to study the histological slides

CO4.The student will be able to do Genetics experiments

CO5.The student will be able to understand the biotechnological techniques

SEMESTER V

COURSE: BIOSTATISTICS AND BIOINFORMATICS **Credit 6**

CO1: To Define Biostatistics and list out the Scopes of Biostatistics

CO2: To determine the value of mean, the median, the mode of grouped data, identifying the relationship among the three measures of central tendency for systematical and skewed distributions, advantages and disadvantages of the three measures.

CO3: They could be able to do File Operations New, Save & Print - Editing: Cut, copy, Paste, Find and Replace Insert: Page numbers and Pictures - Format: Font, Bullet & Numbering etc.

CO4: To get introduced to the basic concepts of Bioinformatics

CO5: They could able to outline the application areas for multiple sequence Pair wise sequence Alignment

COURSE: DEVELOPMENTAL BIOLOGY & IMMUNOLOGY Credit 6

CO1: The student will be able to study ontogenesis, the development of animals including parthenogenesis.

CO2: The student will be able to study embryonic adaptations, human reproduction and reproductive technology in man.

CO3: The student will be able to study the process of immune response and mechanism.

CO4: The student will be able to understand the advances in Immunology.

CO5: The student will be able to understand the role of development in defining biological process.

COURSE: ANIMAL PHYSIOLOGY Credit 5

CO1: The student will be able to understand macromolecules of food and their importance, understand the digestion and metabolism.

CO2: The student will be able to understand important and mechanism-respiration,

CO3: The student will be able to understand Excretion and Osmoionoregulation

CO4: To acquire the knowledge about nervous system muscles and muscle contraction

CO5**:** The student to acquire the knowledge about Receptors Endocrine system and disorders,

INTERNAL ELECTIVE

COURSE: NANOTECHNOLOGY IN LIFE SCIENCE Credit 3

CO 1: Understand the basics of nanotechnology.

CO 2: Get knowledge about the levels and devices in nanotechnology.

CO 3: Acquire knowledge about Nano techniques at molecular level.

CO 4: Learn the evaluation of nanomaterial.

CO 5: Learn about the application of nanomaterial in various fields.

SKILL BASED SUBJECT

COURSE: ANIMAL BEHAVIOUR **Credit 2**

CO1: Student should be capable of understanding and identify behaviour in a variety of taxa.

CO2: Competently discuss the evolutionary origins of various behaviours.

CO3: Designing and implementing experiment to test hypothesis relating to animal behaviour.

CO4: To demonstrate knowledge of key concepts in animal behaviour.

CO5: To exhibit quantitative research skills.

SEMESTER VI

COURSE: ENVIRONMENTAL BIOLOGY **Credit 5**

CO1: The student will be able to understand Scope, concept, Branches in ecology and Environmental factors (soil, light, temperature, water and air).

CO2: The student will be able to understand fundamental units of ecosystem, Tropic levels of ecosystem and Food chain.

CO3: The student will be able to understand Bio geochemical cycles and importance of inter relationship between every organism and environment

CO4: To acquire the knowledge about population and community ecology, ecological succession, aims of wild life conservation and Natural resources.

CO5: The student will acquire the knowledge environmental hazards, Environmental ethics and laws.

COURSE: ECONOMIC ZOOLOGY **Credit 5**

CO1: Understanding the role of worm farming in modern farming,potential of vermicompost,maintaining health of the soil,economic importance of Vermiculture and role of Vermiculture in protecting the environment.

CO2: They could able to understand Techniques of induced breeding,Commercial culture of catla & cat fish

CO3: They could understand about area of poultry production including nutrition,health welfare and product quality

CO4: To provide basic input to students about production, planning and management of diary farms Milch breeds. Draught breeds, Dual purpose breeds and New Cross breeds of Cows and Buffaloes in India.

CO5: The students could able to learn the Future strategies for Livestock Development.

