Punyashlok Ahilyadevi Holkar Solapur University, Solapur

NAAC Accredited-2022
'B^{++}' Grade (CGPA 2.96)

Name of the Faculty: Science & Technology

CHOICE BASED CREDIT SYSTEM

Syllabus: Zoology

Name of the Course: B.Sc. I Sem. I & II (Liberal Science)

(Syllabus to be implemented from June 2022)

Punyashlok Ahilyadevi Holkar Solapur University, Solapur

B. Sc. First Year (Liberal Science) Semester-I

Core Course: ZOOLOGY (Paper-I)

Teaching Scheme:	**Examination Scheme:**
Lectures – 3 Hours/week, 2 Credits	**UA – 40 Marks**
Practical – 4 Hours/week, 4 Credit	**CIE – 10 Marks**

About Course:

This course provides a broad overview of Zoology and to produces expert hands that would have sufficient knowledge and expertise to solve the urgent problems of the region by using Zoology. The course structure is basic science centric where students learn core science and are taught necessary fundamental subject for that purpose.

Course Prerequisite:

Student shall have knowledge of basic biology to continue with the understanding at the higher level of graduation as defined in the National Education Policy.

Preamble:

The systematic and planned curricula for first year students shall motivate and encourage them for pursuing higher studies in Zoology and for becoming an entrepreneur.

Course Objectives:

The objectives of B. Sc. Zoology course are:

a. To provide an intensive and in depth learning to the students in field of Zoology.

b. Beyond simulating, learning, understanding the techniques, the course also addresses the underlying recurring problems of disciplines in today scientific and changing world.

c. To develop awareness and knowledge of different organization requirement and subject knowledge through varied branches and research methodology in students.

d. To train the students to take up wide variety of roles like researchers, scientists, consultants, entrepreneurs, academicians, industry leaders and policy.

Course Outcomes:

Zoology has tremendous job potential in life sciences and allied areas such as:

a) Classical and molecular biology, ecology and environment, biochemistry, Biotechnology, Bioinformatics, Wildlife and Conservation Biology, Pharmacology, Clinical Pathology, Genetic Counseling, Human Genetics etc.

b) As a researcher in Scientific Research Organizations, Universities in India & aboard

c) In GOs and NGOs

PAPER I: Non-Chordates

(Total credits 2.0, Contact Hrs 30.0)

UNIT- I: Non-chordates (Acoelomates and Pseudocoelomates)

1) Kingdom Protista **3**

General characters and classification up to classes; locomotory organelle and locomotion inprotozoa, nutrition in protozoa.

2) Phylum Porifera **3**

General characters and classification up to classes; canal system in *Sycon*

3) Phylum Cnidaria **3**

General characters and classification up to classes; polymorphism in hydrozoa

4) Phylum Platyhelminthes **3**

General characters and classification up to classes; life history of *Taenia solium*

5) Phylum Nemathelminthes **4**

General characters and classification up to classes; life history of *Ascaris lumbricoides* andits parasitic adaptations

Unit 2: Non-chordates (Coelomates)

1) Phylum Annelida **3**

General characters and classification up to classes; metamerism in annelid, economicimportance of annelids with reference to earthworm and leech

2) Phylum Arthropoda **4**

General characters and classification up to classes; vision in arthropoda, metamorphosis ininsects, economic importance of insects.

3) Phylum Mollusca **3**

General characters and classification up to classes; torsion in gastropodseconomic importance of molluscs

4) Phylum Echinodermata **4**

General characters and classification up to classes; water-vascular system in Asteroidea

Total- **30**

PAPER II: Chordates

(Total credits 2.0, Contact Hrs 30.0)

Unit 1: Protochordates and Agnatha **5**

1) General features and phylogeny of protochordata
2) General features of agnatha and classification of cyclostomes up to classes

Unit 2: Gnathostomes-Class Pisces to Mammalia

1) Pisces: **5**

General features and classification up to orders; economic importance of fishes

2) Amphibia: **5**

General features and classification up to orders; parental care

3) Reptiles: **5**

General features and classification up to orders; poisonous and non-poisonous snakes,types of snake venom, symptoms and treatments of snake bite

4) Aves **5**

General features and classification up to orders; flight adaptations in birds

5) Mammals **5**

General features and classification up to orders; adaptive radiation in mammals

Total -30

References:

- Ruppert and Barnes, R.D. (2006). *Invertebrate Zoology*, VIII Edition. Holt SaundersInternational Edition.

- Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). *TheInvertebrates: A New Synthesis*, III Edition, Blackwell Science

- Young, J. Z. (2004). *The Life of Vertebrates*. III Edition. Oxford university press.

- Pough H. *Vertebrate life,* VIII Edition, Pearson International.

- Hall B.K. and Hallgrimsson B. (2008). *Strickberger's Evolution*. IV Edition. Jones andBartlett Publishers I

PRACTICAL (CORE COURSE)

B. Sc. First Year (Liberal Science)
Paper- I & II

Practical – I : ZOOLOGY

Teaching Scheme:	**Examination Scheme:**
Practical – 4 Hours/week, 4 Credit	**UA – 80 Marks**
	CIE – 20 Marks

List of Practical: (Minimum 20 Maximum 25)

Students should perform minimum 20 practical during Semester I & II

Practical -I

1. Study of the following specimens (General characters and classification) CD/Model/Chart/Slides/Virtual

- *Amoeba, Euglena, Plasmodium, Paramecium*
- *Sycon, Hyalonema, and Euplectella*
- *Obelia, Physalia, Aurelia, Metridium*
- *Taenia,, Ascaris, Fasciola*
- *Aphrodite, Nereis, Pheretima, Hirudinaria*
- *Peripatus, Palaemon, Crab, Limulus, Scolopendra, Julus, Periplaneta*
- *Chiton, Dentalium, Pila, Unio, Sepia, Octopus*
- *Pentaceros, Ophiura, Echinus, Cucumaria and Antedon*.

2. Study of the following permanent slides/lab.specimens:

(a) T.S. and L.S. of *Sycon*,
(b) cornea of cockroach
(c) spiracles of cockroach

3.Observation and identification of protozoans, and culture of paramecium
4.Collection of Mosquito larvae, butterfly/moth

5.Study of adult Fasciola hepatica, Taenia solium and their life cycles (Slides/microphotographs)

6. Study of adult Ascaris lumbricoides and its life stages (Slides/micro-photographs)

7.Study of mouthparts of insects

8. To submit a Project Report on any related topic on life cycles/coral/ coral reefs.

9.Examination of pond water collected from different places for diversity in protista

10. Brief account of pathogenicity, treatment & prevention *Plasmodium vivax*

11.Study of following specimens:

- *Balanoglossus, Herdmania, Branchiostoma*
- *Petromyzon, Sphyrna, Pristis, Torpedo, Labeo, Exocoetus, Anguilla*
- *Ichthyophis, Salamandra, Bufo, Hyla*
- *Chelone,Hemidactylus, Chamaeleon, Draco, Vipera, Naja, Crocodylus, Gavialis*
- **Any six** common birds from different orders:
- *Ornithorhynchus*, *Pteropus*, *Rattus*, *Loris, Funambulus*

12.Key for Identification of poisonous and non-poisonous snakes: Cobra & Rat Snake

(An "**animal album**" containing photographs, cut outs, with appropriate write up about the above mentionedtaxa. Different taxa/ topics may be given to different sets of students for this purpose.)

13. Osteology: CD/Model/Chart/Slides/Virtual CD

a) Disarticulated skeleton of frog: Skull, Atlas, Typical Vertebra, Pectoral and Pelvic Girdle
b) Study of mammalian skulls: One herbivorous and one carnivorous animal

14. Frog - Study of metamorphosis. (CD/Model/Chart/Slides/Virtual CD)

15. Cytological Preparation: study of placoid, cycloid and ctenoid scales through permanent slides/photograph

16. Study of adaptations in mammals
17. Study of flight adaptations in birds
18. Study Tour / – Visit to any suitable place of Zoological interest to study animal biodiversity; submission of report. All necessary precautions must be taken while organizing study tour with reference to the safety of students.

19) A small project on diversity, ecology and conservation

20) Review article: Submission of any one topic related to any Ecological and AppliedZoological interest.