

DEPARTMENT OF ZOOLOGY, EGRA SSB COLLEGE, 721429

Zoology (Under Graduate)

Program Outcomes(P.O), Program Specific Outcomes and (P.S.O)

Zoology Program Outcomes:

1. PO1 - Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms
2. PO2 – Analyse complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
3. PO3 – Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
4. PO4 – Understands the complex evolutionary processes and behaviour of animals
5. PO5 – Correlates the physiological processes of animals and relationship of organ systems
6. PO6 – Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
7. PO7 – Gain knowledge of Agro based Small Scale industries like sericulture, fish farming, butterfly farming and vermicompost preparation.
8. PO8 – Understands about various concepts of genetics and its importance in human health
9. PO9 - Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties
10. PO10 – Apply the knowledge and understanding of Zoology to one's own life and work
11. PO11 – Develops empathy and love towards the animals

Program Specific Outcomes:

1. PSO1. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology
2. PSO2. Analyse the relationships among animals, plants and microbes
3. 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
4. PSO4. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine
5. PSO5. Gains knowledge about research methodologies, effective communication and skills of problem solving methods
6. PSO6. Contributes the knowledge for Nation building.

Course Outcomes:

CO1 Animal Diversity – Invertebrates

- CO1.1 Describe general taxonomic rules on animal classification
- CO1.2 Classify Protista up to phylum using examples from parasitic adaptation
- CO1.3 Classify Phylum Porifera to Echinodermata with taxonomic keys
- CO1.4 Describe Phylum Nematoda and give examples of pathogenic Nematodes

CO2 Ecology, Zoogeography and Animal Behaviour:

- CO2.1 Distribution of fauna in different realms interaction
- CO2.2 Understand Animal behaviour and response of animals to different instincts
- CO2.3 Interaction of biota abiota
- CO2.4 Various kinds of Animal adaptations

CO3 Animal Diversity – Vertebrates & Developmental Biology:

- CO3.1 Imparts conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment
- CO3.2 Classify phylum Protochordates to Mammalia
- CO3.3 Complex Vertebrate interactions
- CO3.4 Basic concepts of developmental biology

CO4 Cell Biology, Genetics and Evolution:

- CO4.1 Structural and functional aspects of basic unit of life i.e. cell concepts
- CO4.2 Mendelian and non mendelian inheritance
- CO4.3 Concept behind genetic disorder, gene mutations- various causes associated with inborn errors of metabolism
- CO4.4 Theories of Evolution
- CO5 Knowledge of eras and evolution of species

CO5 Physiology and Biochemistry:

- CO5.1 Seeks to understand the mechanisms that work to keep the human body alive and functioning
- CO5.2 Physiological and biochemical understanding through scientific enquiry into the nature of mechanical, physical, and biochemical functions of humans, their organs, and the cells of which they are composed
- CO5.3 Interactions and interdependence of physiological and biochemical processes

CO6 ANIMAL PHYSIOLOGY

CO6.1 Students are taught the detailed concepts of digestion respiration excretion the functioning of nerves and muscles

CO6.2 Students gain fundamental knowledge of animal physiology

CO6.3 Students will gain skill to execute the roles of a biology teacher or medical lab technicians with training as they have basic fundamentals

CO7 Animal physiology genetics and evolution

CO7.1 Students learn the concepts of endocrine systems and homeostasis a brief account of genetics and organic evolution.

CO7.2 This course helps students to gain fundamental knowledge in these topics

CO7.3 Students gain fundamental knowledge of physiology and endocrine systems

CO7.4 Students gain fundamental knowledge of physiology of homeostasis

CO7.5 Understanding of basic concepts of genetics, laws of inheritance and central dogma of biology

CO7.6 Understanding of genetic basis of evolution, human karyotyping and speciation

CO8 Applied Zoology

CO8.1 Understands concepts of fisheries, fishing tools and site selection

CO8.2 Aqua culture systems, induced breeding techniques, post harvesting techniques

CO8.3 Understands about composition of blood, blood born diseases, autopsy and biopsy

