



SRI VIDYA MANDIR ARTS & SCIENCE COLLEGE

(Autonomous)

[An Autonomous College Affiliated to Periyar University, Salem, Tamil Nadu]

[Accredited by NAAC with 'A' Grade with CGPA of 3.27]

[Recognized 2(f)& 12(B) Statuvs under UGC Act. 1956]

Katteri – 636 902, Uthangarai (Tk), Krishnagiri (Dt)

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BACHELOR OF SCIENCE IN ZOOLOGY

CHOICE BASED CREDIT SYSTEM (CBCS&OBES)

REGULATIONS AND SYLLABUS FOR

B.Sc. ZOOLOGY PROGRAMME

(SEMESTER PATTERN)

(For Students Admitted in the College from the Academic Year 2023- Onwards)



REGULATIONS AND SYLLABUS FOR B.Sc. ZOOLOGY PROGRAMME

(For Students Admitted in the College from the Academic Year 2023- Onwards)

1. Vision of the Department

To create the students comprehends the diversity, Habitat and performance carrying out of animals in order to protect the environment and promoting the new biology and it's Technology.

To achieve academic excellence.

2. Mission of the Department

Broadcasting knowledge in Animal Sciences through innovative teaching and learning and also to make awareness about problems affecting Animal and Human health and world challenging environmental issues.

To create receptive mindset among the students of the department through field study project work and study tour etc.

3. Definitions:

(i) **Programme:** Programme means a course of study leading to the award of the degree in a discipline.

(ii) **Course:** Course refers to the subject offered under the Degree Programme.

4. Aims of the Programme

1. Impart critical thinking skills and evaluation of information among students in Zoology.
2. Provide a conducive environment that ensures cognitive development of students in a holistic manner.
3. Gain knowledge by students across wide areas of animal science and evolution of land animal.
4. Facilitate an opportunity among students to familiarize with life cycles and mode of reproduction in different animal groups.
5. Create an opportunity among students to understand relationship between zoology and its relevant disciplines, such as Biotechnology, Microbiology, Biochemistry, Biophysics, Bioinformatics, and Nano-biotechnology.
6. Understand importance of population and community ecology, Ecosystem dynamics,



Biosphere and its future by students.

7. Gain in depth knowledge by students in taxonomy.
8. Mould students as accountable citizens having awareness of most basic domain-independent knowledge, including critical thinking and communication.
9. Enable students to prepare for different research/teaching qualification and competitive examinations.

5. Programme Outcomes (PO)

PO1	Apply the knowledge of various branches of Zoology and General biology meant both for a graduate terminal course and for higher studies.
PO2	Acquire basic skills in the observation and study of nature, biological techniques, experimental skills and scientific investigation.
PO3	Learning handling DNA sequence data and its analysis which equip students to get employed in R&D in the industry involved in DNA sequencing services, diagnostics, and microbiome analysis.
PO4	Development of theoretical and practical knowledge in handling the animals and using them as model organism
PO5	Development of an understanding of zoological science for its application in medical entomology, Apiculture, Aquaculture, Agriculture and Modern medicine.

6. Programme Specific Outcomes (PSO)

PSO1	Identify and list out common animals in vertebrate and non-vertebrate Explain various physiological and biochemical changes in human
PSO2	Students can apply the knowledge and relate the information gained from the allied subjects viz; Botany and Chemistry, to explain and conclude through the Interdisciplinary approaches.
PSO3	The students enhance knowledge on the pathways of metabolisms and Explain the role and impact of different environmental conservation programmes
PSO4	Understanding the importance of genetic engineering new tools
PSO5	Identify animals beneficial to humans and Use tools of information technology for all activities related to zoology



7. Eligibility for Admission

A candidate who has passed Higher Secondary Examination in Academic or vocational stream with Zoology/Biology under higher secondary board of examination, Tamil Nadu or an examination accepted as Equivalent there to by the syndicate subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the B.Sc Degree examination of this Autonomous College affiliated to Periyar University.

8. Duration of the Programme

The Programme for the Degree of Bachelor of Science (B.Sc.) in Zoology shall consist of three academic years divided into six semesters. Each Semester consists of 90 working days(450 hours).

9. Features of Choice Based Credit System

Under Choice Based Credit System (CBCS), a set of Courses consisting of Core Courses, Elective Courses, Skill Based Elective Courses and Non-Major Elective Courses are offered. Beside the Core Courses, which are totally related to the major subject, the students have the advantage of studying supportive papers and Non-Major Courses. This provides enough opportunity to the students to learn not only the major courses but also interdisciplinary and application oriented courses.

