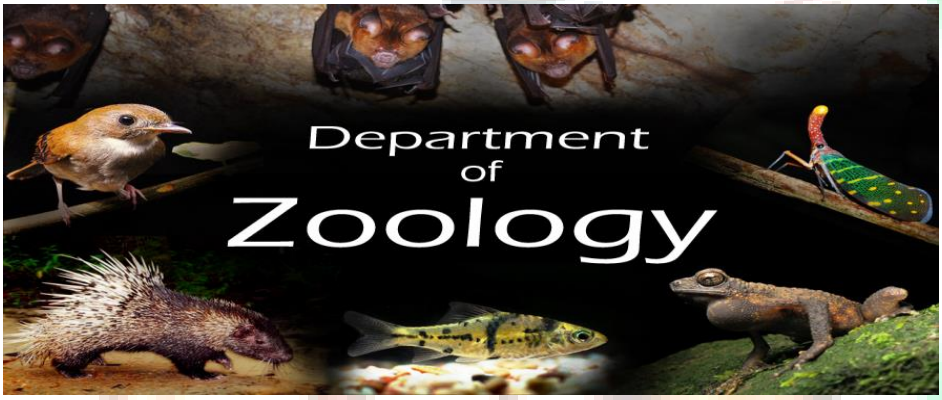
COMMISSIONERATE OF COLLEGIATE EDUCATION
GOVERNMENT OF ANDHRA PRADESH

GOVERNMENT DEGREE COLLEGE
RAYACHOTY, ANNAMAYYA (Dist.)

ZOOLOGY
(UG courses)



COURSE OUTCOMES
(UNDER CBCS FRAME WORK)

B.Sc. ZOOLOGY

COMMISSIONERATE OF COLLEGIATE EDUCATION

GOVERNMENT OF ANDHRAPRADESH

ZOOLOGY

(UG COURSES)

GOVERNMENT DEGREE COLLEGE

RAYACHOTY, ANNAMAYYA(Dist.)

COURSE OUTCOMES

(UNDER CBCS FRAME WORK)

B.Sc.ZOOLOGY

(WITH EFFECT FROM 2015-16)

DEPARTMENT OF ZOOLOGY
2015-16

BSc - Zoology

Course outcomes

Title of the Course: *Animal Physiology, Cellular Metabolism And Embryology*	
Students after successful completion of the course will be able to:	
CO-1	Understand the functions of important animal physiological systems including digestion, cardio-respiratory and renal systems.
CO-2	Understand the muscular system and the neuro-endocrine regulation of animal growth, development and metabolism with a special knowledge of hormonal control of human reproduction.
CO-3	Describe the structure, classification and chemistry of biomolecules and enzymes responsible for sustenance of life in living organisms
CO-4	Develop broad understanding the basic metabolic activities pertaining to the catabolism and anabolism of various bio molecules
CO-5	Describe the key events in early embryonic development starting from the formation of gametes up to gastrulation and formation of primary germ layers.
Title of the Course: *Immunology and Animal Biotechnology*	
Students after successful completion of the course will be able to	
CO-1	To get knowledge of the organs of Immune system,types of immunity,cells and organs of immunity.
CO-2	To describe immunological response as to how it is triggered (antigens) and regulated (antibodies)
CO-3	Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell / tissue culture, stem cell technology and genetic engineering.
CO-4	Get familiar with the tools and techniques of animal biotechnology
CO-5	Proficiency and understanding basic concepts of applied biotechnology in different fields
Title of the Course: *Animal Biotechnology*	
Students after successful completion of the course will be able to	
CO-1	To describe the structure of animal gene and genomes.
CO-2	To describe how genes are expressed and what regulatory mechanisms contribute to control of gene expression.
CO-3	To describe basic principels and techniques in genetic manipulation and genetic engineering

CO-4	Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell / tissue culture, stem cell technology and genetic engineering
CO-5	Get familiar with the tools and techniques of animal biotechnology.

Title of the Course: *Animal Husbandry*	
Students after successful completion of the course will be able to	
CO-1	To gain knowledge about poultry farming
CO-2	To learn about poultry feed management and poultry diseases, useful to the students for poultry farming.
CO-3	To know about selection, care and handling of hatching eggs.
CO-4	Complete knowledge of breeds and dairy cattle and buffaloes to improve practical skills such as dairy farm
CO-5	To know the principles of care and management of dairy animals.