CO8.4 Types of immunity, antigens-antibodies and their properties

CO9 Entomology:

CO9.1 Imparts knowledge of beneficial and non-beneficial insects

CO9.2 Knowledge of how they interact with their environment, other species and humans

CO9.3 Classification of Insects

CO9.4 Role of insects in spread of diseases

CO10 Sericulture:

CO10.1 Gives knowledge of silk worm rearing

CO10.2 Mulberry cultivation

CO10.3 Pests and diseases associated with silk worm and mulberry

CO10.4 Various processes involved in silk production

C11 Immunology:

CO11.1 Imparts in depth knowledge of tissues, cells and molecules involved in host defense mechanisms

CO11.2 Understanding of types of immunity

CO11.3 Interactions of antigens, antibodies, complements and other immune components

CO11.4 Understanding of immune mechanisms in disease control, vaccination, process of immune interactions

CO12 Animal biotechnology:

CO12.1 Imparts the Knowledge to culture animal cells in artificial media.

CO12.2 Knowledge of animal cells in culture, growth of cell lines

CO12.3 Use in recombinant DNA technology, genetic manipulations and in a variety of industrial processes.

CO13 Aquarium fish management

CO13.1 Provides knowledge of ornamental fish breeding which is highly professional and attractive avenue for youth

CO14 Animal Biotechnology

CO14.1 It gives insight into various cell/tissues culture techniques

CO14.2 Understanding of in vitro culturing of organisms and production of transgenic animals.

CO14.3 Understanding of cloning of mammals, large scale culture and production from recombinant microorganisms

CO14.4 Gains skills in medical, environmental biotechnology, biopesticides, Biotechnology of aquaculture and use of animals as bioreactors

CO14.5 This insight allows students to take into consideration about ethical issues involved in production of transgenic animals and BT products.

CO15 Structural Biology

CO15.1 Allows the students to gain basic knowledge about various bio molecules and their role in metabolism

CO15.2 Classification of enzymes, enzyme kinetics

CO15.3 Metabolism of carbohydrates, nucleic acids and metabolic disorders

CO15.4 Gains understanding of cellular organization and functional biology nucleic acids

CO16 Comparative Animal Physiology

CO16.1 Comparative animal physiology is a comprehensive subject that gives in depth knowledge of various physiological processes in the animal kingdom

CO16.2 students gain knowledge about the comparative physiological concepts of nutrition digestion respiration excretion metabolism and osmoregulation.

CO16.3 Course provides students comprehensive understanding about neurobiology, neurophysiology, molecular neurobiology

CO16.4 Understanding of cognitive/behavior neurobiology, thus allowing them to correlate the human behaviour under given situation.

CO16.5 It gives comprehensive understanding regarding inborn disorders and deranged metabolisms.

CO16.6 Students feel confident in teaching physiology as well as executing research projects

CO17 Immunology

CO17.1 Provides basic knowledge about immune system and allows the student to create insight as to how to improve their immune system and good health.

CO17.2 Types of immunity, antigens-antibodies and their properties

CO17.3 Complement system, MHC's and immune responses

CO17.4 Understanding of types of hypersensitivity reactions and auto immune diseases

CO17.5 Ability to understand concepts of tumor immunology and transplantation immunology

CO18 Taxonomy, Systematics and Functional Anatomy of Invertebrates

CO18.1 Imparts knowledge regarding the various Invertebrates species and the regulatory processes to safeguard them

CO18.2 With the study of this paper students gain knowledge in the areas of responses to Systematic position, general organization and affinities of Ctenophora and Nemertea

CO18.3 Rhynchozoa; Systematic position, general organization and affinities of Rotifera;

CO18.4 Systematic position, general organization and affinities of Hemichordata

CO18.5 The students will be well equipped to become very competent in research or teaching fields after completion of this course

CO19 Animal Physiology

CO19.1 Imparts knowledge about various metabolic and physiological mechanisms of the human body.

