

<i>DEPARTMENT OF ZOOLOGY</i>				<i>CLASS: I B.Sc. Zoology</i>				
<b>Semester</b>	<b>Course Type</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credits</b>	<b>Contact Hours/week</b>	<b>CIA</b>	<b>Ext</b>	<b>Total</b>
II	Core	20U2ZMC4	Chordata – II	3	3	25	75	100

**Course Objectives:**

1. To understand the basic, systematic classification and evolution of higher vertebrates.
2. To identify the animals from Amphibia to Mammals and recognize their distinguishing features.
3. To appraise the diversity of animals in a phylogenetic context.
4. To understand the adaptive mechanisms of the animals to solve the biological problems related to physiological and environmental challenges.
5. To develop an appreciation for the role of vertebrates in biological communities, ecological interactions, and conservation problems.

**Unit-I: Amphibia**

Classification and characters of Amphibia (up to order with examples).

**Type Study:** Frog

**General topics:** Metamorphosis of Amphibian, Limbless Amphibians, Parental care in Amphibian, Paedomorphosis.

**Unit-II: Reptilia**

Classification and characters of Reptilia (up to order with examples).

**Type Study:** *Calotes*

**General topics:** Identification of Poisonous and non-poisonous snakes – Poison apparatus and types of poison, Skull of Reptiles, Salient features of Chelonia & Crocodilia.

**Unit-III: Aves**

Classification and characters of Aves (up to order with examples).

**Type Study:** Pigeon

**General topics:** Flightless Birds, Flight Adaptations in Birds, Feet and Beak modifications, Acoustics in Birds, Migration in Birds.

**Unit-IV: Mammals**

Classification and characters of Mammals (up to order with examples).

**Type Study:** Rabbit

**General topics:** Aquatic mammals and adaptation, Dentition in Mammals

**Unit-V: Chordate Phylogeny**

Geological time scale, Chordate phylogeny, Evolution of Aortic Arches, Evolution of kidney and their ducts, Diversity of Marsupials, Affinities of Prototheria, Adaptive radiation in Mammals.

### **Books for Study**

1. Thangamani A, Prasannakumar S, Narayanan L.M, Arumugam N, 2017. *A Text Book of Chordates*, Saras Publication, Nagercoil.
2. Kotpal R.L, 2017. *Modern Text Book of Zoology: Vertebrates*, Rastogi Publications, Meerut.
3. Arumugam N, 2019. *Animal Diversity – Chordata, Volume - 2*, Saras Publication, Nagercoil.

### **Books for References**

1. EkambaranathaAyyar and Ananthakrishnan T.N. (Recent Edition), *Manual of Zoology Vol-II*, S. Viswanathan Pvt. Ltd. Chennai.
2. Young J.Z, 1950. *Life of Vertebrates*. Clarendon Press, Oxford, UK.
3. Pough Harvey F, Christine M, Janis and John B, Heiser, 2002. *Vertebrate Life*, Pearson Education Inc. New Delhi.
4. Verma P.S, 2010. *Chordate Zoology*, S Chand Publishers, New Delhi.

### **Web Resources**

1. <https://www.khanacademy.org/science/biology/crash-course-bio-ecology/crash-course-biology-science/v/crash-course-biology-123>
2. <https://ucmp.berkeley.edu/vertebrates/vertintro.html>
3. <https://ucmp.berkeley.edu/chordata/chordata.html>

### **Pedagogy**

Chalk and Talk, PPT, group discussion, seminar, interaction, quiz, tutorial and virtual labs.

**Course Learning Outcomes:**

	<b>CLO Statement</b>	<b>Knowledge level</b>
CLO-1	Understand the diversity and basic taxonomy from Amphibia to Mammals.	K1
CLO-2	List the general characters and outline classification from Amphibia to Mammals.	K2
CLO-3	Apply the knowledge to identify the fauna based on their unique characters.	K3
CLO-4	Analyse the importance and adaptation of fauna in their habitat.	K4
CLO-5	Assess the role of Chordates in biological communities and ecological interactions.	K4

**Mapping with Programme Specific Outcomes:**

	<b>PSO-1</b>	<b>PSO-2</b>	<b>PSO-3</b>	<b>PSO-4</b>	<b>PSO-5</b>	<b>PSO-6</b>	<b>PSO-7</b>	<b>PSO-8</b>
CLO-1	1	2	1	1			1	
CLO-2	1	3	3	3			3	
CLO-3	1	3	3	3			3	
CLO-4	1	3	3	3			3	
CLO-5	1	3	3	3			3	

3- Advance application; 2- Intermediate level; 1- Basic level

**Mapping with Programme Outcomes:**

	<b>PO-1</b>	<b>PO-2</b>	<b>PO-3</b>	<b>PO-4</b>	<b>PO-5</b>
CLO-1	1	2	1	2	
CLO-2	2	2	2	3	1
CLO-3	1	3	2	3	2
CLO-4	2	3	2	3	2
CLO-5	2	2	2	3	3

3- Advance application; 2- Intermediate level; 1- Basic level

**LESSON PLAN (Total hours: 45)**

Unit	Description	Staff Name	Hours	Mode
I	General characters of Amphibia		1	Group Discussion
	Classification of Amphibia (up to order with examples)		1	Interaction
	Type Study: Frog		4	Chalk and Talk, Lecture
	Metamorphosis of Amphibian, Limbless Amphibians, Parental care in Amphibian, Paedomorphosis		3	Interaction, Group Discussion, PPT
II	General characters of Reptilia		1	Group Discussion
	Classification of Reptilia (up to order with examples)		1	Interaction
	Type Study: <i>Calotes</i>		4	Chalk and Talk
	Identification of Poisonous and non-poisonous snakes, Poison apparatus and types of poison		2	Interaction, Lecture, PPT
	Salient features of Chelonia & Crocodilia		1	PPT, Interaction
III	General characters of Aves		1	Group Discussion
	Classification of Aves (up to order with examples)		1	Interaction
	Type Study: Pigeon		4	Chalk and Talk
	Flightless Birds, Flight Adaptations in Birds		1	PPT, Interaction
	Feet and Beak modifications & Acoustics in Birds, Migration in Birds		2	PPT, Lecture, Interaction
IV	General characters of Mammals		1	Group Discussion
	Classification of Mammals (up to order with examples)		2	Interaction
	Type Study: Rabbit		4	Chalk and Talk
	Aquatic mammals and adaptation		1	Lecture
	Dentition in Mammals		1	PPT
V	Geological time scale		2	Group Discussion
	Chordate phylogeny		1	Interaction
	Evolution of Aortic Arches		2	Lecture
	Evolution of kidney and their ducts		1	PPT
	Diversity of Marsupials		1	Interaction
	Affinities of Prototheria		1	Lecture
	Adaptive radiation in Mammals		1	Interaction

**Course designers: Dr. L.D. Devasree and Dr. R. Eswaran**