

GUJARAT UNIVERSITY

**B.Sc. SEMESTER-III
SYLLABUS
Sub- ZOOLOGY**

(National Education Policy-2020)

W.E.F. June-2024

GUJARAT UNIVERSITY
DISCIPLINE SPECIFIC COURSE (CORE) THEORY
B.Sc. SEMESTER-III ZOOLOGY
DSC-C-231 T (4-CREDITS)

(Animal diversity (Non-chordates) & Economic Zoology)

Unit: 1 Systematics (Non- Chordates)

General characters, salient features and classification of invertebrates, from Kingdom up to class giving reasons with examples (as per practical syllabus)

PHYLUM:

1. Annelida
2. Arthropoda
3. Mollusca
4. Echinodermata
5. Hemichordata

Unit: 2 Type Study: Earthworm (*Pheretima posthuma*)

Systematic position, Habits and Habitat, External characters, Body wall, Digestive system, Circulatory system, Excretory system, Nervous system, Reproductive system and Reproduction. Body Setae, Blood Gland, Septal Nephridia, Spermatheca, Ovary.

Unit: 3 General Topics

Metamerism, Symmetry, Metamorphosis, Regeneration in Annelids and Echinoderms

Coelom, Segmental organs in Annelida

Coelomoducts and Nephridia,

Adaptive radiation in Polychaetes.

Unit: 4 Economic Zoology

1. Sponge Industry and Economic importance of sponges,
2. Vermiculture,
3. Pearl culture in brief
4. Fresh water Prawn culture,
5. Lac culture.

Reference Books :

1. Textbook of Invertebrates, R. L. Kotpal, Rastogi Publishers, Meerut.
 2. A Manual of Zoology, E. K. Ayyer, Vol. I & II.
 3. Invertebrate Zoology, Jordan and Verma, S. Chand & Company, Delhi.
 4. Invertebrate : Structure and Function, E. J. W. Barrington.
 5. Economic zoology: Shukla G.S. and Upadhyay V.B. 1998, Rastogi Publication, Meerut.
 6. Handbook of Economics Zoology - Jawaid Ahsan, Subhash Prasad Sinha
 7. Text book of Invertebrates, N Arumugam, Saras Publication
 8. અપૃષ્ઠવશી પ્રાણીઓ, મ.શી.દુબળે અને એ.બી.વ્યાસ, યુનિ. ગ્રંથ નિર્માણ બોર્ડ.
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GUJARAT UNIVERSITY
DISCIPLINE SPECIFIC COURSE (CORE) THEORY
B.Sc. SEMESTER-III ZOOLOGY
DSC-C-232 T (4-CREDITS)
(Animal diversity (Chordates) & Wild Life)

Unit: 1 Systematics (Chordates)

General characters, salient features and classification of Vertebrates, from Kingdom up to order giving reasons with examples (as per practical syllabus)

1. Protochordata
2. Cyclostomata
3. Pisces
4. Amphibia

Unit: 2 Type Study: Scoliodon

Systematic position, Habits and Habitat, External characters, Digestive system, Respiratory system, Blood vascular system, Nervous system, Sense organs (Internal ears, Lateral line organs, Ampullae of Lorenzini) Urinogenital system, Reproduction.

Unit: 3 General Topics:

1. Comparison of Chondrichthyes and Osteichthyes.
2. Neoteny (Types and affecting factors)
3. Identification of venomous and non-venomous snakes of India. -
- Venomous snakes- Russel's viper, Krait, Cobra, King cobra, Marine Snakes.
- Non-venomous snakes- Boa, Pythons, Rat snake
4. Hearing, Feeding mechanism, Poison apparatus, Biting mechanism, Snake Venom and its types, Symptoms of snake bite, Treatment.

Unit: 4 Wild life Biology

1. Scopes & Importance of wild life in India.
2. Brief account on wild life in India.
3. Wild life Conservation and Protection (Animal Projects and Acts) - Project Lion, Project Elephant, Wild life Protection act 1972 & its amendments.

4. Brief Introduction of Indian Board for Wild Life (IBWL), Convention on International Trade in Endangered Species of wild fauna and flora (CITES) and Bombay Natural History Society (BNHS).
5. 1. Biodiversity hot spots in India- the Western Ghats, the Himalayas, the Indo- Burma region, and Sundaland region.
2. Key stone species in India – Location, Distribution and Description of Star fish, Elephant, Sea otter, Sun bird.
6. Protected areas in India – Jim Corbett, Kaziranga, Sundarbans, Bharatpur, Periyar, Dachigam.

