



திருவள்ளூர் பல்கலைக்கழகம்
THIRUVALLUVAR UNIVERSITY
SERKKADU, VELLORE - 632 115

ANNEXURE - I

Course Structure

THIRUVALLUVAR UNIVERSITY, VELLORE – 632115
(Name of the Programme) – 2022-2023 onwards

Semester: I/ II /... Paper type: Allied Zoology I

Paper code: Name of the Paper: Zoology I Credit: 3

Total Hours per Week: 4 Lecture Hours: Tutorial Hours: Practical Hours:

Course Objectives

1. To acquire knowledge about different kinds of animals species.
2. To study the systematic and functional morphology of invertebrates and chordates

Course Out Comes (five outcomes for each units should be mentioned)

1. After studied unit-1, the student will be able to understand the life – cycle to and adaptations of protozoa, porifera coelenterata and platy helminthes
2. After studied unit-2, the student will be able to understand the functional morphology of Annelids, Arthropods , Molluscs and Echinoderms
3. After studied unit-3, the student will be able to acquire knowledge about the functional morphology of chordata, prochordatas and pisces.
4. After studied unit-4, the student will be able to have a thorough knowledge about Frog and Calotes
5. After studied unit-5, the student will be able to understand the functional morphology of Aves and Mammals.

Matching Table (put Yes / No in the appropriate box)

Unit	i. Remembering	ii. Understanding	iii. Applying	iv. Analyzing	v. Evaluating	vi. Creating
1	Yes	Yes	Yes	No	No	Yes
2	Yes	Yes	Yes	No	No	Yes
3	Yes	Yes	Yes	No	No	Yes

4	Yes	Yes	Yes	No	No	Yes
5	Yes	Yes	Yes	No	No	Yes

Unit-1 :Type study includes life history. Protozoa – entamoeba, Porifera- Sycon. Coelenterata – Obelia geniculata. Platyhelminthes - Teaniasolium. **Teaching Hours: 12**

Unit-2: Annelida – earthworm , Arthropoda – Prawn, Mollusca – Freshwater Mussel,Echinodermata – Sea Star. **Teaching Hours: 12**

Unit-3: Type study includes morphology, digestive system, respiratory system, circulatory system and urinogenital system of Chordate. Chordate – general characters, Prochordata; morphology of Amphioxus. Vertebrates; Pisces –Shark. **Teaching Hours: 12**

Unit-4: Amphibia; Frog, Reptiles; calotes. **Teaching Hours: 12**

Unit-5:Aves; Pigeon, Mammalia; Rabbit. **Teaching Hours: 12**

Internal Assessment Methods: (refer the instructions)

Text book:

- 1..Ayyar, E.K. and T.N. Ananthakrishnan. 1992. Manual of Zoology. Volume I & I, S. Viswanathan (printers and publishers) Pvt. Ltd., Madras, 891 p.
2. Kotpal series, 1998 – 1992. Rastogi publications, Meerut.
3. Jordan E.L. and P.S. Verma. 1993. Invertebrate Zoology 12th edition, S. Chand & Co., Ltd., New Delhi.
4. Jordan, E.L. and P.S. Verma. 1995. Chordate Zoology and Elements of Animal physiology , S. Chand & Co., Ltd., New Delhi.

Reference Book:

1. Viswanathan (Printers and Publishers) pvt. Ltd, Madras
2. Kotpal, R.L. 1988-1992 Protozoa, Porifera, Coelenterata, Helminthes, Annelida, Arthropoda, Mollusca, Echinodermata. Rastogi Publications, Meerut.
3. L.A Borrandile and F.A. Pott. The invertebrates. Cambridge university press. UK.
4. Adam Sedgwick 1972. A student text book of zoology Vol. I and II. Central book Depot. Allahabad
5. Waterman, Allyn J.et al.1971, Chordate Structure and functions. Mac.Millan and Co., New York.
6. Jollie. M. 1968. Chordate Morphology. East west press Pvt. Ltd., New Delhi. 5. Hyman. L.H. Comparative vertebrate Zoology. McGraw Hill Co., New York.

