बिरसा मुंडा ट्रायबल युनिवर्सिटी
Birsa Munda Tribal University

राजपिपला, जि॰ नर्मदा   Rajpipla, Dist. Narmda
Established by Tribal Development Department, Govt. of Gujarat

School of Science
B.Sc. (Zoology) Programme
Subject Code & Name: BS04MJZOO1 Animal Diversity -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	IV
Course Code	BS04MJZOO1
Course Title	Animal Diversity -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. Understand their defining characteristics, including the presence of a notochord.
3. Student should be able to describe the evolutionary relationships between the different subphyla of chordates.
4. Students should be able to identify the derived characters that distinguish craniates from other chordates.

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. Students were able to learn about the taxonomy and diversity of different classes of animals.
2. Students will learn about morphology and organ systems of primitive animal.
3. Students should understand the unique characteristics and they should be able to define Chordata.
4. Student should be able to name and describe the classification of Chordata.

1

53

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Detailed Contents

UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	**General characters and Classification of Chordates.** • Classification of group Protochordata up to order • Classification of class Cyclostomata up to order. • Classification of super class Pisces up to order • Classification of class Amphibia up to order. • Classification of class Reptiles up to order. • Classification of class Aves up to order. • Classification of class Mammals up to order.	15
II	**General Topics of Chordates.** • Retrogressive metamorphosis in Protochordata. • Air bladder and swim bladder in fish. • Parental care in fish. • Migration of fish. • Parental care in Amphibia. • Amphibians are unsuccessful terrestrial animal. • Reptiles are successful terrestrial animal. • Modification of beak and feet in birds. • Migration of Birds. • Placental mammals.	15
III	**Type study: Scoliodon sorrakowah (Shark) / Indian dogfish.** • Habit & Habitat. • External Morphology • Digestive system. • Arterial system. • Nervous system. • Membranous labyrinth and Ampulla of Lorenzini. • Urinogenital system.	15

54

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Unit – IV Practical (s)	30 Hours

1. To study the classification of group protochordata and class Cyclostomata up to order.
   Balanoglossuss, Herdmania, Botryllus, Salpa, Ambhioxus ,lampry, Ammocoete larva.
2. To study the classification of super class Pisces up to order. *Raja, Pristis, Chimaera, Protopterus, Polypterus, Polydon,catla, clarias,Anabas, Tetrad*
3. To study the classification of class Amphibia up to Order.
   Axolotal Larva,, Necturus, Siren, Alytes, Bufo, Rana tigrina
4. To study the classification of class Reptile up to Order.
   Chelone, Testudo, Draco, Varanus, Mabuia, Sand boa, Indian python, Krait, Naja naja, Gavialish, Alligator.
5. To study the classification of class Aves up to Order.
   Ostrich, Kiwi, Coots, Spoon-bill, Penguins, Flamingo, Vulture, Quill, Swans, Humming bird.
6. To study the classification of class Mammals up to Order.
   Platypus, Spiny anteater, Fox, Lion, Dolphin, Kangaroo, Shrew, Loris, Porcupine, Mongoose.
7. To Study External character of Scoliodon.
8. To Study Digestive system of Scoliodon.
9. To Study Arterial system of Scoliodon.
10. To Study Nervous system of Scoliodon.
11. To Study Urinogenital system of Scoliodon.
12. To study parental care in fish.
13. To study parental care in Amphibia.

Text Book(s)

1. Vertebrate Zoology by E. L. Jordan & P. S. Verma
2. A modern textbook of Zoology – vertebrate Zoology by R. L. Kotpal
3. A textbook of Practical Zoology – vertebrates by S. S. Lal
4. A Manual of Practical Zoology – vertebrates by P. S. Verma
5. Nirav Collage Zoology – 202 for B.Sc. Students by Mihir Suthar and Haresh Patel.

Reference Books

1. Nirav College Zoology – 202 for B.Sc. Students by Mihir Suthar and Haresh Patel.
2. A Manual of Zoology- Vol. I &II by Ayyar and Ananthakrishnan.
3. A text Book of vertebrate Zoology by Prasad and Kashyap.
4. A Text Book of Chordata (Saras Publication) by Arumugam.
5. Principles of Animal Taxonomy by Wallace, Dyson George and Gaylord Simpson.

Web Resources

55

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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