Course Code : ZOO-DSC-01
Course Title: Diversity of Animals
Total Credits: 04 (Credits: Theory-02, Practical-02)
Total Lectures: Theory- 30 hrs., Practical- 15 classes of 4 hours each

Objectives: The objective of this course is to teach the students concepts of morpho- taxonomy aswell as understand the characteristics and physiological aspects of unicellular and metazoan animals. The course lays emphasis on creating awareness and concern towards significance of animal diversity for human survival and its socio- economic importance. In addition to this, the course is aimed at nurturing skills of conducting scientific inquiry and experimentation in the field of animal diversity to acquire knowledge of fundamental concepts and theories of animal diversity.

Learning Outcomes:

By the end of the course, the students will be able to:

- Acquire knowledge of diversity of non-chordate and chordates.
- Learn characteristics, morphotaxonomy, structural organization and physiological life systemof diverse animal groups.
- Understand the economic importance of non-chordates and chordates and their importance inthe ecosystem.
- Learn evolutionary relationships and phylogeny of invertebrates and vertebrates to structuralas well as functional similarities.

Unit I– Introduction ***02 hrs.***

Introduction to five kingdom classification system, General characters of kingdom Animalia and basis of its classification (with special reference to coelom), Concept of Taxonomic Hierarchy (up to species level), significance of binomial nomenclature.

Unit II: Protista to Pseudocoelomates **09 hrs.**

Characteristics of acoelomates and pseudocoelomates. Locomotory organelles and locomotion inProtozoa, Canal system in Porifera, Polymorphism in Cnidaria (Hydrozoa), Life cycle of *Taeniasolium* and its Parasitic adaptations, Life cycle of *Ascaris lumbricoides* and its Parasitic adaptations.

Unit III: Coelomates ***09 hrs.***

General features of coelomates, Metamerism in Annelida, Vision in Arthropoda, Metamorphosis in Insects. Torsion and detorsion in Gastropoda. Pearl Formation, Water-vascular system in Asteroidea

Unit IV: Chordates ***10 hrs.***

Salient features of protochordates and chordates, Retrogressive metamorphosis in protochordates, Osmoregulation, Migration, and Parental care in fishes, Parental care in Amphibians, Flight adaptations and Migration in birds, Biting mechanism in snakes, Origin of mammals.

PRACTICAL **[60 hours]**

1. General Characteristics and Classification up toclasses: Protista, Porifera, Cnidaria,Platyhelminthes, Nemathelminthes. Study of museum specimens: *Amoeba,Euglena, Paramecium, Sycon, Euplectella, Obelia, Physalia, Aurelia, Metridium,* larval stage of *Taenia solium,* Male and female *Ascaris lumbricoides.*

2. General Characteristics and Classification up to classes: Annelida, Arthropoda, Mollusca, Echinodermata. Study of museum specimens: *Aphrodite, Nereis, Chaetopterus, Pheretima, Hirudinaria, Palaemon, Cancer, Limulus, Palamnaeus, Scolopendra, Chiton, Dentalium, Pila, Unio, Octopus, Pentaceros, Echinus, Cucumaria, Antedon.*

3. Study of following specimens, general characteristics and classification: *Balanoglossus, Amphioxus, Herdmania.*

4. Study of following specimens, general characteristics and classification up to order: *Petromyzon, Pristis, Exocoetus, Hippocampus, Hyla, Salamander Ichthyophis/Uraeotyphlus, Naja, Viper, Hydrophis, Chameleon, Uromastix, Milvus, Anas, Psittacula, Loris, Pteropus, Sorex*

5. Submission of report on an excursion to a Sanctuary/ Biodiversity Park.

Note: Classification to be followed from Ruppert, E.E., Fox, R.S., Barnes R.D. "*Invertebrate Zoology*" 7th Edition., Cengage Leaning, India" & Young, J. Z. (2004) *The Life of Vertebrates*. III Edition. Oxford university press.

Recommended Books:

1. Ruppert, E.E., Fox, R.S., Barnes, R. D. *Invertebrate Zoology: A Functional EvolutionaryApproach*. 7th Edition, Cengage Learning, India.
2. Young, J. Z. (2004) *The Life of Vertebrates*. III Edition. Oxford university press.
3. Barrington, E.J.W. (2012) *Invertebrate Structure and Functions*. II Edition, EWP Publishers.
Pechenik, J. A. (2015) *Biology of the Invertebrates*. VII Edition, McGraw-Hill Education
4. Campbell & Reece (2005). Biology, Pearson Education, (Singapore) Pvt. Ltd.
5. Kardong, K. V. (2002). Vertebrates Comparative Anatomy. Function and Evolution. TataMcGraw Hill Publishing Company. New Delhi.
6. Pough H. *Vertebrate Life*, VIII Edition, Pearson International.

7. Lal, S.S. (2012), Practical Zoology Invertebrate.
8. Lal S.S. (2015-16), Practical Zoology Vertebrate.
9. P. S. Verma (2010), A Manual of Practical Zoology: Chordates.

Teaching Learning Process:

- Blend of conventional blackboard teaching, modern teaching learning tools and computational infrastructure- based instructions and Practical training.
- Problem solving and quizzes for enhanced understanding of the concepts.
- Explaining the handling and usage of the hardware and software required for solution to thegiven set of problems.

Assessment Methods:

- Presentations by Individual Student/ Group of Students
- Class Tests at Periodic Intervals.
- Written assignment(s)
- End semester University Theory Examination Presentations by Individual Student/ Group of Students

REGISTRAR