## B.Sc. Zoology Syllabus Under CBCS 2019

### Curriculum for Zoology
**In Under Graduate Degree Programme**
**CBCS Syllabus Schedule 2019**

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Paper</th>
<th>Title of the Paper</th>
<th>No. of Credits</th>
<th>Exam Hrs</th>
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Practical One Credit equal to 3hrs
UNIT – I:
1.1 Protozoa.
   1.1.1 General characters and classification of Protozoa upto order levels with examples
   1.1.2 Type study – *Elphidium*
   1.1.3 Locomotion and Reproduction in Protozoa.
   1.1.4 Epidemiology of Protozoan diseases - Amoebiasis; Giardiasis; Leishmaniasis and Malaria.

1.2 Porifera
   1.2.1. General characters and classification of Porifera upto order levels with examples
   1.2.2 Type study – *Sycon*
   1.2.3 Canal system in sponges and Spicules.

UNIT – II

2.1. Cnidaria
   2.1.1 General characters and classification of Cnidaria upto order levels with examples
   2.1.2 Type study - *Obelia*
   2.1.3 Polymorphism in Siphonophora
   2.1.4 Corals and coral reef formation

2.2 Platyhelminthes
   2.2.1 General characters
   2.2.2 Classification of Platyhelminthes up to classes with examples
   2.2.3 Type study- *Schistosoma*

2.3 Nematelminthes
   2.3.1 General characters
   2.3.2 Classification of Nematelminthes up to classes with examples
   2.3.3 Type study - *Dracunculus*
   2.3.4 Parasitic Adaptations in Helminthes

UNIT – III

3.1 Annelida
   3.1.1 General characters
   3.1.2 Classification of Annelida up to classes with examples
   3.1.3 Type study - *Hirudinaria granulosa*.
   3.1.4 Evolutionary significance of Coelome and Coelomoducts and metamermism

3.2 Arthropoda
   3.2.1 General characters
   3.2.2 Classification of Arthropoda up to classes with examples
   3.2.3 Type study - Prawn

Practical One Credit equal to 3hrs
B.Sc. ZOLOGY SYLLABUS UNDER CBCS 2019

3.2.4 Crustacean larvae
3.2.5 Insect metamorphosis
3.2.6 Peripatus - Structure and affinities

UNIT – IV

4.1 Mollusca
  4.1.1 General characters
  4.1.2 Classification of Mollusca up to classes with examples
  4.1.3 Type study - Pila
  4.1.4 Pearl formation
  4.1.5 Torsion and detorsion in gastropods

4.2 Echinodermata
  4.2.1 General characters
  4.2.2 Classification of Echinodermata up to classes with examples
  4.2.3 Water vascular system in star fish
  4.2.4 Echinoderm larvae and their significance

Suggested Readings

5. Barrington. E.J.W., ‘Invertebrate structure and Function’ by ELBS.

Practical One Credit equal to 3hrs
1. **Study of museum slides / specimens / models (Classification of animals up to orders)**
   i. **Protozoa:** Amoeba, Paramoecium, Paramoecium Binary fission and Conjugation, Vorticella, Entamoeba histolytica, Plasmodium vivax
   ii. **Porifera:** Sycon, Spongilla, Euspongia, Sycon - T.S & L.S, Spicules, Gemmule
   iii. **Coelenterata:** Obelia – Colony & Medusa, Aurelia, Physalia, Velella, Corallium, Gorgonia, Pennatula
   iv. **Platyhelminthes:** Planaria, Fasciola hepatica, Fasciola larval forms – Miracidium, Redia, Cercaria, Echinococcus granulosus, Taenia solium, Schistosoma haematobium
   v. **Nematheleminthes:** Ascaris(Male & Female), Dracunculus, Anclyostoma, Wuchereria
   vi. **Annelida:** Nerelis, Aphrodite, Chaetopterus, Hirudinaria, Trochophore larva
   vii. **Arthropoda:** Cancer, Palaemon, Scorpion, Scolopendra, Sacculina, Limulus, Peripatus, Larvae - Nauplius, Mysis, Zoa, Mouth parts of male & female Anopheles and Culex, Mouthparts of Housenfly and Butterfly.
   viii. **Mollusca:** Chiton, Pila, Unio, Pteres, Murex, Sepia, Loligo, Octopus, Nautilus, Glochidium larva
   ix. **Echinodermata:** Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria, Antedon, Bipinnaria larva

2. **Dissections:**
   - Prawn: Appendages, Digestive system, Nervous system, Mounting of Statocyst
   - Insect Mouth Parts

3. **Laboratory Record work shall be submitted at the time of practical examination**

4. An “Animal album” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/topics may be given to different sets of students for this purpose.