INTERNAL ELECTIVE

COURSE: EVOLUTION **Credit 3**

CO1: The students will understand the basic concepts of evolution

CO2: The students will understand various theories of evolution

CO3: The students will have a comprehensive knowledge regarding various Sources of Variations and their role in evolution

CO4: The student will have an adequate knowledge about Micro- evolutionary changes. Speciation and Adaptive Radiation.

CO5: The students will have a descriptive knowledge regarding Origin and Evolution of Man.

INTERNAL ELECTIVE

COURSE: BIOCHEMISTRY **Credit 3**

CO1: To learn and understands the various properties of water

CO2: To understand the bioenergetics

CO3: To know about classification, metabolism and biological significance of carbohydrate, protein and lipids

CO4: To learn properties, classification, nomenclature and action of enzymes

CO5: To learn biochemistry of antibiotics

CO6: To learn about principles and application of instruments

SKILL BASED SUBJECT

COURSE: MEDICAL LABORATORY TECHNOLOGY **Credit 2**

CO1: The student will be able to understand the sterilization techniques.

CO2: The student will be able to apply and analyse the haematalogical parameters.

CO3: The student will be able to diagnose different diseases.

CO4: The student will be able to analyse the physical examination of urine and faeces.

CO5: The student will be able to get a thorough knowledge about cerebro-spinal fluid.

PRACTICAL

COURSE: CORE PRACTICAL - III **Credit: 3**

CO1. After studied unit-1, the student will be able to solve biostatistic problems.

CO2. The student will be able to understand experimental physiology

CO3.The student will be able to understand experimental Developmental biology

CO4.The student will be able to understand Immunological techniques

CO5. After studied unit-5, the student will be able to record the experimental findings.

COURSE: CORE PRACTICAL - IV **Credit: 3**

CO1. The student will be able to perform ecological experiments

CO2. The student will be able to identify the parasites of fish and cultivable earthworms

CO 3.The student will be able to identify the larvivorous fish and pest

CO 4.The student will be able to identify the fossils of evolutionary importance

CO5. The student will be able to Record their findings

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DEPARTMENT OF ZOOLOGY

2023-2024

PROGRAM OUTCOMES:

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 nonfamiliar 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. 4 PO 11 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 toembrace 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 demonstratingthe 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.

PROGRAM SPECIFIC OUTCOMES:

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.

PSO 2 - 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.

PSO 5 – Contribution to the Society: To contribute to the development of the society by collaborating with stakeholders for mutual benefit

SEMESTER I

COURSE: INVERTEBRATA I Credits: 4

CO1: Understand the basic concepts of invertebrate animals and recall its structure and functions.

CO2: Illustrate and examine the systemic and functional morphology of various groups of invertebrata.

CO3: Differentiate and classify the animal‟s mode of life in various taxa and estimate the biodiversity.

CO4: To compare and distinguish the various physiological processes and organ systems in lower animals.

CO5: Infer and integrate the parasitic and economic importance of invertebrate animals.

COURSE: INVERTEBRATA II Credits: 4

CO1: Classify, Identify and recall the name and distinct features of invertebrate groups.

CO2: Explain, and relate the origin, structural organization and evolutionary aspects of

invertebrates.

CO3: Analyze, compare and distinguish the developmental stages and describe the important biological process.

CO4: Correlate the interaction of invertebrates with humans and critique its economic importance.

CO5: Summarize the physiology, ecological adaptations to stimulate and integrate the significance of invertebrates to the environment, humans, and agriculture.

COURSE: FOUNDATION COURSE Credits: 2

CO1: Be able to understand the distinct features of invertebrate and chordate life forms.

CO2: Will understand the role of cell and their organelles.

CO3: Students will understand the basis of genetics .

CO4: Be aware on the different fields of microbiology

COURSE: INVERTEBRATA LAB COURSE Credits: 3

CO1: Identify and label the external features of different groups of invertebrate animals.

CO2: Illustrate and examine the circulatory system, nervous system and reproductive system of invertebrate animals.

