



**SARVODAYA KELAVANI SAMAJ MANAGED,  
SHREE MANIBHAI VIRANI & SMT. NAVALBEN VIRANI SCIENCE COLLEGE**

**AN AUTONOMOUS COLLEGE- AFFILIATED TO SAURASHTRAUNIVERSITY,  
RAJKOT**

Re-accredited at the 'A' Level (CGPA 3.28) by NAAC  
'STAR' College Scheme & Status by MST-DBT  
A College with Potential for Excellence - CPE (Phase-II) by UGC  
UGC-DDU KAUSHAL Kendra  
Accredited at the G-AAA Highest Grade 'A-1' Level by KCG, Govt. of Gujarat  
UGC-DDU KAUSHAL Kendra  
GPCB-Government of Gujarat approved Environment Audit Centre

**Enclosure –I A2**

Department: Biology

Programme: **B.Sc. Biochemistry**

<b>Semester – II</b>		
<b>Course Code</b>	<b>Course Title (Ap)</b>	<b>Credits</b>
21UBCID201	<b>IDC- II Zoology Zoology – Taxonomy, Histology and Applied Zoology</b>	3 Credits

**Course Description:**

The course “**Zoology – Taxonomy, Histology and Applied Zoology**” is specially designed to understand the nature and basic concept of animal Taxonomy, Forms and functions, Histology, Parasitology, and Applied Zoology. Students can learn the amazing diversity of living forms from simple to complex one. It enlightens how each group of organisms arose and how did they establish themselves in the environment with their special characteristics. It also deals with the differences and similarities between organisms on the basis of their anatomy and histology. This course also emphasis the diseases which are arose by parasites and applied Zoology.

**Course Purpose:**

This course is required for life science majors with a focus in fundamentals of animal Taxonomy and anatomical structure. With this course, the students can understand the needs of zoology for life and its utilization for the conservation of Biodiversity. The goal of the course is to inspire the knowledge across diverse fields of zoology. By this course students get the complete awareness regarding the chronic disease which is common among the society. Student can also get good practice in hands for self-sustaining economy.

**Course Outcomes:** Upon completion of this course, the learner will be able to

CO No.	CO Statement	Blooms taxonomy Level (K <sub>1</sub> to K <sub>6</sub> )
CO <sub>1</sub>	Describe a basic knowledge and understanding on the diversity of non-chordate and Chordate animals and its identification with Taxonomic status.	K <sub>1</sub> and K <sub>2</sub>
CO <sub>2</sub>	Illustrate basics of anatomical characteristics and structure in invertebrates.	K <sub>2</sub> and K <sub>3</sub>
CO <sub>3</sub>	Develop understanding and functioning of histological structures.	K <sub>2</sub> and K <sub>1</sub>
CO <sub>4</sub>	Observe identification and functions of chronic parasitic human diseases and human health.	K <sub>1</sub> and K <sub>3</sub>
CO <sub>5</sub>	Demonstrate application and principals of applied zoology for self-sustaining economy, economical self-dependency and economical productivity.	K <sub>3</sub> and K <sub>4</sub>

Course Content	Hours
<b>Unit -I: Animal Taxonomy</b>	9Hrs
<ul style="list-style-type: none"> <li>• Taxonomy of phylum Protozoa to Coelenterata.</li> <li>• Taxonomy of phylum Platyhelminthes to Annelida.</li> <li>• Taxonomy of phylum Arthropoda to Mollusca.</li> <li>• Taxonomy of phylum Echinodermata to Hemichordata.</li> <li>• Taxonomy of Chordate Animals.</li> </ul>	
<b>Unit-II Human Anatomy</b>	9 Hrs
<b>Type Study: Earth worm.</b> <ul style="list-style-type: none"> <li>• Habit, Habitat and External Characters</li> <li>• Digestive system</li> <li>• Reproductive system</li> <li>• Nervous system</li> <li>• Structure of Septal Nephridia</li> </ul>	
<b>Unit- III Organ Histology</b>	9 Hrs

<ul style="list-style-type: none"> <li>• Integumentary glands.</li> <li>• Histology of Gastro-intestinal track.</li> <li>• Pancreas.</li> <li>• Thyroid gland</li> <li>• Muscles.</li> </ul>	
<b>Unit- IV Pathogenic Animals</b>	9 Hrs
<ul style="list-style-type: none"> <li>• Entamoeba</li> <li>• Trypanosoma</li> <li>• Filarial worm</li> <li>• Guinea worm</li> <li>• Ascares</li> </ul>	
<b>Unit-V Applied Zoology</b>	9 Hrs
<ul style="list-style-type: none"> <li>• Aquarium Management</li> <li>• Shrimp culture</li> <li>• Pearl culture</li> <li>• Apiculture</li> <li>• Taxidermy and preservation.</li> </ul>	