Reference Books :

1. Textbook of Vertebrates, R. L. Kotpal, Rastogi Publication, Meerut.
2. Chordate Zoology, P. S. Dhama, and J. K. Dhama, S. Chand & Co., Delhi.
3. Introduction to Chordates, T. C. Majumuria, PradeepPublication, Jalandhar.
4. Indian Wildlife, Srilanka, Nepal, APA Publications.
5. Wildlife of India, Mark E. Trisch, HarperCollins Pub.
6. Threatened Animals of India, B.K. Tikader, ZSI, Calcutta.
7. Natural Heritage of Gujarat (Forest & Wildlife), Singh, H. S. 2001, GEER Foundation, Gandhinagar.
8. Snake of South-East Asia, Indraneil Das, John Beaufoy publication
9. Guidelines of management of snake bites, WHO, ISBN 978-92-9022-530-0

GUJARAT UNIVERSITY
DISCIPLINE SPECIFIC COURSE (CORE) PRACTICAL
B.Sc. SEMESTER-III ZOOLOGY
DSC-C-233 P (Practicals) (4-CREDITS)
(Animal diversity (Non-chordates and Chordates), Economic
Zoology, Wild Life Biology)

PART - A (Based on Paper- DSC-C-231 T)

- **Systematics (Non-chordates)** - Identification and classification from Kingdom up to class.
 1. Annelida- Nereis, Lumbricus, Hirudinaria
 2. Arthropoda- Limulus, Prawn, Millipede, Centipede, Silverfish, Dragonfly.
 3. Mollusca- Chiton, Dentalium, Pila, Mytilus, Sepia.
 4. Echinodermata- Astropecten, Ophiura, Echinocardium, Holothuria, Antedon.
 5. Hemichordata- Balanoglossus, Rhabdopleura.

- **Type study- Earthworm** - Study through charts/models/multimedia.
 1. External Characters
 2. Digestive system,
 3. Circulatory system,
 4. Nervous system,
 5. Reproductive system
 6. Mountings- Body Setae, Blood Gland, Septal Nephridia, Spermatheca, Ovary.
 7. T.S. passing through- Pharynx, Gizzard, Typhlosole.

- **General Topics (Non-Chordates)** - Study through charts/models / multimedia.
 1. Metamerism
 2. Symmetry
 3. Metamorphosis
 4. Regeneration
 5. Coelom
 6. Segmental Organs
 7. Adaptive Radiation in Polychaetes

- **Economic Zoology** – Study through charts/ models/ multimedia.
 1. Sponge Industry & Economic Importance of Sponges.
 2. Vermiculture
 3. Pearl Culture
 4. Prawn Culture
 5. Lac Culture

PART - B (Based on Paper- DSC-C-232 T)

- **Systematics (Chordates)** Identification and classification from Kingdom up to order.
 1. Protochordates – Ascidia, Doliolum, Salpa, Amphioxus.
 2. Cyclostomata – Lamprey, Myxine (Hag Fish).
 3. Pisces – Sting ray, Electric ray, Catfish, , Ophiocephalus, Hippocampus (Sea Horse).
 4. Amphibia – Ichthyophis, Tiger salamander, Alytus.
- **Type study- Scoliodon** - Study through charts/models/multimedia.
 1. External Characters
 2. Digestive System
 3. Blood Vascular System – Heart, Venous System, Arterial System.
 4. Nervous System – Brain
 5. Urinogenital System
 6. Mountings – Placoid Scales, Membranous Labyrinth, Ampulla of Lorenzini.
- **General Topics (Non-Chordates)** - Study through charts/models/multimedia.
 1. Comparison of Chondrichthyes with Osteichthyes
 2. Examples of Neoteny
 3. Venomous and Non-Venomous Snakes
 - Venomous- Russel’s Viper, Krait, Cobra, King Cobra, Marine Snakes.
 - Non – Venomous – Boa, Python, Rat snake.
 4. Poison apparatus & Biting mechanism.
- **Wild Life Biology** - Study through charts/models/multimedia.

1. Biodiversity hot spots in India- the Western Ghats, the Himalayas, the Indo- Burma region, and Sundaland region – Spotting on Map, Location, Distribution and Description.
 2. Key stone species in India – Location, Distribution and Description of Star fish, Elephant, Sea otter, Sun bird.
 3. Protected areas in India – Jim Corbett, Kaziranga, Sundarbans, Bharatpur, Periyar, Dachigam. - Spotting on Map, Location, Distribution and Description.
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