CO3: Differentiate and compare the structure, function and mode of life of various groups of animals.

CO4: To compare and distinguish the dissected internal organs of lower animals.

CO5 Prepare and develop the mounting procedure of economically important invertebrates.

COURSE: AQUARIUM KEEPING Credits: 2

CO1: Students to learn about different ornamental fishes and identify the diseases of them

CO2: To develop entrepreneur potential in the field of aquarium and get self-employment.

ALLIED CHEMISTRY Credit 3

On completion of the course the students should be able to:

CO1: state the theories of chemical bonding, nuclear reactions and its applications.

CO 2: evaluate the efficiencies and uses of various fuels and fertilizers.

CO 3: explain the type of hybridization, electronic effect and mechanism involved in the organic reactions.

CO 4: demonstrate the structure and uses of antibiotics, anaesthetics, antipyretics and artificial sugars.

CO 5: analyse various methods to identify an appropriate method for the separation of chemical components.

SEMESTER II

COURSE: CHORDATA Credit: 5

CO1: Classify, Identify and recall the name and distinct features of different subphylum belonging to phylum Chordata.

CO2: Explain, and relate the origin, structural organization and evolutionary aspects of vertebrates.

CO3: Analyze, compare and distinguish the developmental stages and describe the important biological process.

CO4: Correlate the different modes of life and parental care among different vertebrates.

PO3,

CO5: Summarise the morphology and ecological adaptations in vertebrates and list out the economic importance.

COURSE: CHORDATA LAB COURSE Credit: 3

CO1 Identify and recall the name and distinct external and internal features of animals belonging to phylum Chordata.

CO2 Explain the structural organization of various organs and systems in different classes of vertebrates.

CO3 Analyse, compare and distinguish the morphological features and developmental stages of chordates

CO4 Dissect and explain various organs and internal systems in different vertebrates and correlate its function.

CO5 Summarise the morphology and ecological adaptations in vertebrates and list out the economic importance.

COURSE: ALLIED CHEMISTRY II Credit 3

On completion of the course the students should be able to

CO 1: write the IUPAC name for complex, different theories to explain the bonding in coordination compounds and water technology.

CO 2: explain the preparation and property of carbohydrate.

CO 3: enlighten the biological role of transition metals, amino acids and nucleic acids.

CO 4: apply/demonstrate the electrochemistry principles in corrosion, electroplating and fuel cells.

CO 5: outline the various type of photochemical process.

COURSE: ALLIED CHEMISTRY PRACTICAL Credit 3

On completion of the course the students should be able to

CO 1: gain an understanding of the use of standard flask and volumetric pipettes, burette.

CO 2: design, carry out, record and interpret the results of volumetric titration.

CO 3: apply their skill in the analysis of water/hardness.

CO4: analyze the chemical constituents in allied chemical products

COURSE: ORNAMENTAL FISH FARMING& MANAGEMENT

Credit 2

CO1: The students will be able to identify culture, maintain and market the commercially important ornamental fishes.

CO2: 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

COURSE: ECONOMIC ZOOLOGY Credit 2

CO1: To identify the breeds and varieties of poultry, fish, bees, and cattle and understand the basic aspects of farming.

CO2: To assess and integrate the available tools and techniques to increase the productivity in farms.

CO3: To analyse the pros and cons of different methods of farming and marketing strategies of products.

CO4: To evaluate the use of available resources in improving the breeds, vermicomposting, farm products etc.

CO5: To design new methods to improve farm animals with increased productivity and disease resistance and to construct new methods in vermicomposting.

SEMESTER III

COURSE: CELL AND MOLECULAR BIOLOGY Credit: 3

CO1 To understand and recall the basic structure, origin and development of cell organelles.

CO2 To integrate and assess the biochemical, cytological and histological tools to infer cellular basis of organization.

CO3 To analyze and differentiate organisms based on structure, composition and inter and intra cellular interactions.

