



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)

Tamil Nadu, India

Website:www.svmcugi.comE-mail:svmzoologyug@gmail.com



BACHELOR OF SCIENCE IN ZOOLOGY

CHOICE BASED CREDIT SYSTEM (CBCS&OBES)

Program Code: UZOY

REGULATIONS AND SYLLABUS FOR

B.Sc. ZOOLOGY PROGRAMME

(SEMESTER PATTERN)

(For Students Admitted in the College from the Academic Year 2021-2022 Onwards)



Programme Outcomes (POs)

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.

Programme Specific Outcomes (PSOs)

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 <i>viz</i> ; 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



SRI VIDYA MANDIR ARTS & SCIENCE COLLEGE

(Autonomous)

Bachelor of Science (B.Sc.) in Zoology

Programme Pattern and Syllabus (CBCS)

(For Students Admitted in the College from the Academic Year 2021-2022 Onwards)

Sl. No.	Part	Nature of the Course	Subject Code	Title of the Paper	Hours / Week	Credits	Marks		
							CIA	ESE	Total
SEMESTER-I									
1	I	Language	21UTA1F01	Tamil - I	5	3	25	75	100
2	II	Language	21UEN1CE01	Communicative English-I	5	3	25	75	100
3		Core-I	21UZO1C01	Invertebrate I	5	5	25	75	100
4		Allied-I	21UCH1A01	Allied Chemistry - I	5	4	25	75	100
5		Core Practical-I	21UZO2P01	Lab Course-I (Covering core I-II)	3	-	-	-	-
6		III	Allied Practical-I	21UCH2AP01	Allied Chemistry Lab Course-I	3	-	-	-
7	IV	Add on Course	21ULS1AO01	Professional English-I	2	4	25	75	100
8		Value Education	21UVE101	Yoga	2	2	25	75	100
Total					30	21	150	450	600
SEMESTER-II									
8	I	Language	21UTA2F02	Tamil- II	5	3	25	75	100
9	II	Language	21UEN2CE02	Communicative English -II	5	3	25	75	100
10		Core-II	21UZO2C02	Invertebrate II	5	5	25	75	100
11		Allied-II	21UCH2A02	Allied Chemistry - II	5	4	25	75	100
12		Core Practical-I	21UZO2P01	Lab Course-I (Covering core I-II)	3	4	40	60	100



13	III	Allied Practical-I	21UCH2AP01	Allied Chemistry Lab Course-II	3	3	40	60	100
14		Add on Course	21ULS2AO02	Professional English-II	2	4	25	75	100
15	IV	Common Paper	21UES201	Environmental Studies	2	2	25	75	100
Total					30	28	230	570	800

Note

CBCS – Choice Based Credit system

CIA – Continuous Internal Assessment

ESE – End of Semester Examinations

SWAYAM – Study Webs of Active-Learning for Young Aspiring Minds

NPTEL – National Programme on Technology Enhanced



PROGRAMME SYLLABUS



Program: B.Sc. Zoology				
Core – I		Course Code: 21UZO1C01		Course Title: Invertebrate – I
Semester	Hours/Week	Total Hours	Credits	Total Marks
I	5	75	5	100

Course Objectives

1. To obtain the knowledge of the taxonomical and characteristics of Invertebrates.
2. To understand the morphological and anatomical features of selected Invertebrate.
3. To create awareness about the harmful parasites and their economic importance.

UNIT-I

Taxonomy: Introduction to principles of taxonomy and outline classification of animal kingdom. **Protozoa:** General Characters and Classification. Type study: *Paramecium caudatum*– Structure - Reproduction and Development. **General Topic:** Pathogenic protozoa of Humans – *Plasmodium vivax*, *Leishmania donovani*.

UNIT-II

Porifera: General Characters and Classification. Type study: *Leucosolenia* – External Morphology – Physiology and Development. **General Topic:** Canal system in sponges.

