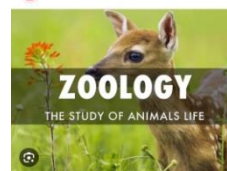




SLN DEGREE COLLEGE

Alamur Road, Anantapuramu

Affiliated to S.K. University



The Department of ZOOLOGY was started in the year 2019 with an UG Courses B.Z.C (BOTANY,ZOOLOGY, CHEMISTRY), In the year 2019 B.Z.C (BOTANY,ZOOLOGY, CHEMISTRY) was introduced.

The department is having well qualified and experienced faculty members. The faculty is a perfect blend of different specializations in ZOOLOGY to impart their expertise in handling diversified courses of the UG programs. The teaching methodology in the department goes beyond fulfilling the syllabus requirements of the University, to meet the today's industry needs. Faculty motivates and guides the students to do mini projects in core subjects. Special focus will be given to develop Communication and Soft Skills. The Department adopted and made the ICT in teaching techniques effectively.

–“Tamsa Maa Jyotirgama”

To create an innovative atmosphere for teaching and learning to achieve excellence in biology education. Leading to the sustainable development of the society

VISION:

The department promote the discovery and broad knowledge about the biology of animals, evolution and their environments. The holistic development of the student and make them able to contribute effectively for their welfare and society in this dynamic era.

MISSION:

Our mission is to offer high quality education dedicated to building minds with social and moral responsibility. We are committed to educating the students beyond the confines of a class room to make them better individuals and develop their personalities, enabling them to face the challenges of the modern world .

GOALS AND OBJECTIVES:

- Conducting educational tour to giving exposure to the students by visiting Animal park, dairy industry, Sericulture, fisheries, poultry forms, zoo etc.
- To motivate students to conduct seminars, workshops on the topics included in the curriculum. It will help in achieving academic excellence and exposure.
- To provide a comprehensive training in theoretical and practical Zoology and Environmental Biology to students.

- To equip students with adequate practical skills that will enable them function productively in society.
- To produce leadership in science and technology.
- To sensitize human society for animal welfare, conservation and protection of biodiversity.
- To create awareness of INSITU conservation of wild life.
- To develop the attitude of the students to concentrate on applied science aspects
- Transform society through the empowerment of women
- To develop research aptitude and a scientific advancement.

Courses / Programs offered:

Level	Course
UG	B.Z.C (BOTANY,ZOOLOGY, CHEMISTRY)

Course Structure under CBCS:**SLN DEGREE COLLEGE, ANANTAPUR
DEPARTMENT OF ZOOLOGY****Structure of ZOOLOGY - Syllabus**

(Under CBCS for 3-year B.Sc. Programme)

YEAR	SEM	PAPER	TITLE	MARKS (100)		CREDITS
				MID SEMESTER	END SEMESTER	
I	I	I	Animal Diversity – I Biology of Non-Chordates	25	75	04
			Practical - I	25	75	01
	II	II	Animal Diversity – II Biology of Chordates	25	75	04
			Practical - II	25	75	01
II	III	III	Cell biology, Genetics, Molecular Biology & Evolution	25	75	04
			Practical - III	25	75	01
	IV	IV	Physiology, Cellular Metabolism & Embryology	25	75	04
			Practical - IV	25	75	01
		V	Immunology & Animal Biotechnology	25	75	04
			Practical - V	25	75	01

Univ Code	Course Number 6&7	Name of Course	Hours/Week Theory +Practical	Credits Theory + Practical	Marks	
					IA-20 FW- 05	Sem End T+P
	6A	SUSTAINABLE AQUACULTURE REMANAGEMENT	3+3	3+2	25	75+50
	7A	POST HARVEST TECHNOLOGY OF FISH AND FISHERIES	3+3	3+2	25	75+50

OR

	6B	LIVE STOCK MANAGEMENT-I (BIOLOGY OF DAIRY ANIMALS)	3+3	3+2	25	75+50
	7B	LIVE STOCK MANAGEMENT -II (DAIRY PRODUCTION AND MANAGEMENT)	3+3	3+2	25	75+50

