



बिरसा मुंडा ट्रायबल युनिवर्सिटी

Birsa Munda Tribal University

राजपिपला, जि. नर्मदा Rajpipla, Dist. Narmada

Established by Tribal Development Department, Govt. of Gujarat

School of Science

B.Sc. (Chemistry) Programme

Subject Code & Name: - BS01MICHE1 : Basic Concepts of Zoology-I

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				CCE		SEE	
L	T	P	Total	TH	PWE	TH	PWE
3	-	1	4	37.5 %	12.5 %	37.5 %	12.5 %

Programme Name	B.Sc. (Chemistry)
Semester	I
Course Code	BS01MICHE1
Course Title	Basic Concepts of Zoology-I
Course Content Type (Th./Pr.)	Theory + Practical
Course Credit	3 + 1
Sessions+ Lab. Per Week	3 + 2
Total Teaching/Lab. Hours	45 Theory Hours + 30 Practical Hours
* 2 Laboratory = 1 Session	

Learning Objectives

The student develop an understanding of taxonomy of non-chordates from Protist to Echinodermata, and understands the complex interactions of different living organisms.

Prerequisites (if any)

- Student must know about different strata and hierarchy of taxonomy.
- Student must aware about specific terms used for animal cell biology and genetics.

Learning Outcomes

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

1. Students will able to learn about the taxonomy and diversity of different phylum of non-chordate animals.
2. Students will learn about structure and functions of animal cell and cell organelles.
3. Students will learn about basic concepts of Mendelian genetics.





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Detailed Contents		
UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	Fundamentals of classification: <ul style="list-style-type: none">Scheme of classification of Non-chordatesGeneral characters of Phyla: Protozoa, Porifera, Coelenterata, Platyhelminthes, Nematoda, Annelida, Arthropoda, Mollusca and Echinodermata.Suitable examples (as per Practical Syllabus)	15
II	Basic Cell Biology: Cell, Cell Organelles and Microscopy <ul style="list-style-type: none">Ultra-structure of a typical Animal cell following organelles:NucleusMitochondriaEndoplasmic reticulumEukaryotic RibosomeLight Microscopes: (i) Simple (ii) Compound	15
III	Genetics: Mendelian and Non-mendelian inheritance: <ul style="list-style-type: none">Introduction to Genetics and geneMendel's Monohybrid (1:2:1) andDi - hybrid cross (9:3:3:1).Incomplete dominance (4 O'clock plant - 1:2:1)Co - dominance (Coat color in Cattle - 1:2:1)Multiple alleles ABO Blood groupsPolygenic inheritance (Skin color in humans -1:4:6:4:1)Lethal Genes : Coat color in Rat	15





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Unit – IV Practical(s)

30 Hours

1. Study of general characters of phylum protozoa and examples using laboratory slides, charts and specimens; Amoeba, Paramecium and Euglena.
2. Study of general characters of phylum Porifera and examples using laboratory slides, charts and specimens; Leucosolenia, Euspongia, and slides of sponge spicules
3. Study of general characters of phylum Coelenterata and Platyhelminthes and examples using laboratory slides, charts and specimens; Obelia, Aurelia, Sea anemone, Planaria, Liver fluke and Tape worm.
4. Study of general characters of phylum Nematoda and examples using laboratory slides, charts and specimens; Ascaris and Enterobius
5. Study of general characters of phylum Arthropoda and examples using laboratory slides, charts and specimens; Scorpion, Crab.
6. Study of general characters of phylum Mollusca and examples using laboratory slides, charts and specimens; Chiton, Dentalium, Pila, Unio, Octopus.
7. Study of general characters of phylum Echinodermata and examples using laboratory slides, charts and specimens; Star Fish, Brittle Star, Sea Cucumber, Feather Star.
8. Study of Cytology:
 - (i) Typical Animal cell
 - (ii) Nucleus
 - (iii) Mitochondria
 - (iv) Endoplasmic Reticulum
 - (v) Eukaryotic Ribosomes
9. Study of Light Microscopes: (i) simple (ii) compound
10. Study of Genetics:
 - (i) Monohybrid Ratio 3 : 1
 - (ii) Di - hybrid Ratio 9 : 3 : 3 : 1
 - (iii) In complete dominance 1 : 2 : 1
 - (iv) Co - dominance (1:2:1)
 - (v) Multiple Alleles - ABO Blood groups
 - (vi) Polygenic inheritance 1 : 4 : 6 : 4 : 1 (skin color in man)
 - (vii) Lethal genes-Coat Color in Rat 2 : 1





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Text Book(s)

1. Invertebrate Zoology by R. L. Kotpal Rastogi Publications, Meerut- New Delhi
2. Cytology by P. K. Gupta., S Chand & Co. Delhi
3. Fundamentals of Genetics by B. D. Singh. Medtech Science Press

Reference Books

1. Invertebrate Zoology by Jordan, E. L. and Verma, P.S, S. Chand & Co. New Delhi
2. Invertebrate Zoology by Dhami, P.S. and Dhami, J. K., S Chand & Co. Delhi
3. Cell Biology and Molecular Biology by N. Arumugan, Saras Publications.
4. Genetics by P.S. Verma & V.K. Agarwal, S. Chand & Co. Delhi.
5. A Manual of Zoology Vol. I & II, by Ayyar and Ananthkrishnan and Viswanthan
6. Biology of the Invertebrates by J. A. Pechenik,
7. Fundamental of Light Microscopy & Electron Imaging. Murphy D.B., Wiley Liss

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