10. Syllabus

The syllabus of the B.Sc. Zoology Degree Programme is divided into the following Courses:

1. Language Course
2. Core Courses
3. Elective Courses
4. Skill Based Elective Courses (SBEC)
5. Non-Major Elective Courses
6. Extension Activity
7. Extra Credit Courses
8. Add on Course

(i) Language Courses:

(ii) **Core Courses:** The Core Courses are related to the Programme concerned including practicals offered under the Programme.

(iii) **Elective Courses:** There are TWO Elective Courses offered under the Programme related to the major or non-major but are to be selected by the students.

(iv) **Skill Based Elective Courses (SBEC):** This course aims to impart advanced and recent developments in the concerned discipline.

(v) **Non-Major Elective Courses (NMEC):** Irrespective of the discipline, the student can select papers that are offered by other disciplines as non-major elective course.



(vi) Extension Activity: Participation in NSS/NCC/YRC/RRC/Sports or other co-circular activities are considered as Extension Activity.

(vii) Extra Credit Courses: In order to facilitate the students gaining extra credits, the Extra Credit Courses are offered. According to the guidelines of the UGC, the students are encouraged to avail this option of enriching the knowledge by enrolling themselves in the Massive Open Online Courses (MOOC) provided by various portals, such as SWAYAM, NPTEL, etc.

(viii) Add on course:

11. Programme of Study

The Programme of study for the Degree shall be in the Branch – Zoology (Choice Based Credit System) with internal assessment comprised of instructions in the following subjects according to the syllabi and books prescribed from time to time.

12. Credit

Weightage given to each course of study is termed as Credit.

13. Credit System

The weightage of credits are spread over to four different semesters during the period of study and the cumulative credit point average shall be awarded based on the credits earned by the student. A total of **140** Credits are prescribed for the B.Sc. Zoology Degree Programme which is the minimum Credit requirement for the three years B.Sc. Zoology Degree Programme



SEMESTER -1

Program: B.Sc. Zoology				
Core – I		Course Code: 23UZO1C01		Course Title: INVERTEBRATA- I
Semester I	Hours/Week 5	Total Hours 75	Credits 5	Total Marks 100

Course Objectives

1. To understand the basic concepts of lower animals and observe the structure and functions.
2. To illustrate and examine the systemic and functional morphology of various group of invertebrates.
3. To differentiate and classify the various groups of animal modes of life and to estimate the biodiversity.
4. To compare and distinguish the general and specific characteristics of reproduction in lower animals.
5. To infer and integrate the parasitic and economic importance of invertebrate animals

UNIT – I

Protozoa: Introduction to Classification, taxonomy and nomenclature. General characters and classification of Phylum Protozoa up to classes. Type study - *Paramecium* and *Plasmodium* - Parasitic protozoans (*Entamoeba*, *Trypanasoma* & *Leishmania*) - Economic importance Nutrition in protozoa - Host-parasitic interactions in *Entamoeba* and *Plasmodium*-Locomotion in protozoa.

UNIT – II

Porifera: General characters and classification up to Classes. Type study - Ascon & Sycon - Canal system in sponges - Skeleton in sponges, Economic importance, Canal system in sponges - Reproduction in sponges.

UNIT – III



Coelenterata: General characters and classification up to classes – Type study - *Obelia* and *Aurelia* - Corals and coral reefs - Polymorphism - Economic importance - Mesenteries in Anthozoa - Economic importance of corals and coral reefs - Polymorphism in Hydrozoa.

UNIT-IV

Platyhelminthes: General characters and classification of up to classes. Type study – *Fasciola hepatica*. Nematelminthes: *Taenia solium* – Parasitic adaptations. Host-parasitic interactions of Helminth parasites. Nematode Parasites and diseases - *Wuchereria bancrofti*, *Enterobius vermicularis*, *Ancylostome duodenale*. Aschelminthes : General characters and classification of up to classes - Type study - *Ascaris lumbricoides*

UNIT- V

Annelida: General characters and classification up to Classes. Type study –*Nereis* and *Hirudinaria granulosa*. Metamerism Nephridium and coelomoducts - Modes of life in Annelids. Reproduction in polychaetes.

Text Books

1. Ekambaranatha Iyer, 2000. A Manual of Zoology, 10th edition, Viswanathan, S., Printers & Publishers Pvt Ltd
2. Jordan, E.L. and Verma P.S, 1995. Invertebrate Zoology, 12th edn. S. Chand& Co.
3. Kotpal, R.L, 1992. Protozoa, Porifera, Coelenterata, Annelida, Arthropoda.