UNIT-III

Coelenterata: General Characters and Classification. Type study: *Obelia* – External Morphology – Reproduction – Life cycle. Biology of corals and coral reefs – asexual reproduction. **General Topic:** Polymorphism of Halistemma.

UNIT-IV

Platyhelminthes: General Characters and Classification. Type study: *Taenia solium* – External Morphology – Digestive system and Lifecycle. **General Topic:** Human Helminthes Parasite

UNIT- V

Aschelminthes: General characters and classification. Type of study: *Ascaris lumbricoides* –



External Morphology – Digestive System –Reproduction and Development. **General Topic:** Diseases caused, Symptoms and Control measures of parasitic Worms *Wuchereria bancrofti*, *Dracunculus medinensis*.

Text Books

1. Ekambaranatha Ayyar M, Anantha krishnan T N, and Viswanathan S (1981). Manual of Zoology, Vol. 1 & 2, Printers & Publishers Pvt. Ltd.,Chennai.
2. Jordan E .L and Verma P. S (2000). Invertebrate Zoology, S. Chand &Co.
3. Kotpal R. L (2015). Modern Text Book of Zoology, Invertebrate, Rastogi Publication, Meerut.
4. Nair N. C, Leelavathi S, Soundrapandian N, Murugan T and Arumugam. N (2013). A Text Book of Invertebrates. Saras Publication.

Reference Books

1. Agarwal V .K (2000). Invertebrate Zoology, S. ChandCompany.
2. Ekambaranatha Ayyar M and Viswanathan S (1954). A Manual of Zoology, Part I. Invertebrata. No.11, McNichols Road Chetput, Madras-31.
3. Kashyap V (1997). Life of Invertebrates. Vikas Publishing House Pvt. Ltd., New Delhi.
4. Kotpal R L (2003). Modern Text Book of Zoology, Rastogi Publications, Meerut. New Delhi.
5. Moore R C, Lalicker C. G, and Fischer A G (1952). Invertebrate Palaeontology, McGraw Hill Book Co.



Course Outcomes (COs)

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

CO Number	CO Statement	Knowledge Level
CO1	Define the evolution any history of phylum.	K1
CO2	Understand about the Invertebrates animals.	K2
CO3	Understand the external as well as internal characters of Invertebrates.	K3
CO4	Investigate the economic importance of Invertebrates animals.	K6

K1–Remember, K2–Understand, K3–Apply, K4–Analyze, K5–Evaluate, K6–Create

Mapping of COs with POs

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	S	M	M
CO2	S	S	M	M	M
CO3	S	M	S	S	S
CO4	S	S	M	M	S

S – Strong

M – Medium

L – Low



Program: B.Sc. Zoology				
Core – II		Course Code: 21UZO2C02		Course Title: Invertebrate –II
Semester II	Hours/Week	Total Hours	Credits	Total Marks
	5	75	5	100

Course Objectives

1. To obtain the knowledge of the taxonomical and characteristics of Invertebrates.
2. To understand the morphological and anatomical features of selected Invertebrates.
3. To create awareness about the harmful parasites and their economic importance of Invertebrates.

UNIT-I

Annelida: General Characters and Classification. Type study: *Lampito mauritii* – External Morphology - Digestive system - Reproduction and Development. **General Topic:** Excretion in Annelids.

UNIT-II

Arthropoda-I: General Characteristics and Classification up to Classes. Type study: *Panaeus indicus* – External Morphology and Reproduction. **General topic:** Economic importance of Insects. Social organization in Termites and Termitaria

UNIT-III

Arthropoda-II: Type study: Cockroach – External Morphology and Reproduction. **General Topic:** Mouth Parts of Insects. Respiratory organs: Gills, book gills, trachea, book lungs

UNIT-IV

Mollusca: General Characters and Classification up to Classes. Type study: *Pila globosa* – Morphology - Respiratory System – Locomotion - Excretory System and Reproduction. **General Topic:** Economic importance of Molluscs.

