

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year
I - SEMESTER

Discipline Specific Course, Paper – I
[Code: BS105; Course Type DSC 2A]
Animal Diversity – Invertebrates

Periods: 60

Max. Marks: 40

UNIT – I

(15 Periods)

1.1 Brief history of Invertebrates

- 1.1.1 Kingdom Animalia
- 1.1.2 Brief history of Invertebrates

1.2 Protozoa

- 1.2.1 General characters
- 1.2.2 Classification up to classes with examples
- 1.2.3 Type study - Elphidium
- 1.2.4 Life cycle of Plasmodium.
- 1.2.5 Locomotion, Reproduction and Diseases

1.3 Porifera

- 1.3.1 General characters
- 1.3.2 Classification of Porifera up to classes with examples
- 1.3.3 Type study - Sycon
- 1.3.4 Canal system in sponges and Spicules.

UNIT – II

(15 Periods)

2.1. Cnidaria

- 2.1.1 General characters
- 2.1.2 Classification of Cnidaria up to classes with examples
- 2.1.3 Type study - Obelia
- 2.1.4 Polymorphism in hydrozoa
- 2.1.5 Corals and coral reef formation

2.2 Platyhelminthes

- 2.1.1 General characters
- 2.1.2 Classification of Platyhelminthes up to classes with examples
- 2.1.3 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

(15 Periods)

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 metamerism

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
- 3.2.4 Mouth parts of Insects
- 3.2.5 Insect metamorphosis
- 3.2.6 *Peripatus* - Structure and affinities

UNIT – IV

(15 Periods)

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

4.3 Hemichordata

- 4.3.1 General characters
- 4.3.2 Classification of Hemichordata up to classes with examples
- 4.3.3 *Balanoglossus* - Structure and affinities

Suggested Readings

1. L.H. Hyman 'The Invertebrates' Vol I, II and V. – M.C. Graw Hill Company Ltd.
2. Kotpal, R.L. 1988 - 1992 Protozoa, Porifera, Coelenterata, Helminthes, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
3. E.L. Jordan and P.S. Verma 'Invertebrate Zoology' S. Chand and Company.
4. R.D. Barnes 'Invertebrate Zoology' by: W.B. Saunders CO., 1986.
5. Barrington. E.J.W., 'Invertebrate structure and Function' by ELBS.
- 6 P.S. Dhami and J.K. Dhami. Invertebrate Zoology. S. Chand and Co. New Delhi.
7. Parker, T.J. and Haswell 'A text book of Zoology' by, W.A., Mac Millan Co. London.
8. Barnes, R.D. (1982). Invertebrate Zoology, V Edition"

B.Sc. I Year
ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER
Discipline Specific Course, Paper – I
[Code: BS105; Course Type DSC 2A]
ANIMAL DIVERSITY - INVERTEBRATES

Periods: 30

Max. Marks: 40

1. Study of museum slides / specimens / models (Classification of animals up to orders)
 - i. Protozoa: Amoeba, Paramecium, Paramecium 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. Nematelminthes: Ascaris(Male & Female), Dracunculus, Ancylostoma, Wuchereria
 - vi. Annelida: Nereis, Aphrodite, Chaetopteurs, Hirudinaria, Trochophore larva
 - vii. Arthropoda: Cancer, Palaemon, Scorpion, Scolopendra, Sacculina, Limulus, Peripatus, Larvae - Nauplius, Mysis, Zoea, Mouth parts of male & female Anopheles and Culex, Mouthparts of Housefly and Butterfly.
 - viii. Mollusca: Chiton, Pila, Unio, Pteredo, Murex, Sepia, Loligo, Octopus, Nautilus, Glochidium larva
 - ix. Echinodermata: Asterias, Ophiothrix, Echinus, Clypeaster, Cucumaria, Antedon, Bipinnaria larva
 - x. Hemichordata: Balanoglossus, Tornaria 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

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B.Sc. I Year
ZOOLOGY PRACTICAL SYLLABUS FOR I SEMESTER
Discipline Specific Course, Paper – I
[Code: BS105; Course Type DSC 2A]
ANIMAL DIVERSITY - INVERTEBRATES

Time: 2 Hrs.