#### **Text Books:**

1. Jordan E. L & Varma P.S.(2010) Non-chordate Zoology, S.Chand& Co. Ltd. New Delhi, 4<sup>th</sup> edition.(for unit 1, 2 &5).
2. Powar Nagendra S. (2018) Applied Zoology 2<sup>nd</sup> edition, Adhyayan Publisher and Distributor.
3. Kotpal R. L. Modern Text Book of Zoology: Invertebrate, Rastogi Publications, Merrut.
4. Rastogi, V. B. (1994) Organic evolution. Kedernath Ramnath, India.(for unit 4).

#### **References:**

1. Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *The Invertebrates: A New Synthesis*, III Edition, Blackwell Science .
2. Walter, H.E. and Sayles, L.P; *Biology of Vertebrates*, Khosla Publishing House

**PRACTICALS:****IDC II– Zoology Practical  
Zoology – Taxonomy, Histology and Applied Zoology**

21UBCID202	<b>Zoology Practicals</b>	<b>6 Hrs/Week</b>	<b>2 Credit</b>
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## Practicals

1. Identification and Classification of Protozoa and Coelentereta.
2. Identification and Classification of Phylum Platyhelminthes to Annelida.
3. Identification and Classification of Arthropoda.
4. Identification and Classification of Mollusc & Echinodermata.
5. Identification and Classification of Protochordate and Pisces.
6. Identification and Classification of Amphibia & reptiles.
7. Identification and Classification of Aves and Mammal.
8. Study of Connective links.
9. Systems of Earthworm.
10. Histological structure of mammalian organs.
11. Microtomy and its utility.
12. Study of staining technique for permanent slide.
13. Study of Pathogenic Animals.
14. To study the aquarium tank set up and its proper arrangement.
15. To study the types of Aquarium fishes and plants.
16. Study of Aqua culture.
17. Instrumentation in Pearl culture and Api culture.
18. Study of Taxidermy and animal preservation.
19. Digestion of Starch through salivary Amylase.
20. Study of Mitosis.
21. Study of Meiosis.
22. To identify adulteration in Turmeric and Chilli powder.

**Reference books**

- Lal S. S., Practical book of Non-chordate.,.
- Lal S. S., Practical book of Chordate., 2014, Rastogi publication, Meerut .
- Jaysurya, Arumugam A., Zoology Practical, 2015, Saras Publication, South India.

**Pedagogic tools:**

- Chalk and Board
- Power point presentation
- Seminar
- Videos
- By field visit
- e-learning – Facebook page Royal Botany
- By models, specimens, charts, permanent slides
- By workshop

**Methods of Assessment & Tools:**

Components of CIE: 30 marks : Theory:

<b>Sr. No.</b>	<b>Component</b>	<b>Content</b>	<b>Duration (if any)</b>	<b>Marks</b>	<b>Sub Total</b>
<b>A</b>	Test 1	1 <sup>st</sup> 2 units	1 <sup>1/2</sup> hours	5 (Set for 30)	20
	Test 2	All 5 units	3 hours	15 (Set for 70)	
<b>B</b>	Assignment			05 (Set for 20)	10
<b>C</b>	Class activity			05 (Set for 20)	
<b>Grand Total</b>					<b>30</b>
<b>Assignment</b>		<ul style="list-style-type: none"> <li>• Question answer</li> <li>• Student generated hand book</li> <li>• Essay writing</li> <li>• Case study</li> <li>• Abstract and exclusive study</li> <li>• Power presentation</li> <li>• Chart/model</li> <li>• Poster</li> <li>• Herbarium preparation</li> </ul>			
<b>Class activity</b>		<ul style="list-style-type: none"> <li>• Quiz</li> <li>• One minute game on the base of the topic</li> <li>• Group discussion,</li> </ul>			

	<ul style="list-style-type: none"> <li>• Student talk, etc...</li> </ul>
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Components of CIE: 40 marks : Practical:

<b>Sr. No.</b>	<b>Component</b>	<b>Content</b>	<b>Duration (if any)</b>	<b>Marks</b>	<b>Sub Total</b>
<b>A</b>	Test	60% of Practical course	2 hours	30 (Set for 30)	30
<b>B</b>	Observation books and record	All Practicals	-	10 (Set for 05)	10
<b>Grand Total</b>					<b>40</b>