CO4 To explain the role of cells and cell organelles in various biological processes. PO2,

CO5 To construct and simulate the role of different cytological tools to explain the structure and complexity of cells and cell organelles.

COURSE: GENETICS Credit: 3

CO1 Understand the basis of inheritance and expression of genes.

CO2 Correlate changes in genetic makeup and phenotypic changes in progeny.

CO3 Analyse the causes of variations in genetic material and predict the effect in a population using different techniques.

CO4 Explain the role of cellular processes and different genetic elements in the expression of genes.

CO5 Compile the factors which contribute to changes in gene expression and specify the changes which contribute to evolution.

COURSE: CYTOGENETICS LAB COURSE Credit: 3

CO1 To describe, examine and interpret the organization of genomic material and to research theories of genetic inheritance.

CO2 To prepare samples of genetic molecules and to determine their purity, structure and characteristics.

CO3 To experiment with genomic preparations and devise techniques to distinguish genetic material in different organisms to survey biodiversity.

CO4 To assess the changes in genetic material and to predict and consider the consequences of those changes.

CO5 To report and justify the results of molecular and genetic experiments in an accurate and

meaningful manner.

COURSE: BIOCOMPOSTING FOR ENTREPRENEURSHIP Credit: 2

CO 1The students will gain knowledge about the process of Biocomposting.

CO 2 Students will be able to demonstrate Biocomposting techniques for various end applications like solid waste management, industrial waste recycling using sugarcane bagasse, etc.

CO 3 To gain knowledge about the economic cost of establishing small Biocompost units as a cottage industry.

COURSE: BASIC COURSE IN ORNITHOLOGY Credit:2

CO 1 Recall the taxonomic position of birds, their external morphology and internal parts, types of bird behaviour, sampling methods and types of avian diseases.

CO 2 Identify the external parts of the bird, internal structures of the bird and different types of bird behavior

CO 3 Differentiate birds based on their morphology, foraging strategies and other behaviour

CO 4 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

CO 5Discuss and analyse case studies relating to bird conservation

SEMESTER IV

COURSE: DEVELOPMENTAL BIOLOGY Credit:3

CO1 To describe and illustrate the significance of cellular processes in embryonic development.

CO2 To relate the factors that contribute to the developmental process, construct fate maps and illustrate the steps in morphogenesis and organogenesis.

CO3 To correlate the involvement of specific cell types in the formation of specific organs and explain the importance of morphogens.

CO4 To distinguish between the different types of developmental mechanisms in various organisms and appraise the species-based differences in development.

CO5 To justify and validate the role of environment and genetics in influencing embryonic development

COURSE: ANIMAL BEHAVIOUR Credit:3

CO1. Recall and record genetic basis and evolutionary history of behaviour.

CO2. Classify movement and migration behaviors and explain environmental influence upon behaviour.

CO 3. Analyze and identify innate, learned and cognitive behavior and differentiate between various mating systems.

CO4. Assess complexity involved in behavioural traits and evaluate hormones and their role in aggression and reproduction.

CO5. Discuss the rhythmicity of behavioural expressions and the scientific concepts in behavior and behavioral ecology.

COURSE: MEDICAL LABORATORY TECHNIQUES Credit: 2

CO1. Understand protocols and procedures to collect clinical samples for blood analysis and to study human physiology.

CO2. Explain the characteristics of clinical samples.

CO3. Demonstrate skill in handling clinical equipment.

CO4. Evaluate the hematological and histological parameters of biological samples.

CO 5. Elaborate the role of medical laboratory techniques in health care industry.

COURSE: BASICS OF MARINE BIOLOGY Credit:2

CO 1. Define marine ecosystem, recognize and describe the interrelationship between biology and ocean technology.

CO 2. Articulate and classify the dynamics and the physical attributes of the ocean, interpret the factors which affect the global climate.

CO 3. Identify and analyze the physical and biological factors of marine environments, and focus life in the open sea.