**UNIT-V**

Echinodermata: General Characters and Classification up to Classes. Type study: *Asterius rubens* (Star fish) – External Morphology and Water vascular System. **General Topic:** Larval forms of Echinoderms.

Text Books

1. Jordan E L and Verma P S (2000). Invertebrate Zoology, S. Chand &Co.
2. Kotpal R L (2015). Modern Text Book of Zoology, Invertebrate, Rastogi Publication, Meerut.
3. Nair N C, Leelavathi S, Soundrapandian N, Murugan T and Arumugam N (2013). A Text Book of Invertebrates. Saras Publication.

Reference Books

1. Agarwal V K (2000). Invertebrate Zoology, S. Chand Company.
2. Ekambaranatha Ayyar M (1973). A Manual of Zoology, Part I. Invertebrata. S. Viswanathan Pvt. Ltd,
3. Kashyap V (1997). Life of Invertebrates. Vikas Publishing House Pvt. Ltd., New Delhi.
3. Kotpal RL (2003). Modern Text Book of Zoology. Rastogi Publications, Meerut.
4. Moore R C, Lalicker and Fischer A G (1952). Invertebrate Palaeontology, McGraw Hill Book Co. Inc., New York.

Course Outcomes (COs)

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

CO Number	CO Statement	Knowledge Level
CO1	Define the internal and external morphology of the animal.	K1
CO2	Understand the concepts of Metamorphosis, regeneration and autonomy.	K2
CO3	Demonstrate the Mouthparts of insects.	K3
CO4	Distinguish the economic importance of Molluscs.	K4
CO5	Investigate the Water vascular System in <i>Asterius rubens</i>	K6

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create



Mapping of COs with POs

PO CO	PO1	PO2	PO3	PO4	PO5
C01	S	S	S	M	M
C02	S	M	M	S	M
C03	S	M	S	S	S
C04	M	S	M	S	S
C05	M	M	S	M	M

S – Strong

M–Medium

L –Low



Program: B.Sc. Zoology				
Core Practical – I		Course Code: 21UZO2P01		Course Title: Invertebrate I & II
Semester I & II	Hours/Week 3	Total Hours 45	Credits 4	Total Marks 100

Course Objectives

1. To observe various Invertebrate specimens by using Microscope.
2. To know the various systems (Digestive system, Nervous system and Reproductive system) of animals.
3. To inculcate the significance of various Invertebrate animals.

I. Major Practicals

Cockroach digestive system - Nervous system - Reproductive system and Prawn Nervous system

II. Minor Practicals

Prawn Appendages - Mouth parts – Honey bee - Mosquito and Cockroach.

III. Spotters

Classify and giving reasons: Paramecium – Sycon - Obelia colony - *Taenia solium* - Earth worm – Leech - Sea cucumber - Star fish - freshwater mussel – Prawn and Neries

Draw labelled sketches: T.S. of Ascaris (Male and Female) - T.S. of Hydra - T.S. of *Taenia solium* proglottid and T.S of Fasciola.

Biological significance: Gemmule - Spicules – Limulus – Leech - Bipinnaria larva and Physalia.

Relate structure and function: *Taenia scolex* - Earthworm body setae - Star fish – Tube feet - Peneus – Petasma and Nereis – Parapodium.

Submission of Practical Record



Course Outcomes (COs)

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

CO Number	CO Statement	Knowledge Level
CO1	Identified invertebrates specimen slides under compound microscope.	K2
CO2	Examine the various anatomical system of invertebrates animal.	K4
CO3	Evaluate the biological significance and structure and functions of various animals.	K5

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	M	M
CO2	S	M	S	S	M
CO3	S	M	M	S	S

S – Strong

M–Medium

L –Low



Program: B.Sc. Zoology				
Allied Zoology (For Other Department)		Course Code: 21UZO1A01		Course Title: Allied Zoology– I
Semester I	Hours/Week 5	Total Hours 75	Credits 3	Total Marks 100

Course Objectives

1. To learn about the taxonomy and characteristics of Invertebrate.
2. To obtain the knowledge of morphology and anatomy of the animals.

