



बिरसा मुंडा ट्रायबल युनिवर्सिटी Birsā Munda Tribal University

राजपिपला, जि० नर्मदा Rajpipla, Dist. Narmda

Established by Tribal Development Department, Govt. of Gujarat

School of Science B.Sc. (Zoology) Programme

Subject Code & Name: BS03MJZOO1 Animal Diversity – Non Chordates

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage (%)			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
3	-	1	4	35	15	35	15

Programme Name	B.Sc. Zoology
Semester	III
Course Code	BS03MJZOO1
Course Title	Animal Diversity – Non Chordates
Course Content Type (Th./Pr.)	Theory + Practical
Course Credit	4
Sessions + Lab. Per Week	3 + 2
Total Teaching/Lab. Hours	45 Theory Hours + 30 Practical Hours
* 2 Laboratory = 1 Session	

Learning Objectives

1. The student receives training and skills in the basics of zoology, understands the complex interactions of different living organisms.
2. Students should be able to identify and classify the major groups of non-chordates.
3. Students should learn about the general body plans, organ systems, and specialized adaptations of different non-chordates groups.
4. They should be able to trace the evolutionary relationships.

Prerequisites (if any)

- Student must know about different strata and hierarchy of taxonomy.
- Student must aware about specific terms used for animal organ and organ systems.

Learning Outcomes

On the Completion of this course, students will able to:

1. Learn about the taxonomy and diversity of different classes of animals.
2. They learn about morphology and organ systems of primitive animal.
3. Understand the diversity of non-chordate animals, their evolutionary history.
4. Students gain knowledge about the different phyla characteristics.





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Detailed Contents		
UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	<p>Scheme of classification of phylum Protozoa to Echinodermata up to order with examples:</p> <ul style="list-style-type: none">• General characters Protozoa.• Classification outline of phylum Protozoa (up to order).• General characters Porifera.• Classification outline of phylum Porifera (up to order).• General characters Coelenterata• Classification outline of phylum Coelenterata (up to order).• General characters Platyhelminthes.• Classification outline of phylum Platyhelminthes (up to order).• General characters Nemathelminthes• Classification outline of phylum Nemathelminthes (up to order).• General characters Annelida• Classification outline of phylum Annelid (up to order)• General characters Arthropoda.• Classification outline of phylum Arthropoda (up to order).• General characters Mollusca• Classification outline of phylum Mollusca (up to order).• General characters Echinodermata• Classification outline of phylum Echinodermata (up to order).	15
II	<p>General Topics of Non-chordates:</p> <ul style="list-style-type: none">• Nutrition in protozoa.• Protozoa and Human diseases in brief (<i>Entamoeba histolytica</i>, <i>Giardia</i>, <i>Trypanosoma gambiense</i>).• Economic importance of sponges• Polymorphism in Coelenterata.• Parasitic Adaptations of Helminthes.• Regeneration in Annelida.• Economic importance of Arthropoda, Mollusca and Echinodermata.	15





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III	General Morphology and Functional Anatomy: Liver fluke (<i>Fasciola hepatica</i>) <ul style="list-style-type: none">• Habit & Habitat.• External Morphology.• Digestive system.• Excretory system.• Nervous system.• Reproductive system.• Regeneration in Liver fluke.• Life cycle and Parasitic adaptations.	15
Unit – IV Practical (s)		30 Hours
<ol style="list-style-type: none">1. To study the classification of phylum Protozoa and Porifera up to Order. <i>Entamoeba, Diffugia, Noctiluca, Trypanosoma, Nyctothererus, Balanotidium, Plasmodium, Clathrina, Sycon, Hyalonema, Euplectella, Euspongia, Cliona, Spongilla.</i>2. To study the classification of phylum Coelenterata up to Order. <i>Obelia, Bougainvillea, Tubularia, Physalia, Velella, Pennaria, Plumularia, Zoanthus, Fungia, Corals.</i>3. To study the classification of phylum Platyhelminthes and Nematelminthes up to Order. <i>Polystoma, Schistosoma, Liver fluke, Tap worm, Trichinella, Wauchereria, (filaria worm), Enterobius (pin worm), Ancylostoma (Hook worm).</i>4. To study the classification of Phylum Annelida and Arthropoda up to Order. <i>Polyone, Cheatopterus, Arenicola, Tubifix, Pontobdella, Cyclops, Lobster, Julus (Millipede), Spider, Dragonfly, Lepisma.</i>5. To study the classification of Phylum Mollusca and Echinodermata up to Order. <i>Murex, Patella, Pearl oyster, Mya, Sepia, Thyone, Cake urchin, Heart urchin, Spiny brittle star, Astropecten.</i>6. To Study Digestive system of <i>Liver fluke</i>.7. To Study Reproductive system of <i>Liver fluke</i>.8. To Study Excretory system of <i>Liver fluke</i>.9. To Study Nervous system of <i>Liver fluke</i>.10. To Study Life cycle of <i>Liver fluke</i>.		





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Text Book(s)

1. Invertebrate Zoology by E. L. Jordan & P. S. Verma
2. A modern textbook of Zoology – Invertebrate Zoology by R. L. Kotpal
3. A textbook of Practical Zoology – Invertebrates by S. S. Lal
4. A Manual of Practical Zoology – Invertebrates by P. S. Verma
5. Nirav Collage Zoology – 201 for B.Sc. Students by Mihir Suthar and Haresh Patel.
6. Nirav Collage Zoology – 204 for B.Sc. Students by Mihir Suthar and Haresh Patel.
7. અપૃષ્ઠવંશી પ્રાણીઓ – યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ

Reference Books

1. Nirav College Zoology – 201 for B.Sc. Students by Mihir Suthar and Haresh Patel.
2. A Manual of Zoology- Vol. I & II by Ayyar and Ananthakrishnan.
3. Structure and Functions of Invertebrates by Barrington
4. Textbook of Invertebrates, 5th Ed. by Dhami and Dhami
5. Principles of Animal Taxonomy by Wallace, Dyson George and Gaylord Simpson.

Web Resources

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