OR

	6C	POULTRY MANAGEMENT-I (POULTRY FARMING)	3+3	3+2	25	75+50
	7C	POULTRY MANAGEMENT- II (POULTRY PRODUCTION AND MANAGEMENT)	3+3	3+2	25	75+50

OR

	6D	SERiculture -I***	3+3	3+2	25	75+50
	7D	SERiculture -II	3+3	3+2	25	75+50

SEMESTER I

PAPER – I: ANIMAL DIVERSITY – BIOLOGY OF NONCHORDATES

Course Outcomes: By the completion of the course the graduate should be able to –

- CO1** Describe general taxonomic rules on animal classification
- CO2** Classify Protozoa to Coelenterata with taxonomic keys
- CO3** Classify Phylum Platyhelminthes to Annelida phylum using examples from parasitic adaptation and vermin composting
- CO4** Describe Phylum Arthropoda to Mollusca using examples and importance of insects and Molluscs
- CO5** Describe Echinodermata to Hemichordata with suitable examples and larval stages in relation to the phylogeny

Learning objectives

1. To understand the taxonomic position of protozoa to helminthes.
2. To understand the general characteristics of animals belonging to protozoa to hemichordata.
3. To understand the structural organization of animals phylum from protozoa to hemichordata.
4. To understand the origin and evolutionary relationship of different phyla from protozoa to hemichordata.
5. To understand the origin and evolutionary relationship of different phylum from annelids to hemichordates.

PRACTICAL SYLLABUS FOR I SEMESTER-
PAPER - I
ANIMAL DIVERSITY - BIOLOGY OF NONCHORDATES

Learning Outcomes:

- To understand the importance of preservation of museum specimens
- To identify animals based on special identifying characters
- To understand different organ systems through demo or virtual dissections
- To maintain a neat, labeled record of identified museum specimens

SEMESTER II

PAPER – II: ANIMAL DIVERSITY – BIOLOGY OF CHORDATES

Course Outcomes:

By the completion of the course the graduate should be able to -

- CO1** Describe general taxonomic rules on animal classification of chordates
- CO2** Classify Protochordata to Mammalia with taxonomic keys
- CO3** Understand Mammals with specific structural adaptations
- CO4** Understand the significance of dentition and evolutionary significance
- CO5** Understand the origin and evolutionary relationship of different phyla from Protochordata to mammalia.

Learning objectives

1. To understand the animal kingdom .
2. To understand the taxonomic position of Protochordata to Mammalia.
3. To understand the general characteristics of animals belonging to Fishes to Reptilians.
4. To understand the body organization of Chordata.
5. To understand the taxonomic position of Protherian mammals.

**PRACTICAL SYLLABUS FOR II SEMESTER
ZOOLOGY PAPER – II-ANIMAL DIVERSITY - BIOLOGY
OF CHORDATES**

Learning Outcomes:

- To understand the taxidermic and other methods of preservation of chordates
- To identify chordates based on special identifying characters
- To understand internal anatomy of animals through demo or virtual dissections, thus directing the student for “empathy towards the fellow living beings”
- To maintain a neat, labeled record of identified museum specimens

**ZOOLOGY – SEMESTER III
PAPER – III: CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY
AND EVOLUTION**

Course Outcomes:

The overall course outcome is that the student shall develop deeper understanding of what life is and how it functions at cellular level. This course will provide students with a deep knowledge in Cell Biology, Animal Biotechnology and Evolution and by the completion of the course the graduate shall be able to –

- 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 understand the 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 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.