Title of the Course: : *Immunology*	
Students after successful completion of the course will be able to	
CO-1	Provides basics knowledge about immune system and allows the student to create insight as how to improve their immune system and good health.
CO-2	Types of immunity,antigens-antibodies and their properties.
CO-3	Complement system,MHC's and immune responses.
CO-4	Understanding of types of hypersensitivity reactions and autoimmune diseases.
CO-5	Ability to understand concepts of tumor immunology and transplantation immunology.

Cluster Elective Paper: VIII-B-1 PRINCIPLES OF AQUACULTURE	
CO-1	Course provides them comprehensive understanding about aquatic ecosystem and various economical important fishes.
CO-2	Students gain knowledge in the areas of responses characterization and classification of Ostracoderms, placoderms, acanthodians, holocephali, elasmobranches.
CO-3	Students gain knowledge of integumentary system-basic structure of skin, dermal and epidermal pigments, fins, and scales.
CO-4	Understanding of embryogenesis-Early development and postembryonic development.
CO-5	Understanding of fishes habits and habitats and their functional anatomy

Cluster Elective Paper: VIII-B-2 AQUACULTURE MANAGEMENT	
CO-1	The students will be well equipped to become very competent in research or teaching fields.
CO-2	It is one of the small scale industry which can provide the student employment opportunity.
CO-3	To understand the Aquaculture concept, Culture systems: Freshwater aqua culture systems: Fresh water prawn culture,fish culture in paddy fields, Brackish water culture, Mari culture: Oyster culture,Crab culture, Lobster culture, mussel culture, culture of Eels, Culture of aquatic weeds.
CO-4	To understand the Composite fish culture and Preparation and management of fish culture ponds.
CO-5	Transport of fish seed and Brood fish and Harvesting: Fishing techniques, preservation & processing of fish and Fish pathology.
Cluster Elective Paper: VIII-B-3 POSTHARVEST TECHNOLOGY	
CO-1	To understand Handling of fresh fish, storage and transport of fresh fish, post mortem changes
CO-2	To understand the Technologies in Fisheries development
CO-3	To understand the **Processing and preservation of fish and fish by-products**
CO-4	To understand the **Sanitation and Quality control and Regulatory affairs in industries**
CO-5	To learn about **Quality Assurance, Management and Certification**

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COMMISSIONERATE OF COLLEGIATE EDUCATION

GOVERNMENT OF ANDHRAPRADESH

ZOOLOGY

(UG COURSES)

GOVERNMENT DEGREE COLLEGE

RAYACHOTY, ANNAMAYYA(Dist.)

COURSE OUTCOMES

(UNDER CBCS FRAME WORK)

B.Sc.ZOOLOGY

(WITH EFFECT FROM 2020-21)

DEPARTMENT OF ZOOLOGY

2020-21

BSc - Zoology

Course outcomes

SEMESTER–I	
COURSE	**OUTCOME**
ANIMAL DIVERSITY– INVERTEBRATES	***CO1*** *Describe general taxonomic rules on animal classification* ***CO2*** *Classify Protozoa toCoelenterata with taxonomic keys* ***CO3*** *Classify Phylum Platy hemninthes to Annelida phylum using examples from parasitic adaptation and vermin composting* ***CO4*** *Describe Phylum Arthropoda to Mollusca using examples and importance of insects and Molluscans* ***CO5*** *Describe Echinodermata to Hemi chordata with suitable examples and larval stages in relation to the phylogeny*
SEMESTER–II	
COURSE	**OUTCOME**
ANIMAL DIVERSITY - BIOLOGY OF CHORDATES	***CO1*** *Describe general taxonomic rules on animal classification of chordates* ***CO2*** *Classify Protochordata to Mammalia with taxonomic keys* ***CO3*** *Understand Mammals with specific structural adaptaions* ***CO4*** *Understand the significance of dentition and evolutionary significance* **CO5** Understand the origin and evolutionary relationship of different phyla from Prochordata to mammalia.

