



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: BS05MJZOO3 Practical Based on BS05MJZOO1 & BS05MJZOO2

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
-	-	4	4	-	50 %		50 %

Programme Name	B.Sc. Zoology
Semester	V
Course Code	BS05MJZOO3
Course Title	Practical Based on BS05MJZOO1 & BS05MJZOO2
Course Content Type (Th./Pr.)	Practical
Course Credit	4
Sessions + Lab. Per Week	8 Hours (4 + 4)
Total Teaching/Lab. Hours	60 hours
* 2 Laboratory = 1 Session	

Learning Objectives

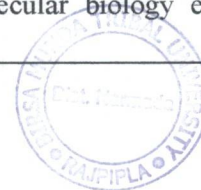
- Students will learn to identify and differentiate larval stages of various animal groups.
- They will develop a understanding of digestive, nervous, and reproductive systems in selected animals.
- Students will also gain basic knowledge of DNA structure, replication, and laboratory techniques such as DNA extraction and cell culture handling.

Prerequisites (if any)

- Students should have a basic understanding of animal classification and major phyla.
- They should be familiar with cell structure, DNA as genetic material, and the central dogma of molecular biology.
- Knowledge of laboratory safety, microscope handling, and biological sketching is also required.

Learning Outcomes

- After completing the course, students will be able to identify important larvae and relate them to their adult forms.
- They will be able to draw and explain the anatomy of selected organisms and correlate structures with functions.
- Students will also perform DNA extraction, explain landmark molecular biology experiments, and demonstrate familiarity with essential laboratory instruments.





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

Detailed Contents	
TOPIC/SUB-TOPIC	TEACHING HOURS
List of Practical (Practical are demonstrated using charts, models and multimedia videos) 1. To study larva of Annelida, Arthropoda and Echinodermata. - <i>Trochophore larva</i> , <i>Nauplius larva</i> , <i>Zoea larva</i> , <i>Megalopa larva</i> , <i>Alima larva</i> , <i>Bipinaria larva</i> , <i>Ophiopluteus larva</i> , <i>Echinopluteus larva</i> . 2. To study the External features of Tape worm. 3. To study the Nervous system of Tape worm. 4. To study the Reproductive system of Tape worm. 5. To study the External features of <i>Nereis</i> . 6. To study the digestive system of <i>Nereis</i> . 7. To study the Nervous system of <i>Nereis</i> . 8. To study the Reproductive system of <i>Nereis</i> . 9. To study the External features of Cockroach. 10. To study the Digestive system of Cockroach. 11. To study the Nervous system of <i>Cockroach</i> . 12. To study the Reproductive system of <i>Cockroach</i> . 13. To study the External features of <i>Pila</i> . 14. To study the Digestive system of <i>Pila</i> . 15. To study the Nervous system of <i>Pila</i> . 16. To study the Reproductive system of <i>Pila</i> . 17. To study the External features of <i>Star Fish</i> . 18. To study the Digestive system of <i>Star Fish</i> . 19. To study the Nervous system of <i>Star Fish</i> . 20. To study the Reproductive system of <i>Star Fish</i> . 21. Extracting genomic DNA from onions, bananas, or tomatoes using household detergent, table salt, and chilled ethanol (or 90% Isopropyl alcohol). 22. To study the Griffiths transformation experiment 23. To study the Watson & Crick 3D DNA double helix Model. 24. To study the Polymorphism in DNA double helix. 25. To study the codon assignment and the Wobble Hypothesis. 26. To study the DNA Replication (Semi-discontinuous). 27. To study the types of DNA damage. 28. To study the tools and equipments used in Animal Cell culture.	60





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

Text Book(s)

1. A Manual of Practical Zoology: Invertebrates by P. S. Verma, S. Chand
2. Practical Zoology: Invertebrates by S. S. Lal. Rastogi Publications, Meerut
3. Laboratory Manual in Zoology by P. S. Verma and V. K. Agarwal, S. Chand
4. A Textbook of Practical Zoology by R. L. Kotpal. Rastogi Publications, Meerut
5. Invertebrate Zoology by E. L. Jordan and P. S. Verma, S. Chand & Company Ltd., New Delhi
6. Modern Textbook of Zoology: Invertebrates by R. L. Kotpal, Rastogi Publications
7. Cell and Molecular Biology by De Robertis, Lippincott Williams & Wilkins
8. Molecular Biology of the Cell by Bruce Alberts et al. Garland Science
9. Molecular Biology of the Gene by James D. Watson et al. Pearson Education
10. Principles of Genetics by D. Peter Snustad and Michael J. Simmons, John Wiley & Sons
11. Genetics: A Conceptual Approach by Benjamin A. Pierce, W. H. Freeman & Company
12. Animal Cell Culture: A Practical Approach by John R. W. Masters, Oxford University Press
13. Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications by R. Ian Freshney. Publication: Wiley-Blackwell
14. Developmental Biology by Scott F. Gilbert. Publication: Sinauer Associates, Oxford University Press
15. Human Embryology and Developmental Biology by Bruce M. Carlson, Elsevier Publication,

Web Resources

1. Animal Diversity Web – <https://animaldiversity.org>
2. Encyclopaedia Britannica (Invertebrates) – <https://www.britannica.com/science/invertebrate>
3. Smithsonian Ocean Portal (Invertebrates) – <https://ocean.si.edu/ocean-life/invertebrates>
4. Tree of Life Web Project – <http://tolweb.org/tree/>
5. National Geographic Animals – <https://www.nationalgeographic.com/animals>
6. DNA from the Beginning – <https://www.dnafb.org>
7. Learn Genetics – <https://learn.genetics.utah.edu>
8. Khan Academy Biology – <https://www.khanacademy.org/science/biology>
9. Virtual Labs Biotechnology – <https://vlab.amrita.edu/?sub=3&brch=73>
10. YourGenome – <https://www.yourgenome.org>

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