CO6 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 for the benefit of the society

Learning Objectives

- To understand the origin of cell and distinguish between prokaryotic and eukaryotic cell
- To understand the role of different cell organelles in maintenance of life activities
- To provide the history and basic concepts of heredity, variations and gene interaction
- To enable the students distinguish between polygenic, sex-linked, and multiple allelic modes of inheritance.
- To acquaint student with basic concepts of molecular biology as to how characters are expressed with a coordinated functioning of replication, transcription and translation in all living beings
- To provide knowledge on origin of life, theories and forces of evolution
- To understand the role of variations and mutations in evolution of organisms

**ZOOLOGY PRACTICAL SYLLABUS FOR III
SEMESTER ZOOLOGY - PAPER - III
CELL BIOLOGY, GENETICS, MOLECULAR BIOLOGY AND
EVOLUTION**

Learning Objectives:

- Acquainting and skill enhancement in the usage of laboratory microscope
- Hands-on experience of different phases of cell division by experimentation
- Develop skills on human karyotyping and identification of chromosomal disorders
- To apply the basic concept of inheritance for applied research
- To get familiar with phylogeny and geological history of origin & evolution of animals

I. Cell Biology

1. Preparation of temporary slides of Mitotic divisions with onion root tips
2. Observation of various stages of Mitosis and Meiosis with prepared slides
3. Mounting of salivary gland chromosomes of *Chironomus*

II. Genetics

1. Study of Mendelian inheritance using suitable examples and problems
2. Problems on blood group inheritance and sex linked inheritance
3. Study of human karyotypes (Down's syndrome, Edwards, syndrome, Patau syndrome, Turner's syndrome and Klinefelter syndrome)

III. Evolution

1. Study of fossil evidences
2. Study of homology and analogy from suitable specimens and pictures
3. Phylogeny of horse with pictures
4. Study of Genetic Drift by using examples of Darwin's finches (pictures)
5. Visit to Natural History Museum and submission of report

ZOOLOGY – SEMESTER IV
PAPER – IV: ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND
EMBRYOLOGY

Course Outcomes:

This course will provide students with a deep knowledge in Physiology, Cellular metabolism and Molecular Biology and by the completion of the course the graduate shall be able to –

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 broad understanding 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 up to gastrulation and formation of primary germ layers.

Learning Objectives

- To achieve a thorough understanding of various aspects of physiological systems and their functioning in animals.
- To instil the concept of hormonal regulation of physiology, metabolism and reproduction in animals.
- To understand the disorders associated with the deficiency of hormones
- To demonstrate a thorough knowledge of the intersection between the disciplines of Biology and Chemistry.
- To provide insightful knowledge on the structure and classification of carbohydrates, proteins, lipids and enzymes

- To demonstrate an understanding of fundamental biochemical principles such as the function of biomolecules, metabolic pathways and the regulation of biochemical processes.
- To make students gain proficiency in laboratory techniques in biochemistry and orient them to apply the scientific method to the processes of experimentation and hypothesis testing.

ZOOLOGY PRACTICAL SYLLABUS FOR IV
SEMESTER ZOOLOGY - PAPER - IV
ANIMAL PHYSIOLOGY, CELLULAR METABOLISM AND
EMBRYOLOGY

Learning Objectives:

- Identification of an organ system with histological structure
- Deducing human health based on the information of composition of blood cells
- Demonstration of enzyme activity *in vitro*
- Identification of various biomolecules of tissues by simple colorimetric methods and also quantitative methods
- Identification of different stages of early embryonic development in animals

I. ANIMAL PHYSIOLOGY

1. Qualitative tests for identification of carbohydrates, proteins and fats
2. Study of activity of salivary amylase under optimum conditions
3. T.S. of duodenum, liver, lung, kidney, spinal cord, bone and cartilage
4. Differential count of human blood

II. CELLULAR METABOLISM

1. Estimation of total proteins in given solutions by Lowry's method.
2. Estimation of total carbohydrate by Anthrone method.
3. Qualitative tests for identification of ammonia, urea and uric acid
4. Protocol for Isolation of DNA in animal cells

III. EMBRYOLOGY

1. Study of T.S. of testis, ovary of a mammal
2. Study of different stages of cleavages (2, 4, 8 cell stages)
3. Construction of fate map of frog blastula

ZOOLOGY – SEMESTER IV
COURSE – 5: IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Course Outcomes:

This course will provide students with a deep knowledge in immunology, genetics, embryology and ecology and by the completion of the course the graduate shall be able to –

- 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.