Course Material: website links, e-Books and e-journals

1. **Error! Hyperlink reference not valid.>**
2. **Error! Hyperlink reference not valid.**
3. <https://www.merriam-webster.com>
4. **Error! Hyperlink reference not valid.**
5. <https://www.biodiversitylibrary.org>>

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	M	S	M	M	S	M	S
CO2	S	S	S	M	M	M	S	M	S	M
CO3	S	S	M	S	S	S	S	S	S	M
CO4	S	M	S	S	M	S	S	M	S	S
CO5	S	S	S	S	S	M	M	S	M	M

PO – Programme Outcome, CO – Course outcome

S – Strong , M – Medium, L – Low (may be avoided)



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Course Structure

THIRUVALUVAR UNIVERSITY, VELLORE – 632115
(Name of the Programme) – 2022-2023 onwards

Semester: II Paper type: Allied Zoology II

Paper code: Name of the Paper: Zoology II Credit: 3

Total Hours per Week: 4 Lecture Hours: Tutorial Hours: Practical Hours:

Course Objectives

- 1 To study the principles of Cell biology and Genetics.
- 2, To study the principles of Developmental Biology and Physiology.
- 3.To have a complete knowledge about circulatory systems and excretory system.
- 4.To create awareness towards recent changes in the environment and preventive measures.
5. To understand the concepts of origin of life.

Course Out Comes (five outcomes for each units should be mentioned)

1. After studied unit-1, the student will be able to acquire knowledge about cell structure, gene function and Genetic engineering
2. After studied unit-2, the student will be able to understand the cleavage pattern and gastrulation in Amphioxus.
3. After studied unit-3, the student will be able to have a thorough knowledge about the diseases of circulatory systems and urine formation
4. After studied unit-4, the student will be able to have an awareness about the environment.
5. After studied unit-5, the student will be able to understand the basic concepts of evolution.

Matching Table (put Yes / No in the appropriate box)

Unit	i. Remembering	ii. Understanding	iii. Applying	iv. Analyzing	v. Evaluating	vi. Creating
1	Yes	Yes	Yes	No	No	Yes
2	Yes	Yes	Yes	No	No	Yes
3	Yes	Yes	Yes	No	No	Yes
4	Yes	Yes	Yes	No	No	Yes
5	Yes	Yes	Yes	No	No	Yes

Unit-1: Cell Biology – structure of animal cell, Genetic; molecular structure of gene – gene function, sex linked inheritance. Genetic engineering and its application. **Teaching Hours: 12**

Unit-2: Embryology – cleavage and gastrulation of Amphioxus. Human Physiology; Digestion, circulation – blood components, structure of heart, heart function. **Teaching Hours: 12**

Unit-3: Disease of Circulatory system – blood pressure, heart disease – Ischemia, Myocardial infarction, Rheumatic heart disease, stroke. Excretion – structure of kidney and mechanisms of urine formation **Teaching Hours: 12**

Unit-4: Environmental Biology – Biotic factors and Abiotic factors, food chain and food web. Pollution – Environmental Degradation, (Air, Water and Land) – Green house effect – Bioremediation, - Global warming – acid rain. **Teaching Hours: 12**

Unit-5: Evolution; Theories of Lamarkism& Darwinism. **Teaching Hours: 12**

Internal Assessment Methods: (refer the instructions)

Text book:

1. Ekambaranatha Ayyar, and Ananthakrishnan, T.N. 1993. Outlines of Zoology, Vol I & II, Viswanathan and Co, Madras. 11
2. Sambasiviah, I, Kamalakara Rao, A.P., Augustine Chellappa, S. 1983. Text book of Animal Physiology, S. Chand & Co., New Delhi.
3. Verma and Agarwal. 1983. Text book of animal Ecology, S. Chand & Co., New Delhi.
4. Verma and Agarwal and Tyagi. 1991. Chordate Embryology, S. Chand & Co., New Delhi
5. . 5. Rastogi and Jayaraj. 2000. Taxt book of genetics. Rastogi publications, Meerut.
6. Verma and Agarawal. 2000. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology, S. Chand & Co., New Delhi

Reference Book:

1. Lehninger, Nelson and Micheal Cox (2017). Principles of Biochemistry 7 th Edition. W. H. Freeman and Macmillan Learning, New York
2. Lewin B. Micheal Stone (2008). Genes IX. Jones and Barlett Publishers Ltd.
3. Balinsky, B.L., 1981. Introduction to embryology Saundeers, Philadelphia.

4. William S. Hoar, 1976. General and comparative physiology, prentice Hall of India Pvt. Ltd., New Delhi. 110 001.
5. Eugene P. Odum, 1971. Fundamentals of ecology, Saunders International Student Edition, W.B. Saunders Company, Philadelphia London, Toronto

Course Material: website links, e-Books and e-journals

1. <https://examstime.in/development-biology-study-materials/>
 - a. <https://www.perlego.com/browse/biological-sciences/zoology>
 - b. <http://www.freebookcentre.net/Biology/Zoology-Books.html>
 - c. <http://www.freebookcentre.net/Biology/Zoology-Books.html>
 - d. <https://www.pdfdrive.com/zoology-textbooks-online-e10983221.html>

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	M	S	M
CO2	M	S	S	M	S	M	S	S	M	M
CO3	S	S	M	S	S	S	M	S	M	M
CO4	S	M	S	M	S	S	S	M	S	S
CO5	M	M	S	S	M	S	M	S	M	M

