



बिरसा मुंडा ट्रायबल युनिवर्सिटी Birsā Munda Tribal University

राजपिपला, जि. नर्मदा Rajpipla, Dist. Narmada

Established by Tribal Development Department, Govt. of Gujarat

School of Science B.Sc. (Zoology) Programme

Subject Code & Name: BS05SEZOO2 Industrial Zoology

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
2	-	-	2	50 %	-	50 %	-

Programme Name	B.Sc. Zoology
Semester	V
Course Code	BS05SEZOO2
Course Title	Industrial Zoology
Course Content Type (Th./Pr.)	Theory
Course Credit	2
Sessions	2
Total Teaching/Lab. Hours	30 Theory Hours

Learning Objectives

- Bridge academic biological theory with commercial application.
- Transform students from observers to managers of biological resources.
- Curriculum covers life cycles and industrial technologies of important organisms (e.g., silkworms, honey bees, livestock).
- Aims to cultivate an entrepreneurial mindset.

Prerequisites (if any)

- Students should have a strong background in General Zoology, particularly in Invertebrate and Vertebrate taxonomy and anatomy.
- A basic understanding of Biochemistry and Genetics
- Also have the knowledge of Ecological Principles to understand the relationship between animals and their environment, essential for effective rearing and sustainable waste management.

Learning Outcomes

After completing this course, students will be able to:

- Student will master the production of animal by-products, including silk, honey, leather, and wool.
- They will manage commercial poultry and dairy operations, implement vaccination schedules, and identify high-yield breeds.
- Graduates will conduct Environmental Impact Assessments (EIA) and develop comprehensive business proposals.



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Detailed Contents		
UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	Industrial Entomology, Diagnostic Zoology Application Animals • Sericulture: Life cycle of Bombyx mori, mulberry cultivation, silkworm rearing, and the technology of silk reeling. • Lac Culture: Biology of the lac insect (<i>Laccifer lacca</i>), host plants, and industrial processing of shellac. • Leather and Wool Industries: Basics of hide processing (tanning) and the grading of wool fibers from various sheep breeds. • Transgenic Animals: Principles of producing "Pharmed" animals (cows, goats) for human therapeutic proteins. • Ornamental Fish Farming: Biology and rearing of popular aquarium fishes; construction and maintenance of home and commercial aquaria.	15
II	Animal Husbandry & Poultry Science • Dairy Industry: Selection of high-yield breeds (cows and buffaloes), milk processing, and production of dairy products (cheese, butter, yogurt). • Poultry Farming: Management of layers (Egg-producing) and broilers (Meat-producing), poultry diseases, and vaccination. • Vermiculture: Industrial production of vermicompost using earthworms for organic farming and waste management. • Bio-products: Extraction of Insulin, Heparin, and Snake Venom for Anti-Venom production. • Laboratory Animal Science: Breeding and ethics of using model organisms (Mice, Rats, Zebrafish) for pharmaceutical testing. • Quality Control: Standardizations (ISO, FSSAI) for animal-based products. • Project Formulation: How to draft a business plan for a small-scale sericulture or aquaculture unit.	15





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Text Book(s)

1. Economic Zoology by Shukla and Upadhyay, Rastogi Publications
2. Introduction to Economic Zoology by Sarkar, Kundu and Chaki, New Central Book Agency
3. Textbook of Economic Zoology by Aminul Islam, I K International Publishing House
4. A Handbook of Economic Zoology by by Jawaid Ahsan and Subhas Prasad Sinha, S.Chand
5. Economic Zoology by N. Arumugam et al. Saras Publications
6. Economic Zoology by Biostatistics and Animal Behaviour by Shukla & Upadhyay
7. Economic Zoology by Vinita Jaiswal & Kamal Kumar Jaiswal (PHI Learning)
8. A Textbook of Animal Husbandry by G.C. Banerjee, Oxford & IBH
9. Economic Zoology by Dr. M. Bhushanam et al., IIP Books
10. Applied Zoology by N. Arumugam et al., Saras Publications

Reference Books

1. Apiculture, Sericulture and Lac Culture by Laxmi Lal Somani
2. Illustrated Textbook of Clinical Diagnosis in Farm Animals by Philip R. Scott, CRC Press
3. Biotechnology: Expanding Horizons by B.D. Singh, Kalyani Publishers
4. Vermiculture and Vermicomposting by R.K. Bhatnagar & R.K. Pal
5. Milk and Milk Products Technology by Subhash Biswas

Web Resources

1. SWAYAM / NPTEL (Government of India): <https://swayam.gov.in/>
2. Consortium for Educational Communication (CEC): <http://cec.nic.in/>
3. e-PG Pathshala: <https://epgp.inflibnet.ac.in/>
4. Coursera / edX: <https://www.coursera.org/>
5. ICAR - e-Krishi Shiksha: <https://ecourses.icar.gov.in/>
6. Practical Learning Tips: fssai.gov.in

L:: Lecture, **T::** Tutorial, **P::** Practical

CCE:: Continuous and Comprehensive Evaluation

(CCE Theory includes Mid Semester Examination, Assignment, MCQ quizzes, Seminar, Reflective notes, class participation, case analysis and presentation, slip tests (announced/ surprised), attendance etc. or any combination of these)

PWE:: Practical Work Examination

(PWE includes Laboratory practical work, project work, viva simulation exercise work etc.)

SEE:: Semester End Evaluation