Learning Objectives

- To trace the history and development of immunology
- To provide students with a foundation in immunological processes
- To be able to compare and contrast the innate versus adaptive immune systems and humoral versus cell-mediated immune responses
- Understand the significance of the Major Histocompatibility Complex in terms of immune response and transplantation
- To provide knowledge on animal cell and tissue culture and their preservation
- To empower students with latest biotechnology techniques like stem cell technology, genetic engineering, hybridoma technology, transgenic technology and their application in medicine and industry for the benefit of living organisms
 - To explain *in vitro* fertilization, embryo transfer technology and other reproduction manipulation methodologies.
 - To get insight in applications of recombinant DNA technology in agriculture, production of therapeutic proteins.
 - To understand principles of animal culture, media preparation.

ZOOLOGY PRACTICAL SYLLABUS FOR V SEMESTER
COURSE – 5: IMMUNOLOGY AND ANIMAL BIOTECHNOLOGY

Learning Objectives:

- Acquainting student with immunological techniques vis-à-vis theory taught in the class room
- Interconnect the theoretical and practical knowledge of immunity with the outer world for the development of a healthier life.
- Demonstrate basic laboratory skills necessary for Biotechnology research
- Promoting application of the lab techniques for taking up research in higher studies

I. IMMUNOLOGY

1. Demonstration of lymphoid organs (as per UGC guidelines)
2. Histological study of spleen, thymus and lymph nodes (through prepared slides)
3. Blood group determination
4. Demonstration of
 - a. ELISA
 - b. Immuno electrophoresis

II. Animal biotechnology

1. DNA quantification using DPA Method.
2. Techniques: Western Blot, Southern Hybridization, DNA Fingerprinting
3. Separation, Purification of biological compounds by paper, Thin-layer and Column chromatography
4. Cleaning and sterilization of glass and plastic wares for cell culture.
Preparation of culture media

Domain Subject: **ZOOLOGY**
IV Year B. Sc.(Hons)–Semester –V
Course Code: Max. Marks: 100+50
Course6 A: SUSTAINABLE AQUACULTURE MANAGEMENT
(Skill Enhancement Course (Elective), -Credits: 05)

Learning Outcomes:

Students at the successful completion of this course will be able to

- Evaluate the present status of aquaculture at the Global level and National level
- Classify different types of ponds used in aquaculture
- Demonstrate induced breeding of carps
- Acquire critical knowledge on commercial importance of shrimps
- Identify fin and shell fish diseases

**Course6 A: SUSTAINABLE AQUACULTURE MANAGEMENT
PRACTICAL SYLLABUS**

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Identify the characters of Fresh water cultivable species
- Estimate physico chemical characteristics of water used for aquaculture
- Examine the diseases of fin and shell fish
- Suggest measures to prevent diseases in aquaculture

Course 7 A: **POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES**

(Skill Enhancement Course (Elective), - Credits: 05)

Learning Outcomes:

Students at the successful completion of this course will be able to

- Identify the types of preservation methods employed in aquaculture
- Choose the suitable Processing methods in aquaculture
- Maintain the standard quality control protocols laid down in aqua industry
- Identify the best Seafood quality assurance system

Course 7 A: **POSTHARVEST TECHNOLOGY OF FISH AND FISHERIES PRACICAL SYLLABUS**

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Identify the quality of aqua processed products.
- Determine the quality of fishery by products by observation
- Analyze the protocols of aqua processing methods

Course6 B: **LIVE STOCK MANAGEMENT-I(BIOLOGY OF DAIRY ANIMALS)**

(Skill Enhancement Course (Elective), - Credits: 05)

Learning Outcomes:

- Students at the successful completion of the course will be able to
- Select the suitable breeds of livestock for rearing
- Relate the anatomy of udder with letdown of milk
- Identify and manipulate the reproductive behavior of cattle
- Inspect the economics of dairy farming

Apprise the various breeding techniques employed in live stock

Course 6 B: LIVE STOCK MANAGEMENT-I-PRACTICAL SYLLABUS (BIOLOGY OF DAIRY ANIMALS)

Learning Outcomes:

On successful completion of this practical course, student shall be able to

1. Examine the points of dairy cow
2. Understand the behavioral changes of cow during the reproductive period
3. Differentiate the merits and demerits of cross breeds in cattle