CO19.2 Understands about neurophysiology and receptors

CO19.3 Gain knowledge about hormones and bioluminescence

CO19.4 Understanding of stress physiology and endocrine mechanisms will allow them to control their stress and emotions there by diverting their energy towards the positive nation building activities

CO20 Molecular Genetics and Developmental Biology

CO20.1 Knowledge about genetics, developmental biology and organogenesis

CO20.2 Application of DNA technology and molecular biology for research

CO20.3 Gains knowledge about gametogenesis, cleavage mechanisms, gastrulation and role of hormones in metamorphosis and regeneration

CO20.4 Provides students insight into maintaining healthy relationships with their opposite gender and allows them to make right choice about their life partner thus preventing congenital/consanguial diseases.

CO21 Evolution and Functional Anatomy of Vertebrates

CO21.1 Imparts knowledge regarding the various theories of evolution, evolutionary process such as variation, speciation, natural selection, origin of primates and man

CO21.2 Understanding of origin and salient features of Ostracoderms to Actinopterygii, adaptive radiation of Amphibians, Reptiles, birds and Mammals

CO21.3 Gains knowledge of functional anatomy of vertebrates from fishes to mammals

CO21.4 Understanding of evolutionary significance of internal fertilization, neoteny and paedogenesis

CO21.5 Identifies the significance of amniotic egg its structure and evolutionary significance of skeletal system

CO22 Sericulture

CO22.1 Gives knowledge of silk worm rearing, mulberry cultivation, pests and diseases associated with silk worm, mulberry and various process involved in silk production.

CO22.2 It is an agro based cottage industry in India that enables them to get self-employment

CO22.3 Sericulture is a comprehensive subject that gives in depth knowledge of the study of silkworms both physiological as well as commercial purposes including the various processes involved in the formation of silk .

CO22.4 Students gain knowledge about various systems study of silkworms and cocoons, other defective cocoons

CO23 Research Methodology

CO23.1 The course provides wide knowledge about research, experimental & sampling design,

CO23.2 Data collection, analysis & interpretation of data and allows student to present the research data in scientific method

CO23.3 Gains skill to solve problems using inferential statistical tools

CO23.4 Learns to collect literature collection, literature citation, and components of research report – Text, tables, figures, bibliography.

CO23.5 Writing of dissertations, project proposals, project reports, research papers.

CO23.6 Intellectual Property Rights – Biopiracy, copyrights, patent and traditional knowledge and plagiarism.

CO23.7 Understanding of Laboratory safety measures, laboratory good practices, animal model systems, animal ethics- animal welfare guidelines for care and use of animals.

CO24 Project

CO24.1: Make research proposal

CO24.2: Construct tool of data collection

CO24.3: Learn fieldwork modalities

CO24.4: Understand the process of data analysis

CO24.5: Writing research report

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	✓	✓			✓	✓	✓			✓		✓		✓			
CO2	✓					✓	✓	✓				✓				✓	
CO3	✓	✓		✓	✓	✓	✓					✓					
CO4	✓	✓		✓	✓	✓	✓		✓						✓		
CO5	✓		✓	✓	✓	✓	✓					✓					✓
CO6	✓	✓				✓	✓		✓			✓	✓				
CO7	✓		✓			✓	✓	✓				✓					
CO8	✓						✓					✓	✓				✓
CO9	✓		✓	✓		✓	✓			✓						✓	
CO10	✓					✓	✓					✓					
CO11	✓		✓			✓	✓	✓		✓		✓		✓			
CO12	✓			✓		✓											✓
CO13	✓	✓				✓			✓			✓		✓			
CO14	✓					✓			✓			✓					
CO15	✓			✓		✓	✓					✓				✓	
CO16	✓					✓				✓		✓					✓
CO17	✓		✓			✓		✓						✓			
CO18	✓			✓		✓						✓					
CO19	✓					✓				✓		✓					
CO20	✓	✓				✓	✓					✓			✓		✓
CO21	✓			✓					✓			✓					
CO22	✓				✓		✓			✓			✓			✓	
CO23	✓		✓										✓				✓
CO24	✓			✓		✓		✓		✓					✓	✓	