

SHREE GOVIND GURU UNIVERSITY, GODHRA
UNDERGRADUATE SYLLABUS - CHOICE BASED CREDIT SYSTEM
SYLLABUS OUTLINE
B. Sc. ZOOLOGY - Core I and Core II

SEMESTER – I **7 Cr**

THEORY 4 Cr

UNIT I Non-chordates-I

UNIT II Chordates-II

UNIT III Physiology

UNIT IV Cytology

Practicals – I 3 Cr

SEMESTER – II **7 Cr**

THEORY 4 Cr

UNIT I Non-chordates-II

UNIT II Chordates-II

UNIT III Comparative anatomy

UNIT IV Genetics-I

Practicals – II 3 Cr

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SEMESTER – I

7 Cr

THEORY

UNIT I Non-chordates-I

Protista/protozoa to annelid (upto class level)

Type study: HYDRA- External characters, histology of body wall, nerve net, reproduction, life cycle.

UNIT II Chordates-I

Protochordata to Amphibia (upto order level)

Type study: FROG-External characters, buccal cavity, digestive system, brain, urinogenital system.

UNIT III Mammalian Physiology

Physiology of respiration

Physiology of conduction of nerve impulse

Physiology of excretion

UNIT IV Cytology

Light microscopes: Simple and compound microscopes

Ultrastructures of a typical animal cell, nucleus, mitochondria, endoplasmic reticulum, eukaryotic ribosome.

Practicals – I

NON-CHORDATES - Classification up to class level (Study through charts, slides and/or specimens)

1. Protozoa- Amoeba, paramoecium, Euglena
2. Porifera- Sponges (leucosolenia, grantia, Bath sponge)
3. Coelentrata- Hydra, obelia, auralia, Sea anemone, corals
4. Platyhelminthes- Planaria, liverfluke, tapeworm
5. Nematoda- Ascaris, pinworm
6. Annelida- Nereis, Earthworm, leech, Aphrodite, Sabella.

CHORDATES - Classification up to order level (Study through charts, slides and/or specimens)

1. Protochordata- Amphioxus, Petromyzon
2. Chondrichthyes- Shark, Sting ray, Electric Ray
3. Osteichthyes- Catla, Rohu, Flat fish, Flying fish, cat fish, eel, sea horse,
4. Amphibia- Bufo, bull frog, tree frog, Salamander, Siren, Necturus.
5. Urine analysis – chemical analysis (Sugar, protein, Bile salts, Urea).

CYTOLOGY and PHYSIOLOGY

1. Study of simple and compound microscopes.
2. Histology slides: Kidney, Lungs and Types of neurons.
3. Study of cell organelles through charts: Nucleus, mitochondria, typical animal cell, Endoplasmic reticulum, eukaryotic ribosome.
4. Hydra- study through permanent slides: W.M., T.S., budding in hydra, T.S. through Ovary, T.S. through Testis, nematocyst.
5. Frog: External characters, sexual dimorphism, buccal cavity, digestive system, urinogenital system, brain.

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SEMESTER – II

7 Cr

THEORY

UNIT I Non-chordates-II

Arthropoda to hemichordata (upto class level)

Type study: PILA- External characters, foot, mantle, digestive system, circulatory system and reproductive system.

UNIT II Chordates-II

Reptilia to mammalia

Type study: Pigeon – External characters, types of feather, digestive system and reproductive system.

UNIT III Comparative anatomy

Comparative anatomy of circulatory system: Heart and aortic arches

Comparative anatomy of nervous system: Brain

Comparative anatomy of urinogenital system: Kidney

UNIT IV Genetics-I

Introduction to genetics and gene

Mendelian genetics and laws of heredity,

Dominance, multiple alleles, blood grouping, Polygenic inheritance, lethal genes

Practicals – II

Practicals – II

NON-CHORDATES - Classification up to class level (Study through charts, slides and/or specimens)

1. Arthropoda- Crab, lobster, balanus, Scorpion, spider, millipede, centipede, cockroach, ant, termite, butterfly, king crab.
2. Mollusca- Chiton, dentalium, unio, pila, octopus, sepia.
3. Echinodermata- Starfish, brittle star, sea cucumber, feather star.
4. Hemichordata- Balanoglossus.

CHORDATES - Classification up to order level (Study through charts, slides and/or specimens)

1. Reptilia- Draco, calotes, chameleon, varanus, house gecko, crocodile, gavialis, turtle, tortoise, snakes (Krait, cobra, russel's viper, saw scaled viper, rat snake, checkered keel back).
2. Aves- Pigeon, parakeet, sparrow, crow, peacock, black kite, owl, duck, wood pecker, kingfisher, vulture, flamingo, penguin, ostrich, emu.
3. Mammalia- Whale, seal, dolphin, tiger, lion, leopard, fox, wolf, rat, bat, kangaroo, koala, hanuman langur, horse, wild ass, squirrel, rabbit, bonnet monkey, chimpanzee, gorilla, .

COMPARATIVE ANATOMY and GENETICS

4. Pigeon- External characters, feathers, digestive system, reproductive system
5. Comparative anatomy- Heart, aortic arches, brain, kidney.
6. Genetics- Pleiotropism, Duplicate genes (15:1 ratio, e.g. Fruit shape in Shepherd's purse), Multiple genes (e.g. Biochem. pathway of Tryptophan in E. coli).
Mutations-Definition, Mutable & Mutator genes, Reverse mutation, Paramutations
Frame-shift mutations and their types, Mutagens (Radiation & Chemical agents)

RECOMMENDED BOOKS: (Semester I and II)

- A Manual of Zoology Vol. I&II, Ekambarnath Ayyar and Ananthakrishnan Viswanthan Pvt. Ltd. Madras.
- Biology of Animals, C. P. Hickman, L. S. Roberts, and A. Larson, McGraw Hill Company, New York.
- Biology of the Invertebrates, J. A. Pechenik, Tata-McGraw Hill Company, Ltd, New Delhi.
- Book of Indian Animals, S. H. Prater, BNHS-Oxford Press, Mumbai
- Chordate Zoology Jordan, E. L. and Verma, P.S, S. Chand & Co. New Delhi.
- Field Guide to Indian Mammals, V. Menon, D. K. Publications, New Delhi
- Handbook of Indian Birds, S. Ali, BNHS-Oxford Press, Mumbai
- Handbook of Indian Reptiles & Amphibians, J. C. Daniel, BNHS-Oxford Press, Mumbai
- Integrated principals of Zoology, C. P. Hickman, L. S. Roberts, and A. Larson, McGraw Hill Company, New York.
- Invertebrate Form & Function, E. J. W. Barrington, PHI, New Delhi.
- Invertebrate Zoology Jordan, E. L. and Verma, P.S, S. Chand & Co. New Delhi.
- Invertebrate Zoology, Dhami, P. S. and Dhami, J. K. S. Chand and Company
- Practical Zoology Lal, S. Part I & II
- The Vertebrate body Romer, S.. W.B. Saunders, London
- Vertebrates: Comparative Anatomy, Function, Evolution, K. V. Kardong, Tata-McGraw Hill Company, Ltd, New Delhi
- Textbook of Genetics, Veerbala Rastogi, Kedar Nath Ram Nath, Meerut.
- Genetics, P.S.Verma & V.K.Agarwal, S. Chand & Company, Delhi.