5. **Computer aided techniques should be adopted – show virtual dissections**

**Suggested manuals:**

1. Practical Zoology- Invertebrates S.S. Lal
2. Practical Zoology - Invertebrates P.S. Verma
3. Practical Zoology - Invertebrates K.P. Kurl

Practical One Credit equal to 3hrs
B.Sc. I Year
ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER
Discipline Specific Course, Paper – I
ANIMAL DIVERSITY - INVERTEBRATES

Time: 2 Hrs.
Marks: 25

1. Identification, labeled diagram and salient features of spots:
   (7 Museum specimens + 2 slides)  
   Max. 18
2. Dissection (one) (Diagram -02 + Dissection & Display-05)  
   Max. 07
3. Field Visit & Note Book  
   Max. 04
4. Project Work  
   Max. 03
5. Certified practical record  
   Max. 03
6. Animal Album  
   Max. 03
7. Viva voce  
   Max. 02

Practical One Credit equal to 3hrs
UNIT – I
1.1 Hemichordata
   1.1.1 General characters
   1.1.2 Classification of Hemichordata up to classes with examples
   1.1.3 Balanoglossus - Structure and affinities

1.2. Urochordata, Cephalochordata, Cyclostomata
   1.2.1. Salient features of Urochordata
   1.2.2. Retrogressive metamorphosis and its significance in Urochordata
   1.2.3. Salient features and affinities of Cephalochordata
   1.2.4. General characters of Cyclostomata
   1.2.5. Comparison of the Petromyzon and Myxine
   1.2.6. General characters and classification of Chordata upto orders with examples.

UNIT – II
2.1. Pisces
   2.1.1. General characters of Fishes
   2.1.2. Classification of fishes up to order level with examples
   2.1.3. Scoliodon – Respiratory, Circulatory and Nervous system.
   2.1.4. Types of Scales and types of Fins

2.2. Amphibia
   2.2.1. General characters of Amphibians
   2.2.2. Classification of Amphibians up to orders with examples.
   2.2.3. Rana tigrina - Respiratory, Circulatory and Nervous system.
   2.2.4. Parental care in amphibian; neoteny and paedogenesis.

UNIT – III
3.1 Reptilia
   3.1.1. General characters of Reptilia
   3.1.2. Classification of Reptilia up to orders with examples
   3.1.3. Calotes – Respiratory system, Circulatory and Nervous system.
   3.1.4. Temporal fosse in reptiles and its evolutionary importance
   3.1.5. Distinguished characters of Poisonous and Non poisonous snakes.

3.2. Aves
   3.1.1. General characters of Aves
   3.1.2. Classification of Aves up to orders with examples.
   3.1.3. Columba livia - , Digestive system, Circulatory systems, Respiratory system and Nervous system.
   3.1.4. Migration in Birds
   3.1.5. Flight adaptation in Birds

UNIT – IV

Practical One Credit equal to 3 hrs
4.1. Mammalia
   4.1.1. General characters of Mammalia
   4.1.2. Classification of Mammalia up to orders with examples
   4.1.3. Rabbit –Digestive, Respiratory, Circulatory and Nervous system.
   4.1.4. Dentition in mammals.
   4.1.5. Aquatic adaptations in Mammals.

Suggested Readings:

4. Alfred Sherwood Romer. Thomas S. Pearson 'The Vertebrate Body, Sixth edition,
   CBS college Publishing, Saunders College Publishing
   McGraw Hill.
6. Kenneth Kardong Vertebrates: Comparative Anatomy, Function and Evolution, 4th ed,
   'McGraw Hill.
   Education Inc.2002.

Practical One Credit equal to 3hrs
Periods: 45

Max. Marks: 25

Study of museum slides / specimens / models (Classification of animals up to orders)

1. Hemichordata: Balanoglossus, Tornaria larva
2. Protostomata: Amphioxus, Amphioxus T.S. through pharynx
3. Cyclostomata: Petromyzon, Myxine, Ammocoetus larva
4. Pisces: Sphyraena Pristis, Torpedo, Channa, Pleuronectes, Hippocampus, Exocoetus, Echeneis, Labeo, Catla, Clarius, Auguilla, Protopterus, Scales: Placoid, Cycloid, Ctenoid
5. Amphibia: Ichthyophis, Amblystoma, Siren, Hyla, Rana, Bufo, Rana, Axolotl larva
7. Aves: Archaeopteryx, Passer, Psittacula, Bubo, Alceda, Columba, Corvus, Pavo; Collection and study of different types of feathers: Quill, Contour, Filoplume, Down
8. Mammalia: Ornithorhynchus, Tachyglossus, Pteropus, Funambulus, Manis, Loris, Hedgehog


Osteology:
1. Rabbit – Axial skeleton system (bones of Skull and Vertebral Column)
2. Varanus, Pigeon and Rabbit – Appendicular skeleton system (bones of limbs and girdles)

Dissections of Labeo/Tilapia:
1. Digestive system.
2. Brain, Weberian ossicles
3. V, VII, IX, X cranial nerves

Laboratory Record work shall be submitted at the time of practical examination

An “Animal album” containing photographs, cut outs, with appropriate write up about the above mentioned taxa. Different taxa/topics may be given to different sets of students for this purpose.

Computer aided virtual dissections.

Suggested manuals
1. S.S. Lal, Practical Zoology – Vertebrata
2. P.S. Verma, A manual of Practical Zoology – Chordata
3. Freeman & Bracegirdle, An atlas of embryology

Practical One Credit equal to 3hrs