

Major	ZOO-326	Animal Diversity-II (Chordates) For BS/AD Chemistry/ Botany Allied Course	3(2+1)
-------	---------	---	--------

Course Outline:

1. Protochordates

- a. Classification of protochordates.
- b. Structure, anatomy and organ systems of Acorn worms, Urochordates and Cephalochordates
- c. Reproduction; life histories and metamorphosis of protochordates.

2. Fishes:

- a. Vertebrate Success in Water.
- b. Classification of Chondrichthyes, Osteichthyes, Dipnoi and Holocephalli
- c. Locomotory adaptations, nutrition and the digestive system, circulation, gas exchange, nervous and sensory functions, excretion and osmoregulation, reproduction and development of Chondrichthyes (Scoliodon) and Osteichthyes (Cyprinus carpio and Wallago attu).

3. Amphibians:

- a. The first terrestrial vertebrates.
- b. Characteristics of amphibians
- c. Classification of amphibians and characteristics of order Caudata, Gymnophiona, and Anura.
- d. Structure and locomotory adaptations, nutrition and the digestive system, circulation, gas exchange, temperature regulation, nervous and sensory functions, excretion and
- e. Osmoregulation, reproduction, development and metamorphosis of caudate, anura and Gymnophiona.

4. Reptiles:

- a. The First Amniotes and cladistic interpretation of the amniotic lineage. General characteristics of reptiles.
- b. Characteristics of Order Testudines or Chelonia, Rhynchocephalia, Squamata, and Crocodylia
- c. Adaptations in external structure and locomotion, nutrition and the digestive system, circulation, gas exchange and temperature regulation, nervous and sensory functions, excretion and osmoregulation, reproduction and development of chelonia, squamata, Rhynchocephalia and crocodylian.

5. Birds:

- a. Classification, Feathers, flight and endothermy.
- b. Phylogenetic relationships; ancient birds and the evolution of flight.
- c. Diversity of modern birds.
- d. Adaptation in external structure and locomotion, nutrition and the digestive system, circulation, gas exchange, and regulation, nervous and sensory systems, excretion and osmoregulation, reproduction and development.
- e. Migration and navigation.

6. Mammals:

- a. Classification, Specialized teeth, endothermy, hair and viviparity.

b. Diversity of mammals.

c. Adaptations in external structure and locomotion, nutrition and the digestive system, circulation, gas exchange, and temperature regulation, nervous and sensory functions, excretion and osmoregulation, behavior, reproduction and development.

Practicals:

1. Classification and study of lab specimens of hemichordates, fishes, amphibians, reptiles, birds and mammals.

2. Visit to PMNH for the study of diversity of chordates.

Text and Reference Books:

1. Campbell, N.A. Biology. Latest Edition. Menlo Park, California Benjamin/Cummings Publishing Company, Inc.

2. Miller, S.A. and Harley, J.B.. Zoology, Latest Edition (International) Singapore: McGraw Hill.

3. Miller, S.A. 2002. General Zoology Laboratory Manual. 5th Ed. (International), Singapore: McGraw Hill.

4. Hickman, C.P., Roberts, L.S. and Larson, A. Integrated Principles of Zoology, 14th Edition (International), 2009. Singapore: McGraw-Hill.

5. Pechenik, J.A. Biology of Invertebrates, 4th Edition (International), 2000. Singapore: McGraw Hill.