References Books

1. Ruppert and Barnes, R.D. (2006). Invertebrate Zoology, VIII Edition. Holt Saunders International Edition.
2. Barnes, R.S.K., Calow, P., Olive, P.J.W., Golding, D.W. and Spicer, J.I. (2002). The Invertebrates: A New Synthesis, III Edition, Blackwell Science
3. Barrington, E.J.W. (1979). Invertebrate Structure and Functions. II Edition, E.L.B.S. and Nelson
4. Hyman L.H, 1955. The invertebrates - Vol. I to Vol. VII – Mc Graw Hill Book Co.
5. Parker, J. and Haswell, 1978. A text book of Zoology Vol. I - Williams and Williams.

Web Resources



1. <https://www.nationalgeographic.com/animals/invertebrates/>
2. <https://bit.ly/3kABzKa>
3. <https://www.nio.org/>
4. <https://greatbarrierreef.org/>

Course Outcomes (Cos)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of invertebrate animals and recall its structure and functions.	PO1
CO2	Illustrate and examine the systemic and functional morphology of various groups of invertebrata.	PO1, PO2
CO3	Differentiate and classify the animal's mode of life in various taxa and estimate the biodiversity.	PO4, PO6
CO4	To compare and distinguish the various physiological processes and organ systems in lower animals.	PO4, PO5, PO6
CO5	Infer and integrate the parasitic and economic importance of invertebrate animals.	PO3, PO8

Mapping of COs with POs

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	S							
CO 2	M	S						
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S

S-Strong (3) M-Medium (2) L-Low (1) B N



Program: B.Sc. Zoology				
Core – II		Course Code: 23UZO1C02		Course Title: INVERTEBRATA – II
Semester I	Hours/Week	Total Hours	Credits	Total Marks
	5	75	5	100

Course Objectives

1. To understand the structures and distinct features of invertebrate phyla.
2. To understand and able to distinguish the characteristic features of each phylum
3. To understand the economic importance of invertebrates
4. To understand the interaction of invertebrates with the environment.
5. To understand the evolutionary position of different groups of invertebrates

UNIT – I

Arthropoda: General characters and classification of Phylum Arthropoda up to Classes. Detailed study: *Penaeus indicus*. Affinities of *Peripatus* – Larval forms in Crustacea – Organization of Centipede and Millipede.

UNIT – II

Mollusca: General characters and classification of Phylum Mollusca up to Classes. Detailed study: *Pila globosa*. Foot and torsion in Mollusca, Economic importance of Molluscs – Cephalopoda as the most advanced invertebrate.

UNIT – III

Echinodermata: General characters and classification of Phylum Echinodermata up to Classes. Detailed study: *Asterias*. Water vascular system in Echinodermata – Larval forms of Echinoderms.

UNIT – IV

Detailed study: *Periplaneta americana*. Insect pollinators- predators – parasites. Insects associated with human diseases: Mosquitoes, housefly, bed bug, human head louse. Insects



associated with household materials: Ants, Termites, Silver fish.

UNIT – V

Insect pests: Insect pests, life cycle and types of damage to plants. Pest of rice: Rice stem borer (*Scirpophaga incertulas*) – Pest of Sugarcane: The shoot borer (*Chilo infuscatellus*) – Pest of coconut: The rhinoceros beetle (*Oryctes rhinoceros*) Pest of cotton: The spotted bollworm (*Earias insulana*) – Pests of vegetables: Brinjal-The shoot and fruit borer (*Leucinodes orbonalis*) – Cauliflower: The diamond black moth(*Plutella xylostella*)Pests of fruits: Citrus butterfly(*Papilio demoleus*) – Pest of stored products: The rice weevil(*Sitophilus oryzae*). Principles of Integrated Pest Management.

Text Books

1. Ekambaranatha Ayyar, and T. N. Ananthkrishnan, 2000. A Manual of Zoology. Vol 1 (Invertebrata). Part II – Viswanathan Pvt. Ltd, 842pp
2. Jordan, E.L. and Verma P.S, 1995. Invertebrate Zoology, 12th edn. S. Chand& Co.
3. Kotpal R.L. 2019. Modern Text Book of Zoology, Invertebrates 9th Ed., Rastogi Publications, Gangotri, Shivaji Road, Meerut, 1004 pp.
4. Vasantharaj David, B. 2001. Elements of Economic Entomology, Popular Book Depot, Chennai. 400pp.
5. Ruppert and Barnes, R.D. 2006. Invertebrate Zoology, VIII Edition. Holt Saunders International Edition, Belmont, CA : Thomson-Brooks/Cole, 928pp.