Max. Marks: 40

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

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year
II - SEMESTER

Discipline Specific Course, Paper – II
[Code: BS205; Course Type DSC 2B]
Ecology, Zoogeography and Animal Behavior

Periods: 60

Max. Marks: 40

UNIT – I (15Periods)

1.1 Ecology - I

- 1.1.1 Ecosystem structure and functions.
- 1.1.2 Types of Ecosystems –Aquatic and Terrestrial.
- 1.1.3 Biogeochemical cycles - Nitrogen, Carbon, Phosphorus and Water.
- 1.1.4 Energy flow in ecosystem.
- 1.1.5 Food chain, food web and ecological pyramids.
- 1.1.6 Animal Associations - Mutualism, commensalism, parasitism, competition, predation.

UNIT – II (15 Periods)

2.1 Ecology – II

- 2.1.1 Concept of Species, Population dynamics and Growth curves.
- 2.1.2 Community Structure and dynamics and Ecological Succession.
- 2.1.3 Ecological Adaptations.
- 2.1.4 Environmental Pollution – Sources, Effect and Control measures of Air, Water, Soil and Noise pollution,
- 2.1.5 Wildlife conservation - National parks and Sanctuaries of India, Endangered species.
- 2.1.6. Biodiversity and hotspots of Biodiversity in India.

UNIT – III (15 Periods)

3.1 Zoogeography

- 3.1.1 Zoogeographical regions – Palaearctic, Nearctic, Neotropical, Oriental, Australian and Ethiopian regions - their Climatic and faunal peculiarities
- 3.1.2 Wallace line, Discontinuous distribution
- 3.1.3. Continental Drift

UNIT – IV (15 Periods)

4.1 Animal Behaviour

- 4.1.1 Types of Behaviour- Innate and Acquired, Instinctive and Motivated behaviour
- 4.1.2 Taxes, Reflexes, Tropisms
- 4.1.3 Physiology and phylogeny of learning, trial and error learning, Imprinting, habituation, Classical conditioning, Instrumental conditioning
- 4.1.5 Social behavior, Communication, Pheromones

4.1.6 Biological rhythms, Biological clocks, Circadian rhythms

Suggested Readings

M.P.Arora, 'Ecology' Himalaya Publishing company.

P.D.Sharma, Environmental Biology'.

P.R.Trivedi and Gurdeep Raj. 'Environmental Ecology'

Buddhadev Sarma and Tej Kumar, Indian Wildlife Threats and Preservation

Chapman J.L. and Reiss M.J, Ecology Principles and Applications, Second

Ed., Cambridge University Press, London.

Benny Joseph, Environmental Studies, TATA McGraw Hill Com., New Delhi.

Eugene P. Odum, Fundamentals of Ecology Third Ed., Nataraj Publishers,

Dehradun.

Veer Bala Rastogi, "Ecology and Animal Distribution"

P.K. Gupta, "Text Book of Ecology and Environment"

Bhatnagar and Bansal, "Ecology and Wildlife biology

Dasmann, "Wild life Biology"

Reena Mathur, "Animal Behaviour"

Alocock, "Animal Behaviour- an Evolutionary Approach

B.Sc. ZOOLOGY SYLLABUS UNDER CBCS

B.Sc. I Year

B.Sc. PRACTICAL SYLLABUS FOR II SEMESTER

Discipline Specific Course, Paper – II

[Code: BS205; Course Type DSC 2B]

Ecology, Zoogeography and Animal Behavior

Periods: 30

Max. Marks: 40

1. Determination of pH of Soil and Water
2. Estimation of salinity (chlorides) of water in given samples.
3. Estimation of Carbonates and bicarbonates in the given water samples.
4. Estimation of dissolved oxygen of pond water, sewage water and effluents.
5. Identification of Zooplankton from a nearby water body.
6. Study of Pond Ecosystem / local polluted site - Report submission
7. Study of at least 3 endangered or threatened wild animals of India through photographs / specimens / models
8. Field visit to Zoo Park to study the management, behavior and enumeration of wild animals.
9. Identification of Zoogeographical realms from the Map and identify specific fauna of respective regions.
10. Observe the response of invertebrates in different lightening conditions

Computer aided techniques should be adopted as per UGC guide lines.

Suggested manuals

1. Robert Desharnais, Jeffrey Bell, 'Ecology Student Lab Manual, Biology Labs'
2. Darrell S Vodopich, 'Ecology Lab Manual'