CO 4. Evaluate the impact of variations in abiotic factors in marine productivity and justify the role of human activities in the degradation of marine ecosystems.

CO5. Categorize marine pollutants and develop controlling measures in collaboration with the institutions for ocean management

SEMESTER V

COURSE: EVOLUTIONARY BIOLOGY Credit:3

CO1 To understand the Primordial earth and theories on origin of life

CO2 To integrate and assess Lamarckism - Neo Lamarckism – Darwinism

CO3 To analyse various fossil records of man and fossil records of horse, various types of rocks - Geological time scale.

CO4 To explain the Nature of fossils- Dating of fossils, evidences of evolution, Adaptive radiation in reptiles and mammals,

CO5 To construct and compile the role of Human Genome Project, Evolution in the diagnosis, and treatment of diseases.

COURSE: ENVIRONMENTAL BIOLOGY Credit: 3

CO1 Understand the fundamental structure and functions of the ecosystem.

CO2 Assess the inter-relationship between organisms and between biotic and abiotic factors in an ecosystem.

CO3 Evaluate the impact of human population growth and socio-economic development on the structure and function of the ecosystem.

CO4 Analyze the factors that cause pollution, climate change, loss of biodiversity and depletion of resources.

CO5 Design plans to scientifically solve environmental problems using biological tools, technologies and government policies.

COURSE: ANIMAL PHYSIOLOGY AND DEVELOPMENTAL BIOLOGY LAB COURSE Credit: 3

CO1 List and recall the basic equipment used in physiology lab and Identify the nitrogenous waste products of animals.

CO2 Understand and identify the blood groups in man. To understand various types of placenta in animals.

CO3 Demonstrate the instruments, discuss the clinical importance and its applications, To understand the gamete forming structures and gamete cells.

CO4 Examine the various cleavage patters and embryonic developments.

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 through record work.

COURSE: ENVIRONMENTAL BIOLOGY AND TOXICOLOGY LAB COURSE Credit:3

CO1 Understand the properties of toxicants, effects, origin and occurrence in the environment and explain the principle and procedure for quality evaluation, monitoring and remediation of contaminated environments.

CO2 Estimate the toxic chemicals in the environment. Apply tools and techniques for experimenting with environmental problems. Identify and implement solutions to the problems.

CO3 Analyse the consistent and inconsistent range of elements. Interpret the role of the elements in environmental pollution and the effects on organisms.

CO4 Relate the metabolic activity, diseases, ill health and death with reference to exposure to chemicals. Select the suitable experimental design to assess the toxic effects of pesticides and pollutants.

CO5 Discuss the applicability of chemical analysis and toxicity data, both individually and together, in risk assessment and environmental monitoring.

COURSE: ANIMAL PHYSIOLOGY Credit:3

CO1: To explain how the various organ systems are coordinated and controlled.

CO2: To list the functions of various organs in relation to physiological process.

CO3: To develop the idea of multilevel controlling and feedback mechanism in relation to various physiological functions.

CO4: To understand the basic physiological process related to adaptation, metabolism and major requirements.

CO5 : To correlate and understand human physiology.

COURSE: WILDLIFE CONSERVATION AND MANAGEMENT Credit:3

CO 1. To understand and recall the importance of wildlife, extinction and Conservation Approaches of wildlife.

CO 2. To integrate and assess the National, international approaches for biodiversity conservation.

CO 3. To analyze and differentiate threats to wildlife, various action plans, conservation strategies on wildlife of India to turn conflict into tolerance and coexistence.
CO 4. To explain the role PVA models, Wildlife conservation approaches, and limitations.
CO 5. To construct and simulate National and International strategies for Conservation, Wild life laws and ethics.

COURSE : NANOBIOLOGY Credit:3

CO 1: Understand basics of Nano-science and Nano-biology. ¬ Gain knowledge on nanomaterials and nanoparticles.
CO 2 :Know the biological applications of nanomaterials and nanoparticles.
CO 3: Apply their knowledge in their career development in higher education, research anddevelopment.