UNIT-I

Protozoa: *Paramecium caudatum*– Structure – Digestion and Reproduction. **Porifera:** Leucosolenia- Structure. General Topic: Protozoan diseases and Canal system in sponges

UNIT-II

Platyhelminthes: *Fasciola hepatica* – Morphology and Reproduction. **Annelida:** Leech- Structure and Digestive system. General Topic: Human Helminth Parasites- *Taenia* and *wuchereria*

UNIT -III

Arthropoda: *Periplanata Americana* – Structure and Reproduction. **Mollusca:** Fresh water mussel - External characters and Digestive system. **Echinodermata:** Starfish –External characters. General Topic: Water vascular system in Star fish.

UNIT-IV

Chordata - Cephalochordata: Amphioxus - External characters and digestive system. **Pisces:** Shark - External characters and digestive system. **Amphibia:** Frog - External characters and respiratory system. **Reptilia:** Calotes - External characters and Urinogenetal system .

General topic: Parental care in Amphibia



UNIT –V

Aves: Pigeon- External characters and Urinogenetal system. **Mammalia:** Structure and Digestive system of Rabbit. General Topic: Migration of birds – Dentition in Rabbit.

Text Books

1. Ekambaranatha Ayyar M and. Ananthakrishnan T N Viswanathan S (1981). Manual of Zoology Vol. 1 & 2, Printers & Publishers Pvt. Ltd.,Chennai.
2. Jordan E L & P S Verma (2000) Invertebrate Zoology S. Chand &Co.
3. Kotpal R L, (2015). Modern Text Book of Zoology, Invertebrate, Rastagi Publication, Meerut,India.
4. Nair N C, Leelavathi S, Soundrapandian N, Murugan T, N Arumugam (2013) AText Book of Invertebrates, Saras Publication.
5. Jordan E L and Verma P S (2013). Chordate Zoology S Chand & Company Ltd., NewDelhi.
6. Kotpal R L (2012). Morden Text Book of Zoology, Vertebrates Rastogi Publication, Meerut.
7. Nigam H C (1972). Zoology of Chordates. (5thEdn.), S. Nagin& Co. Publishers, Delhi.

Reference Books

1. Agarwal V K (2000). Invertebrate Zoology, S. Chand Company.
2. EkambaranathaAyyar M. (1973). A Manual of Zoology, Part I. Invertebrata. S. Viswanathan Pvt. Ltd.
3. Kashyap V (1997). Life of Invertebrates. Vikas Publishing House Pvt. Ltd., New Delhi.
4. Kotpal R L (2003). Modern Text Book of Zoology- Rastogi Publications, Meerut. India.
5. Moore R C, Lolicker and Fischer A G (1952). Invertebrate Palaeontology, McGraw Hill Book Co. Inc., NewYork.
6. Kotpal R L (2012) Morden Text Book of Zoology, Vertebrates Rastogi Publication. Meerut.
7. Nigam H C(1972). Zoology of Chordates (5thEdn.), S.Nagin & Co. Publishers, Delhi.
8. Thangamani A, Prasannakumar S,Narayanan L M and Arumugam N (2009). Chordates, Saras Publication.



9. Waterman A J (1971). Chordate Structure and Function. Macmillan Company, New Delhi.
10. Young J Z (1981). The Life of the Vertebrates. (3rdEdn.), Oxford University Press, Great Britain.

