




Syllabus

Second Semester Course in **Zoology**

2023 – 2024

Contents:

- Syllabus for Open Elective (OE)
 - **USZOO4501OE1 - WONDERS OF THE ANIMAL KINGDOM**
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- Evaluation and Assessment guidelines


PRINCIPAL
ST. XAVIER'S COLLEGE
AUTONOMOUS
MUMBAI - 400 001.



APPROVED SYLLABUS

08 APR 2023

FYBA, FYBMS, FYMCJ, FYBAF, FYBCom

Course Title: Wonders of the Animal Kingdom Course Code: USZOO4501OE1

Credits 2: **Theory 2 (Total 30 hrs)**

Prerequisite: **None**

Course Objectives:

1. Get a flavour and basic understanding of the way animals are in their ecosystem.
2. Understand special traits/features of animals and the interaction with their environment.
3. Develop a holistic approach to animals and appreciate the diversity and complexity of nature.
4. Get a flavour and basic understanding of the way animals are in their ecosystem.
5. Understand special traits/features of animals and the interaction with their environment.
6. Develop a holistic approach to animals and appreciate the diversity and complexity of nature.

Course Outcomes:

CO	On completion of the course the learner should be able to	Bloom's Taxonomy Level
1	Know how animals interact and behave	Remembering
2	Understand animal interactions with other animals and with their habitat	Understanding
3	Explain animal behaviour and special modifications developed by them	Remembering
4	Use of special features exhibited by animals that help them in hunts and survival	Understanding

UNIT 1: NOVEL ANIMAL CHARACTERISTICS & BIO ENGINEERING

(15 lectures)

- Arctic Fish and the antifreeze protein
- Parental care – Seahorse, Midwife Toad, Kangaroo and Joey relationship
- Fast and the Furious - Cheetah and Peregrine falcon (adaptations for speed)
- Strategizing a hunt (Anatomy of a hunt) – Lions and Orcas
- Biomimicry - Shinkansen bullet train (design inspired by an Owl, an Adele Penguin and a Kingfisher) and Shark skin patterned inspired paint and denticles patterns.
- Communal nesting in sociable weaver birds in Africa (Concept and advantages)

UNIT 2: ANIMAL LEARNING AND MIMICRY

(15 lectures)

- Parasitoid wasp and the zombie Lady bug
- Toxoplasma and the zombified fearless Rat
- Rabies and the human Zombie
- Chimps and use of tools for food
- Learning behaviour in Dolphins
- Mimicry: Butterflies and Coral snakes (Advantages and disadvantages)

List Of Recommended Reference Books:

1. National Geographic Education. (n.d.). Cheetahs on the brink of extinction again. [<https://education.nationalgeographic.org/resource/cheetahs-brink-extinction-again/>]
2. O'Brien, S. J. (1985). A role for molecular genetics in biological conservation. Retrieved from <https://repository.si.edu/bitstream/handle/10088/4265/OBrien1985.pdf?sequence=1>
3. Stanford University School of Medicine. (2012, September). How the cheetah got its stripes: A genetic tale by Stanford researchers. Retrieved from <https://med.stanford.edu/news/all-news/2012/09/how-the-cheetah-got-its-stripes-a-genetic-tale-by-stanford-researchers.html>
4. Unknown. (Unknown). Who knew? 5 charming cheetah facts. Retrieved from <https://www.lionworldtravel.com/news/who-knew-5-charming-cheetah-facts>
5. Unknown. (2016, June 24). Specimen of the Week 245: The peregrine falcon skull. Retrieved from <https://blogs.ucl.ac.uk/museums/2016/06/24/specimen-of-the-week-245-the-peregrine-falcon-skull/>

6. Unknown. (Unknown). The peregrine falcon: Powerful evidence of amazing design. Retrieved from <https://reasonandscience.catsboard.com/t1754-the-peregrine-falcon-powerful-evidence-of-amazing-design>
7. Unknown. (Unknown). Discover how killer whales squeeze out great white livers like toothpaste. Retrieved from <https://a-z-animals.com/blog/discover-how-killer-whales-squeeze-out-great-white-livers-like-toothpaste/>

Evaluation (Theory): Total marks per course - 50

- I. Formative Assessment ‘for’ Learning (continuous internal assessment - CIA to improve learning).**
 - CIA: Written Test – 20 marks
- II. Summative Assessment ‘of’ Learning**
 - End Semester Examination – 30 marks
 - One question from each unit for 15 marks, with internal choice. Total marks per question with choice -20

Template for the Core course End Semester examination in Semester I for the Core course in Genetics.

UNITS	REMEMBERING	UNDERSTANDING	TOTAL MARKS Per unit
1	8	7	15
2	8	7	15
TOTAL	16	14	30
% WEIGHTAGE	53.33	46.67	100

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FYBA, FYBMS, FYMCJ, FYBAF, FYBCom

Course Title: Social Life of Animals

Course Code: USZOO4502OE1

Credits 2: **Theory 2 (Total 30 hrs)**

Prerequisite: **None**

Course Objectives:

1. To understand why animals live in groups and societies.
2. To know the benefits and costs of living in groups and societies.
3. To understand the basic structures of organization of animal groups and societies.
4. To understand special features evolved by animals living in groups and societies.

Course Outcomes:

CO	On completion of the course the learner should be able to:	Bloom's Taxonomy Level (BT level)
1.	Know the reasons behind why animals form groups and societies.	Knowing
2.	Understand the benefits and costs of living in groups and societies.	Understanding
3.	Know the different structures of organization of animal groups and societies.	Knowing
4.	Appreciate evolution of specific features animals living in groups and societies.	Understanding
5	Know how researchers' study and understand the above-mentioned features.	Understanding

UNIT 1: Formation of groups and societies in animals (15 lectures)

- Why do animals form groups? For better shelter, protection, and food collection.
- Benefits that animals get by grouping:
 - Shelter from harsh environment: Penguins
 - Protection from predators by: diluting predation risk, confusing the predators, employing communal defence and having improved vigilance
 - Foraging: better food finding and better food capture
- Costs of living in groups: reduced share of resources, reduced chances of reproduction, increased chances of spread of diseases.
- Rules and decisions whilst living in groups.
- Social behaviour: Darwin's insuperable difficulty, kin selection, Inclusive fitness,

UNIT 2: Special Features Social Animals and their societies (15 lectures)

- Honeybee dance language
- Special features of ants: anyone – choosing smallest distance, fungal culture, brood theft
- Nest architecture of termites
- Functions of aggressive behaviour in wasps
- Societies of naked mole rats
- Reciprocal altruism in vampire bats
- Evolution of special features of animal societies: cooperation, conflict, ethics and morality

List Of Recommended Reference Books:

1. Davies, NB, Krebs, JR, West, SA (2012). An Introduction to Behavioural Ecology (4th edition). Wiley-Blackwell Publication
2. Gadagkar, R (2001). Survival Strategies – Cooperation & Conflict in Animal Societies: Cooperation and Conflict in Animal Societies. Harvard University Press
3. Various easy to read articles published on social animals in journals.