Course 7B: LIVE STOCK MANAGEMENT -II (DAIRY PRODUCTION AND MANAGEMENT)

(Skill Enhancement Course (Elective), - Credits: 05)

Learning Outcomes:

Students at the successful completion of the course will be able to

- Identify and suggest the suitable housing system for the dairy farming
- Understand management practices for the dairy farming
- Learn the process of milk pasteurization
- Prepare cream from milk

Course 7 B: LIVE STOCK MANAGEMENT -II – PRACTICAL SYLLABUS

(DAIRY PRODUCTION AND MANAGEMENT)

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Design a model dairy farm layout
- Understand procedure of milk pasteurization at milk processing centers
- Identify various important management practices in dairy farming

Course6 C: POULTRY MANAGEMENT- I (POULTRY FARMING)

(Skill Enhancement Course (Elective), - Credits: 05 (3+2))

Learning Outcomes:

Students at the successful completion of the course will be able to

- Evaluate the status of Indian Poultry Industry
- Explain the Scientific Poultry keeping
- Compare the diversified Poultry practices
- Inspect the different breeds of chicken

**Course6 C: POULTRY MANAGEMENT- I (POULTRY FARMING)
PRACTICAL SYLLABUS**

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Identify different types of Poultry rearing practices
- Evaluate the efficacy of different types of poultry practices in maximizing yield
- Understand the importance of different hybrid breeds in poultry

Course 7 C: POULTRY MANAGEMENT -II
(POULTRY PRODUCTION AND MANGEMENT)
(Skill Enhancement Course (Elective), - Credits: 05)

I. Learning Outcomes:

Students at the successful completion of the course will be able to

- Suggest measure for Health care in Poultry
- Evaluate the economics of poultry production
- Elaborate the poultry Breeder flock management
- Differentiate the poultry hatchery practices

Course 7C: POULTRY MANAGEMENT –II- PRACTICAL SYLLLABUS
(POULTRY PRODUCTION AND MANGEMENT)

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Identify Poultry diseases by observation
- Analyze Poultry establishment feasibility
- Understand the Poultry Records

Course6 D: SERI CULTURE -I* (BIOLOGY
AND CULTIVATION OF MULBERRY)
(Skill Enhancement Course (Elective), Credits: 05)

Learning Outcomes:

- Students at the successful completion of this course will be able to
- Evaluate the general status of Sericulture in India
- Understand the development of sericulture Botany
- Evaluate the use of Silk worm breeds
- Differentiate among various silkworm breeds
- Apprise the economics of silk rearing

Course6 D: SERI CULTURE -I – PRACTICAL SYLLLABUS

Learning Outcomes:

On successful completion of this practical course, student shall be able to:

- Develop sericulture map of India
- Develop charts on production of silk
- Examine the popular varieties of mulberry
- Display the silk glands of silk worm

Course 7 -D: **SERICULTURE -II (BIOLOGY AND REARING OF SILKWORM)**

(Skill Enhancement Course (Elective), - Credits: 05)

Learning Outcomes:

Students at the successful completion of this course will be able to

- Design low cost rearing house preparation for silk worm rearing
- Formulate procedure of sanitation of rearing house
- Make use of Chawki rearing practice
- Decide and suggest the correct time for harvest
- Develop and Maintain the records related to sericulture

Course 7 -D: **SERICULTURE –II-PRACTICAL SYLLABUS**

(BIOLOGY AND REARING OF SILKWORM)

I. Learning Outcomes:

- On successful completion of this practical course, student shall be able to :
- Appreciate the morphology of silkworm
- Realize the importance of and initiate measures to disinfect the importance of disinfection of rearing houses and rearing appliances
- Differentiate the methods of incubation of silkworm eggs
- Prioritize the records in silkworm rearing

H.O.D



Personal Profile

1. Personal details:

- a.** Name of the Faculty : K.NAGARJUNA
b. Department : ZOOLOGY
c. Designation : Asst.Professor (Selection Grade)
d. Subjects Taught : ZOOLOGY at Graduate level