SEMESTER VI

COURSE: ANIMAL BIOTECHNOLOGY Credit:3

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.
CO2 To develop and explain the protocols for genetically manipulating cells and produce transgenic animals
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.
CO4 To choose the correct methods of transgenesis and to consider their use in improving animal husbandry nationally and globally
CO5 To speculate on the environmental implications of animal biotechnological methods and design responsible, ethical solutions to livestock production and health issues.

COURSE: HUMAN REPRODUCTIVE BIOLOGY Credit:3

CO 1 Recall the structure and functioning of the male and female reproductive system, associated endocrinology, causes for infertility and assisted reproductive technology
CO 2 Describethestructure and physiologyfunctionsofmaleandfemalereproductivesystems.
CO 3 Explaintheroleof structures, accessory glands and hormonesassociatedwiththereproductivetractsandtheircontrol

CO 4 Explainthemechanismofsexdetermination.

CO 5 Discussage-associated physiologicalchangesinthereproductivetract

CO 6 Describephysiologicalchangesduringpregnancyandbenefitsofbreastfeeding.

CO 7 Identify causes for infertility, treatments available and ethical issues related totreatments

CO 8 Discussadvantagesanddisadvantagesofavailablecontraceptives.

CO 9 Analyze the different techniques and associated ethical issues related to reproductive technology

COURSE: MICROBIOLOGY Credit:3

CO1 To understand history, relevance of microbiology and classification of bacteria

CO2 To understand the working of various microscopes and their application

CO3 To gain knowledge of various (physical and chemical) methods of control of microorganisms and safety measures to be followed while handling microbes

CO4 To understand the structure of bacterial cells, its organelles, physiology and behaviour.

CO5 To learn different methods of staining bacteria and demonstrate proficiency in handling aseptic bacteriological specimen.

COURSE: IMMUNOLOGY Credit:3

CO1 Understand and recall the basic structural and functional components of the immune system, compare and contrast cells with respect to origin and maturation.

CO2 Classify and explain types of immunity, state the significance of antigen and examine their relevance to immunizations.

CO3 Describe and differentiate the biological characteristics of the antibodies, analyze and formulate the procedure for antibody production

CO4 Compare and rate the mechanism of various types of hypersensitivity reactions, assess and identify the different types of autoimmune diseases.

CO5 Summarize immune responses against pathogens

COURSE: MICROBIOLOGY, IMMUNOL OGY AND BIOTECHNOLGY LAB COURSE Credit:3

CO1 To describe, examine and interpret the organization of genomic material and to research theories of genetic inheritance.

CO2 To prepare samples of genetic molecules and to determine their purity, structure and characteristics.

CO3 To experiment with genomic preparations and devise techniques to distinguish genetic material in different organisms to survey biodiversity.

CO4 To assess the changes in genetic material and to predict and consider the consequences of those changes.

CO5 To report and justify the results of molecular and genetic experiments in an accurate and meaningful manner

COURSE: AGRICULTURAL ENTOMOLOGY Credit:3

CO1. Examine and identify the systemic and functional morphology of various group of agricultural insect pests.

CO2. Differentiate and classify the various groups of insects and estimate the biodiversity.

CO3. Explain the pest status in agriculture and control measures.

CO4. To compare the methods and outcomes of integrated pest management.

CO5. List the economic importance of agricultural insect species.

COURSE: PROFESSIONAL COMPETENCY SKILL IN ZOOLOGY

Credit:2

CO 1 Develop their competence and competitiveness and thereby improve their employability skills.

CO 2 Recognise students ability to improve their own competence in using the language

C0 3 To determine the value of mean,the median,the mode of grouped data,identifying the relationship among the three measures

CO 4 The students could able to learn the future strategies in livestock development for livelihood and revenue generation.

CO 5 Help students with a research bent of mind develop their skills in writing reports and research proposals