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S – Strong , M – Medium, L – Low (may be avoided)



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(Name of the Programme) – 2022-2023 onwards

Semester: I/ II /... Paper type: Allied Practicals

Paper code: Name of the Paper: Allied Zoology Practicals Credit: 2

Total Hours per Week: 2 Lecture Hours: Tutorial Hours: Practical Hours:

Course Objectives

1. Learn and be familiar with the Laboratory techniques
2. To understand the taxonomic position, body organization and evolutionary relationship of animals
3. To inculcate the significance of various non chordates and chordates

Course Out Comes (five outcomes for each units should be mentioned)

1. After studied unit-1, the student will be able to dissect digestive and nervous system in cockroach
2. After studied unit-2, the student will be able to mount mouth parts of insects
3. After studied unit-3, the student will be able to identify invertebrate and chordate animals
4. After studied unit-4, the student will be able to identify spotters pertaining to cellbiology, physiology and environmental biology
5. After studied unit-5, the student will be able to record the experimental findings

Matching Table (put Yes / No in the appropriate box)

Unit	i. Remembering	ii. Understanding	iii. Applying	iv. Analyzing	v. Evaluating	vi. Creating
1	Yes	Yes	Yes	Yes	No	No
2	Yes	Yes	Yes	No	No	Yes
3	Yes	Yes	Yes	Yes	No	No

4	Yes	Yes	Yes	Yes	No	No
5	Yes	No	No	No	No	No

Unit-1: MAJOR PRACTICAL

DISSECTIONS

Cockroach; Digestive and nervous system

Prawn; nervous system

Teaching Hours: 15

Unit-2: MINOR PRACTICAL

MOUNTING

1. Mouth parts of Mosquito and Honey bee

2. Earthworm – Body setae

3. Placoid scales of Shark

Teaching Hours: 15

Unit-3: SPOTTERS

Entamoeba, Sycan, Obelia, Taenia solium (entire, scolex) earthworm (entire, Pineal setae) Prawn (entire), Fresh water mussel, Sea star, Amphioxus – Entire, Amphioxus – T.S. through pharynx, Shark, Frog, Calotes, Pigeon, feathers of pigeon and Rabbit **Teaching Hours: 10**

Unit-4: SPOTTERS

Structure of Animal cell, Cleavage of Amphioxus, Gastrulation of Amphioxus, Fossil, Sphygnomanometer, Stethoscope, Rain gauge **Teaching Hours: 10**

Unit-5: Record Work

Teaching Hours: 10

Internal Assessment Methods: (refer the instructions)

Text book:

1. Verma. P.S. 2011 A Manual of Practical Zoology INVERTEBRATES Chand & Co, Ltd, Ram Nagar -New Delhi.
2. Verma. P.S. 2011 A Manual of Practical Zoology CHORDATES, Chand & co, Ltd. Ram Nagar – New Delhi.
3. JayanpaSinha . 2010 Advanced Practical Zoology, Books & Allied (p) Ltd. No.1. Subham Plaza IFloor, Calcutta.
4. Practical Zoology- Invertebrates S.S. Lal
5. Practical Zoology - Invertebrates K.P. Kurl

Reference Book:

1. A manual of Zoology - Part I, Invertebrata; Ayyar, M. Ekambaranath
2. Modern text book of Zoology - Invertebrates; Eleventh; Edition Professor R.L. Kotpal; Rastogi publication
3. Invertebrate Zoology by Fatik Baran 2012, PHI Learning
4. Biology of the invertebrates by Jan A. Pechenik, 7th edition, 2014 publications McGraw Hill
5. An introduction to the invertebrates by Janet Moore, 2nd edition 2006, publications Cambridge

Course Material: website links, e-Books and e-journals

1. <https://www.earthlife.net/inverts/an-phyla.html>
2. <http://www.biologydiscussion.com/invertebrate-zoology/invertebrates-phyla/study-notes/>
3. <http://www.asfa.k12.al.us/ourpages/auto/2014/4/23/64232119/invertebrate-animal-/>
4. <http://instruction2.mtsac.edu/mcooper/biology%202/labs/protistalab1.pdf/>
5. <https://portals.iucn.org/library/sites/library/files/documents/2012-064.pdf/>

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	S	S	M	S	S
CO2	S	S	M	S	S	S	M	M	S	S
CO3	S	M	S	M	S	M	S	S	S	S
CO4	S	S	M	S	S	S	M	S	M	M
CO5	S	M	S	M	S	M	S	S	M	M

PO – Programme Outcome, CO – Course outcome

S – Strong, M – Medium, L – Low (may be avoided)