

Detailed Curriculum for Zoology
SEMESTER I

Core Course: CC-Zoo 111: Invertebrate Zoology: I

Unit: I Taxonomy 15 hours

- General Body Organization of Invertebrates: Germ Layers; Coelom, Symmetry; Segmentation
- Classification of following Phyla up to Class
Protozoa, Porifera, Coelenteata, Platyhelminthes, Nementhelminthes

Unit-II Type Study 15 hours

- **Leucosolenia:** Body wall; Reproduction; Canal system
- **Plasmodium:** Life cycle and pathogenesis
- **Hydra:** Ext.characters; Locomotion; Body wall; Reproduction
- **Ascaris:** Ext. characters; Digestive system; Reproductive system; Life cycle & pathogenesis

Unit-III CYTOGENETICS 15 hours

- Animal cell structure
- **Nucleus:** Occurrence and Position; Structure: Nuclear membrane, Nuclear pores, function of Nuclear membrane chromatin fibre, Nucleolus (structure and function)
- **Chromosomes :** Structure and Types
- Cell Cycle & Mitotic division of cell
 - Practical Applications of Genetics
 - Laws of Mendelian genetics
 - Incomplete dominance and Complete dominance
 - Multiple alleles with reference to ABO Blood group in Humans

Unit-IV Economic Zoology 15 hours

- Apiculture ,Sericulture,
- Pearl culture, Prawn Fisheries,
- Vermiculture

Reference Books:

1. Economic Zoology, **Shukla**
2. Modern Textbook of Zoology INVERTEBRATES, R.L.Kotpal, Rastogi publication
3. INVERTEBRATE ZOOLOGY, P.S.Dhami & P.S. Dhami
4. Text book of Invertebrates, N Arumugam, Saras Publication
5. Non-chordata, E.L.Jordan and P.S.Varma, S.Chand & Co.
6. , ଥିଲେ ମଧ୍ୟ
7. Cell Biology, C.B.Powar, Himalaya Books Pub.
8. Cell Biology, N. Arumugam, Saras Publication
9. Cytology, P.S. Varma, S.Chand & Co.Ltd.
10. Text books of Genetics, V.B. Rastogi, Kedarnath Ramnath, Meerat
11. Concept of Genetics, R.L.Kotpal, Rastogi Publication
12. Genetics, N.Arumugam, Saras Publication
13. A Text book of Genetics, R.P. Meyyan, Saras Publication

**Core Course: PC-Zoo 111: Practical Zoology I
(PRACTICAL for SEMESTER-I)**

A. Classification of following specimens up to class

1. Protozoa: Amoeba; Paramecium; Euglena; Plasmodium
2. Porifera: Leucosolenia; Hyalonema; Euspongia
3. Coelenterata: Hydra; Aurelia; Coral
4. Platyhelminthes: Planaria; Liver fluke; Tapeworm
5. Aschelminthes: Ascaris

B. Study of Permanent Slides

6. T.S. and L.S. of Leucosolenia
7. Hydra with Gonads (W.M. and T.S.)

C. Cytology (permanent slides)

8. Animal Cell Structure
9. Nucleus
10. Any chromosomes

D. Dissection and mounting of Ascaris

11. Reproductive system (female) and Mounting of Egg
12. Digestive system

E. Mitotic division of cell (Onion root tip)

F. Genetics:

13. Examples related to Laws of Mendel's : Monohybrid-3:1
Dihybrid: 9:3:3:1
14. Examples related to Incomplete dominance and Co-dominance-1:2:1
15. Examples related to ABO blood groups

G. Economic Zoology

16. Apiculture: Life cycle of *Apis indica*
17. Sericulture: Life cycle of *Bombyx mori*
18. Specimens of Prawn and Pearl oyster

SEMESTER-II

Core Course: CC-Zoo 122: Invertebrate Zoology: II

Unit-I Taxonomy 15 hours

- Classification of following Phyla up to Class
Annelida, Arthropoda, Mollusca
Echinodermata, Hemichordata

Unit-II Type Study -2 15 hours

- Earthworm: Ext. Feature; Body wall; Digestive system; Nervous system;
Reproduction system; Circulatory system; excretory system
- Pila: Ext. Features; Digestive system; Nervous system

Unit-III Human Physiology 15 hours

- **Blood**
 - Composition of Blood and tonicity of RBC
 - Blood coagulation
 - Blood related diseases: Thalassemia; Haemophilia; AIDS and Anaemia
- **Reproduction**
 - Gametogenesis, Ovulation, Menstrual cycle, and Fertilization