SEMESTER– III	
COURSE	**OUTCOME**
CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND EVOLUTION	***CO1*** *To understand the basic unit of the living organisms and to differentiate the organisms by their cell structure.* ***CO2*** *Describe fine structure and function of plasma membrane and different cell organelles of eukaryotic cell.* ***CO3*** *To understandthe history of origin of branch of genetics, gain knowledge on heredity, interaction of genes, various types of inheritance patterns existing in animals* ***CO4*** *Acquiring in-depth knowledge on various of aspects of genetics involved in sex determination, human karyotyping and mutations of chromosomes resulting in various disorders* ***CO5*** *Understand the central dogma of molecular biology and flow of genetic information from DNA to proteins.*

SEMESTER–IV	
COURSE	**OUTCOME**
PAPER – IV: **ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND EMBRYOLOGY**	***CO1*** *Understand the functions of important animal physiological systems including digestion, cardio-respiratory and renal systems.* ***CO2*** *Understand the muscular system and the neuro-endocrine regulation of animal growth, development and metabolism with a special knowledge of hormonal control of human reproduction.* ***CO3*** *Describe the structure, classification and chemistry of biomolecules and enzymes responsible for sustenance of life in living organisms* ***CO4*** *Develop broadunderstanding the basic metabolic activities pertaining to the catabolism and anabolism of various biomolecules* ***CO5*** *Describe the key events in early embryonic development starting from the formation of gametes upto gastrulation and formation of primary germ layers.*
COURSE – 5: **IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY**	***CO1*** *To get knowledge of the organs of Immune system, types of immunity, cells and organs of immunity.* ***CO2*** *To describe immunological response as to how it is triggered (antigens) and regulated (antibodies)* ***CO3*** *Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell/tissue culture, stem cell technology and genetic engineering.* ***CO4*** *Get familiar with the tools and techniques of animal biotechnology.* ***CO5*** *Understand the applications of PCR: Basics of PCR.*
SEMESTER–V	
COURSE	**OUTCOME**
Course 6 B: **LIVE STOCK MANAGEMENT-I (BIOLOGY OF DAIRY ANIMALS)**	**CO1** Select the suitable breeds of livestock for rearing **CO2** Relate the anatomy of udder with letdown of milk **CO3** Identify and manipulate the reproductive behavior of cattle **CO4** Inspect the economics of dairy farming **CO5** Apprise the various breeding techniques employed in live stock.

Course 7B: **LIVE STOCK MANAGEMENT -II (DAIRY PRODUCTION AND MANAGEMENT)**	Students at the successful completion of the course will be able to **CO1** Identify and suggest the suitable housing system for the dairy farming **CO2** Understand management practices for the dairy farming **CO3** Learn the process of milk pasteurization **CO4** Prepare cream from milk. **CO5** Apprise the various breeding techniques employed in live stock

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ZOOLOGY

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COURSE OUTCOMES

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B.Sc.ZOOLOGY

(WITH EFFECT FROM 2023-24)

DEPARTMENT OF ZOOLOGY

2023-24

BSc - Zoology

Course outcomes

SEMESTER–I	
COURSE	**OUTCOME**
COURSE 1: **Introduction to Classical Biology**	1. Learn the principles of classification and preservation of biodiversity 2. Understand the plant anatomical, physiological and reproductive processes. 3. Knowledge on animal classification, physiology, embryonic development and their economic importance. 4. Outline the cell components, cell processes like cell division, heredity and molecular processes. 5. Comprehend the chemical principles in shaping and driving the macromolecules and life processes
COURSE 2: **INTRODUCTION TO APPLIED BIOLOGY**	1. Learn the history, ultra structure, diversity and importance of microorganisms. 2. Understand the structure and functions of macromolecules. 3. Knowledge on biotechnology principles and its applications in food and medicine. 4. Outline the techniques, tools and their uses in diagnosis and therapy. 5. Demonstrate the bioinformatics and statistical tools in comprehending the complex biological data.
SEMESTER–II	
COURSE	**OUTCOME**
COURSE 3: **ANIMAL DIVERSITY-I BIOLOGY OF NON-CHORDATES**	1. Describe concept of animal kingdom classification and general characters of Protozoa 2. Classify Porifera and Coelenterata with taxonomic keys 3. Classify Phylum Platy & Nemathelminthes using examples, parasitic adaptation 4. Describe Phylum Annelida & Arthropoda using examples and economic