Genetics, Animal Physiology, Ecology, Evolution, Cellular Biology, Animal Bio-Technology, Embryology, Immunology.

e. Level of Guidance & Teaching : -

f. Qualification: M.Sc., (Zoology), B.Ed.,

g. Teaching Experience : Graduate level - 10 years,

h. Academic Degrees:

Degree	University/Board	Date/Year	Awarded/Grade/Class
M.Sc., (Zoology)	Yogi Vemana University, Kadapa	2013	First Class
B.Ed.,	Dravida university, Kuppam, Chittor.	2009	First Class
B.Sc., (B.Z.C)	Sri KrishnaDevaraya University, Anantapur.	2008	First Class
Intermediate	BIE, Andhra Pradesh	2004	Second Class
S.S.C.	Board of Secondary School Education, AP	2002	First Class

Faculty profile

Name	Qualification	Designation	Teaching Experience
K.NAGARJUNA	MSc., B.Ed.,	Asst. Professor	10
K.NAGARAJU	MSc., B.Ed.,	Asst. Professor	8

Student profile Program wise:

Name of the course	Year	Total Seats	Enrolled	total
BZC	2019-2022	45	45	45

PASS PERCENTAGE :

NAME OF THE COURSE	YEAR	NO. OF STUDENTS ATTENDED FOR EXAMINATION	NO. OF STUDENTS PASSED	PASS PERCENTAGE
B.Z.C	2022	45	45	100%

Infrastructure facilities:

Library: There is a central library to cater to the need of the students. Department does not have a library. But the complimentary copies provided by different publisher are provided in the department for the use of the student.

Internet facility for staff and students: Yes (only for staff)

Yes Laboratories: Yes. Department has one single lab



Zoology Lab

Departmental activities;



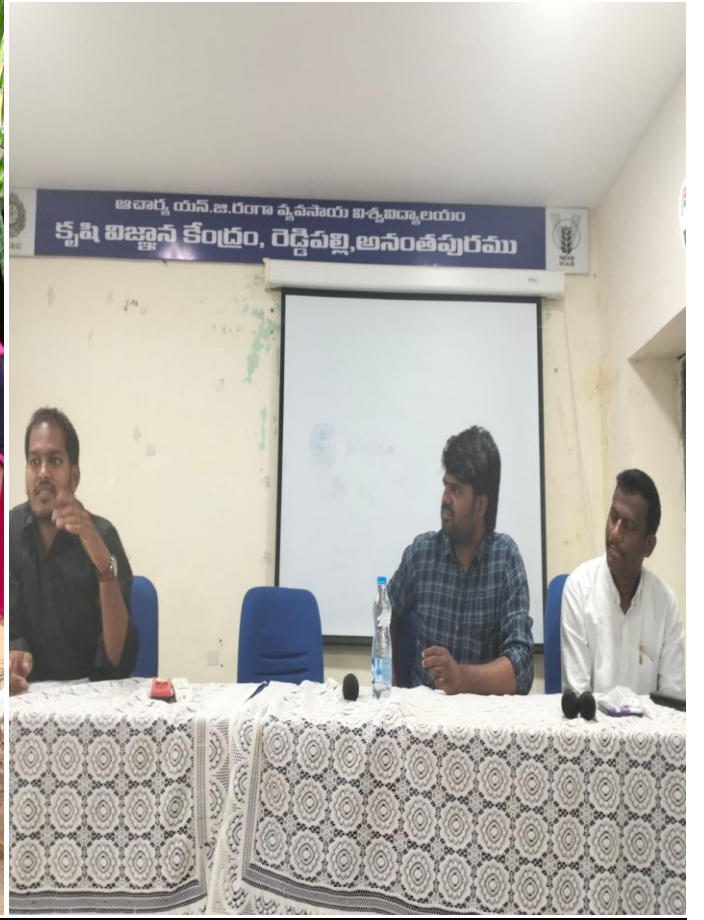
Demonstration of human Anatomy



Explanation about SPECIMENS



Students observed MODELS of different animals





Visit krishi vigan university reddy palli



Vermicompost



Awareness on HIV/AIDS PROGRAMME

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