Course Outcomes (COs)

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

CO Number	CO Statement	Knowledge Level
CO1	List of the classification in various organisms.	K1
CO2	Describe the morphology and anatomy on chordates.	K2
CO3	Explain the biological significance of non-chordates and chordates.	K2
CO4	Discuss the parental care of fishes and amphibians.	K2
CO5	Investigate the Parasitic and protozoan diseases.	K6

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	S	S	M	S	M
CO2	S	M	S	M	S
CO3	S	M	S	S	M
CO4	M	S	S	S	M
CO5	S	M	S	M	S

S – Strong

M–Medium

L –Low



Program: B.Sc. Zoology				
Allied Zoology (For Other Department)		Course Code: 20UZO2A02		Course Title: Allied Zoology– II
Semester II	Hours/Week 5	Total Hours 75	Credits 4	Total Marks 100

Course Objectives

1. To acquire the knowledge about the cytology and developmental biology of living animals.
2. To understand the physiology and of digestion.
3. To create the awareness about the environmental pollution and learn about the evolutionary modification.

UNIT-I

Cell biology: Structure of an animal cell – Structure and functions of Mitochondria – Golgi body – Centrosome – Lysosomes and Nucleus. **Genetics:** Mendel's laws of Monohybrid and Dihybrid

UNIT-III

Developmental Biology: Types of eggs. Cleavage – Blastulation and Gastrulation in Frog.

Animal Physiology: Digestion and Excretion in man.

UNIT-IV

Ecology: Pond Ecosystem and its components - Food chain - Energy flow - Pollution of water - Air and Noise.

UNIT-V

Evolution: Evidences of Evolution – Lamarckism - Darwinism and De-Vries - Mutation theory.



Course Outcomes (COs)

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

CO Number	CO Statement	Knowledge Level
CO1	Acquire the knowledge about the cytology and developmental biology of living animals.	K1
CO2	Understand the physiological function of organisms.	K2
CO3	Analyze the evolutionary significance of animals	K4
CO4	Create the awareness about the environmental pollution and learn about the evolutionary modification.	K6

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	S	M	M	S	S
CO2	S	M	S	M	M
CO3	S	S	M	M	M
CO4	M	M	S	M	S

S – Strong

M–Medium

L –Low



Program: B.Sc. Zoology				
Allied Practical		Course Code: 20UZO2AP01		Course Title: Allied Zoology Practical
Semester I & II	Hours/Week 3	Total Hours 45	Credits 3	Total Marks 100

Course Objectives

1. To observe the various anatomical systems of animals using virtual laboratory.
2. To educate the students about the cell division and genetic disorders.
3. To know the developmental stages of frog and Plankton analysis.

I. Major Practicals

Cockroach – Digestive - Nervous and Reproductive systems. Prawn – Nervous system.

II. Minor Practicals

1. Mouth parts of Honey Bee and Mosquito.
2. Prawn – Appendages.

III. Spotters

Amoeba - Paramecium – Aurelia - *Fasciola hepatica* – Ephyra larva– *Taenia solium*- *Taenia scolex*- Fasciola – C.S of Ascaris - Male and Female. Sea anemone Hermit crab – Star fish – Redia larava – Cercaria larava – Nauplius larava and Mysis larva. Amphioxus – Shark – Cobra - Pigeon, Blastula of frog – 24 hours Chick embryo – Peripatus – Archaeopteryx.

Submission of Practical Record Note



Course Outcomes (COs)

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

CO Number	CO Statement	Knowledge Level
CO1	Apply knowledge to study various anatomical system of invertebrates animal	K1
CO2	Focus invertebrates specimen slides under compound microscope.	K2
CO3	Evaluate the biological significance and structure and functions of various animals.	K5

K1 – Remember, K2 – Understand, K3 – Apply, K4 – Analyze, K5 – Evaluate, K6 – Create

Mapping of COs with POs

PO CO	PO1	PO2	PO3	PO4	PO5
CO1	M	M	S	S	S
CO2	S	S	S	S	S
CO3	M	M	S	S	S

S – Strong

M–Medium

L –Low