Unit-IV Ecology and Wild Life Biology 15 hours

- **Ecology:** Definition; Structure and functions of Ecosystems; Types of Ecosystem [Terrestrial (Desert & Forest) and Aquatic (Fresh water only)]
- **Wild Life:** - National Park [Gir; Velavadar; Marine & Vansada] and Sanctuaries
- [Jassore; Wild Ass; Nal sarovar; Shulpaneshwar] of Gujarat; Asiatic Lion project; Endangered wild life fauna of Gujarat and threats

Reference Books:

1. Modern Textbook of Zoology INVERTEBRATES, R.L.Kotpal, Rastogi publication
2. INVERTEBRATE ZOOLOGY, P.S.Dhami & P.S. Dhami
3. Text book of Invertebrates, N Arumugam, Saras Publication
4. Non-chordata, E.L.Jordan and P.S.Varma, S.Chand & Co.
5. .૨૧ ૫૧૬
6. .૨૧ ૫૧૬
7. Animal Physiology, Goel and Shashtri,
8. Human Physiology, Chatterji & Chatterji
9. Animal Physiology, N. Arumugam, Saras Publicaiton
10. Text book of Medical Physiology, Arthur C. Guyton, W.B.Saunders company
11. Odum, E P, Fundamentals of Ecology
12. Soni V.C., Vanya Jeev ane Teni Vyavastha, Guj. Granth Nirman Board
13. Sharma, P.D. Ecology and Environment
14. Singh, H.S. Natural Heritage of Gujarat

**Core Course: PC-Zoo 122: Practical Zoology II
(PRACTICAL for SEMESTER-II)**

A. Classification of following specimens up to class

- 1 Annelida: Neries , Arenicola, Leech
- 2 Arthropoda: Peripatus, Crab, Centipede, Butterfly, Scorpion
- 3 Mollusca: Chiton, Pila, Unio, Octopus
- 4 Echinodermata: Starfish, Brittlestar, Seaurchin, sea cucumber, Sealily
- 5 Hemichordata: Balanoglossus

B. Dissection of Earthworm:

6. External Character
7. Digestive system
8. Nervous system
9. Reproductive system
10. Mountings: Setae, Blood glands, Septal nephridia, Spermatheca

C. Study of Permanent slides:

11. Pila: Redula
12. Earthworm: - T.S. Passing thro Pharynx
- T.S. Passing thro Gizzard
- T.S. Passing thru Typhlosole
- W.M. of Ovary
13. Blood: Blood Smear
14. Reproduction: P.S. of Mammalian Testis and Ovary
15. Ecology and Wild Life (through chart or models or Field Study)
16. Visit to various places to study different Ecosystem and Submit the excursion report).
17. Study of any one National park (through chart)
18. Study of Sanctuaries (through chart)
19. To prepare a list of endangered fauna with their details
20. To make survey of Blood related diseases in your town:
Anemia/Hemophilia/Thalassemia/AIDS

List of Elective Courses: (EC Zoo...)

- Animal health science
- Human diseases and control
- Animal diversity
- Zoo maintenance and museum curation
- Pest control Technology
- Dairy science and technology
- Forensic science
- Inland fisheries
- Sociality in animals

EC- Zoo____

Animal Health Science

Unit 1: General Introduction

- **Differentiation about Pets, Farm animals, Live stock and Wildlife and their health related issues**
- **Common Health Problems in farm animals and pets**
causes of ill health, injury, pains, conditions, nutritional problems; living organisms; parasites; family pets common conditions; dogs; cats; caged birds; aquarium fish; mice; wild animals common conditions; reptiles.
- **Health Problems in Domestic Pets**
Burns; urinary tract infections; shock; electrolytes, ticks; reptiles; fish problems.

Unit 2: Health indicators and their assessment

- **Signs of Illness**
vital signs, the healthy animal; signs & symptoms of diseases; recognising ill health; diagnosis of diseases; taking smears, taking tissue samples; diagnosis and control of different types of diseases including viruses; bacteria; protozoa; parasites; mites; fleas.
- **Preventative Health Care**
Diet; insect control; dip; vaccinate; avoid stressing livestock; vaccination.
- **Rehabilitation Care**
Animal nursing, planning and recovery

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Human Diseases and Control

Unit 1: General Introduction

- Types of diseases: communicable and non communicable Disease
- Disease vectors and their mode of transmission
- Important disease vectors
- Epidemic disease

Unit 2: Prevention and Control

- Biological control of Vectors
- Prevention of Communicable diseases
- Prevention and control of genetic diseases
- Role of government in controlling diseases

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Pest Control Technology

Unit 1: Introduction to Animal Pests

- Pests, their classification and significance of their control
- Insect pests: Identification, General Information and Type of Damage
- Avian Pests: Identification, General Information and Type of Damage
- Mammalian Pests: Identification, General Information and Type of Damage

Unit 2: Pest Control

- Introduction of pest control
- Control of Insect pests
- Controlling Avian pests
- Control of Mammalian Pests