References Books

1. Barrington, E.J.W., 2012, Invertebrate structure and function. Boston – Houghton. Mifflin and ELBS, London.
2. Bhamrah,H.S. and Kavitha Junea, 2002. A text book of Invertebrates. Alilnol Publications Private Limited, 4374/4B.Ansari Road, Dayaganj, New Delhi.
3. Hyman L.H, 1955. The invertebrates – Vol. I to Vol. VII – McGraw Hill Book Co.
4. Kotpal, 1992. Protozoa, Porifera, Coelenterata, Annelida, Arthropoda, Mollusca, Echinodermata, R.L- Rastogi Publication.
5. Parker, J. and Haswell , 1978. A text book of Zoology Vol. I - Williams and Williams.
6. Srivastava, M.D.L and Srivastava, 1969. A text book of Invertebrate Zoology, U.S- Central Book Depot, Allahabad.



7. Verma, A. Invertebrates: Protozoa to Echinodermata. Narosa Publishing House Private Limited. 35-36 Grems Road, Thousand Lights, Chennai.

Web Resources

1. <https://www.nationalgeographic.com/animals/invertebrates/>
2. <https://bit.ly/3kABzKa>
3. <https://www.nio.org/>
4. <https://bit.ly/3lJdUX0>

Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Classify, Identify and recall the name and distinct features of invertebrate groups.	PO1
CO2	Explain, and relate the origin, structural organization and evolutionary aspects of invertebrates.	PO1, PO2
CO3	Analyze, compare and distinguish the developmental stages and describe the important biological process.	PO3, PO4, PO5
CO4	Correlate the interaction of invertebrates with humans and critique its economic importance.	PO4, PO5, PO6
CO5	Summarize the physiology, ecological adaptations to stimulate and integrate the significance of invertebrates to the environment, humans, and agriculture.	PO1, PO2, PO3, PO8

Mapping of COs with POs

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	S							
CO 2	M	S						
CO 3			S	S	S	S		
CO 4			S	S	S	M		
CO 5			S					S



S-Strong (3) M-Medium (2) L-Low (1)

Program: B.Sc. Zoology				
Allied Zoology (For Other Department)		Course Code: 23UZ01A01		Course Title: Allied Zoology – I
Semester I	Hours/Week 4	Total Hours 75	Credits 3	Total Marks 100

Course Objectives

1. To acquire a basic knowledge of diversity and organization of Protozoa, Coelenterata, Helminthes and Annelida
2. To acquire a basic knowledge of diversity and organization of Arthropoda, Mollusca and Echinodermata
3. To comprehend the taxonomic position and diversity among Protochordata, Pisces and Amphibia
4. To comprehend the taxonomic position and diversity among Reptilia, Aves and Mammalia
5. To acquire detailed knowledge of select invertebrate and chordate forms

Unit – I

Diversity of Invertebrates – I

Principles of taxonomy. Criteria for classification–Symmetry and Coelom –Binomial nomenclature. Classification of Protozoa, Coelenterata, Helminthes and Annelida upto classes with two examples.

Unit – II

Diversity of Invertebrates – II

Classification of Arthropoda, Mollusca and Echinodermata upto class level with examples.

**Unit- III****Diversity of Chordates – I**

Classification of Prochordata, Pisces and Amphibia upto orders giving two examples.

Unit- IV**Diversity of Chordates – II**

Classification of Reptilia, Aves and Mammalia upto orders giving two examples.

Unit- V**Animal organization Structure and organization of**

(i) Earthworm, (ii) Rabbit/Rat, (iii) Prawn/Fish

Text Books

1. Ekambaranatha Iyer, -Outlines of Zoology Viswanathan Publication

References Books

1. Ekambaranatha Iyar and T.N.Ananthakrishnian - A Manual of Zoology Invertebrata– Vol I:Viswanathan Publishers.
2. Ekambaranatha Iyar and T.N.Ananthakrishnan,-A Manual of Zoology-Invertebrata– VolIII:Viswanathan Publishers.
3. Ekambaranatha Iyar and T.N.Ananthakrishnan,- A Manual of Zoology: Chordata Viswanathan Publishers.
4. Jordan E.L. and P.S. Verma-Invertebrate Zoology, S.Chand &Co.

Web Resources

1. www.sanctuaryasia.com
2. www.iaszoology.com

Course Outcomes (COs)

On successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recall the characteristic features invertebrates and chordates.	PO1



CO2	Classify invertebrates up to class level and chordates up to order level	PO1, PO2
CO3	Explain and discuss the structural and functional organisation of some invertebrates and chordates	PO4, PO6
CO4	Relate the adaptations and habits of animals to their habitat	PO4, PO5, PO6
CO5	Analyse the taxonomic position of animals.	PO3, PO8

Mapping of COs with Pos

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	S							
CO 2	M	S						
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S

S-Strong(3)

M-Medium (2)

L-Low (1)