	importance of vermicomposting & economic importance of insects. 5. Describe Mollusca, Echinodermata & Hemi chordata with suitable examples in relation to the phylogen
COURSE 4: **CELL & MOLECULAR BIOLOGY**	1. Understand the basic unit of the living organisms and to differentiate the organisms by their cell structure. 2. Describe fine structure and function of plasma membrane and different cell organelles of eukaryotic cell. 3. Explain the cell cycle and bioenergetics of the cell 4. Understand the central dogma of molecular biology and flow of genetic information from DNA to proteins 5 Understand the gene expression phenomenon and biological importance of bio molecules
SEMESTER– III	
COURSE	**OUTCOME**
COURSE 5: **ANIMAL DIVERISTY-II BIOLOGY OF CHORDATES**	1. Describe general taxonomic rules on animal classification of chordates 2. Classify Protochordata to Mammalia with taxonomic keys 3. Understand Mammals with specific structural adaptations 4. Understand the significance of dentition and evolutionary significance 5. Understand the origin and evolutionary relationship of different phyla from Prochordata to Mammalia.
COURSE 6: **PRINCIPLES OF GENETICS**	1. To understand the history of genetics, gain knowledge basic terminology of genetics 2. To acquire knowledge on interaction of genes, various types of inheritance patterns existing in animals with reference to non-Mendelian inheritance. 3. To acquire knowledge on chromosomal inheritance 4. Acquiring in-depth knowledge on various of aspects of genetics involved in sex determination, 5. Acquiring in-depth knowledge on human karyotyping, pedigree analysis and chromosomal disorders concepts of proteomics and genomics

COURSE 7: **ANIMAL BIOTECHNOLOGY**	1. Get knowledge of the Vectors and Restriction enzymes used in biotechnology 2. Describe the gene delivery mechanism and PCR technique 3. Acquire basic knowledge on media preparation and cell culture techniques 4. Understand the manipulation of reproduction with the application of biotechnology 5. Understand the applications of Biotechnology in the fields of industry and agriculture including animal cell/tissue culture, stem cell technology and genetic engineering.
COURSE 8: **EVOLUTION AND ZOOGEOGRAPHY**	1. Understand the principles and forces of evolution of life on earth, the process of evolution of new species and apply the same to develop new and advanced varieties of animals 2. Explain the different evidences of evolution 3. Understand the theories of evolution 4. Explain the various tools for evolution 5. Map the distribution of animals according to zoological realms

SEMESTER–IV

COURSE	OUTCOME
COURSE 9: **EMBRYOLOGY**	1. Understand the historical perspective and concepts of embryology 2. Acquire knowledge on gametogenesis, fertilization and cleavage patterns 3. Understand the fate of germinal layers and extraembryonic membranes 4. Explain the process of regeneration in certain animals 5. Examine the process of organogenesis
COURSE 10: **ANIMAL PHYSIOLOGY: LIFE SUSTAINING SYSTEMS**	1. Understand the physiology of digestion and hormonal control of digestion 2. Develop a comprehensive picture of respiratory physiology 3. Acquire knowledge on the Renal physiology 4. Understand the physiology of Nerve and muscle 5. Understand the physiology of heart
COURSE 11: **IMMUNOLOGY**	1. Articulate the roles of innate recognition receptors in immune responses 2. Compare and contrast humoral versus cell-mediated immune responses 3. Distinguish various cell types involved in immune responses and associated functions;

	4. Distinguish and characterize antibody isotypes, development, and functions 5. Understand the role of cytokines in immunity and immune cell activation;
SEMESTER–V	
COURSE	**OUTCOME**
COURSE 12: POULTRY MANAGEMENT-I (POULTRY FARMING)	1. Evaluate the status of Indian Poultry Industry 2. Explain the Scientific Poultry keeping 3. Compare the diversified Poultry practices 4. Inspect the different breeds of chicken 5. Understand Breeds from Central Avian Research Institute
COURSE 13: POULTRY MANAGEMENT-II (POULTRY PRODUCTION AND MANAGEMENT	1. Suggest measure for Health care in Poultry 2. Evaluate the economics of poultry production 3. Elaborate the poultry Breeder flock management 4. Differentiate the poultry hatchery practices 5. Understand the importance of different hybrid breeds in poultry
COURSE 14 B: LIVE STOCK MANAGEMENT -I (BIOLOGY OF DAIRY ANIMALS)	1. Select the suitable breeds of livestock for rearing 2. Relate the anatomy of udder with let-down of milk 3. Identify and manipulate the reproductive behaviour of cattle 4. Inspect economics of dairy farming 5. Apprise the various breeding techniques employed in live stock
COURSE 15 B: LIVE STOCK MANAGEMENT -II (DAIRY PRODUCTION AND MANAGEMENT)	1. Identify and suggest the suitable housing system for the dairy farming 2. Understand management practices for the dairy farming 3. Learn the process of milk pasteurization 4. Prepare cream from milk 5. To Identify various important management practices in dairy farming

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