

UNIVERSITY OF KOTA, KOTA
SYLLABUS AND COURSE SCHEME
ACADEMIC YEAR: 2022-23
BACHELOR OF SCIENCE- ZOOLOGY
SEMESTER IV



B. Sc. Semester IV

Z- 401 Paper I Animal Diversity – IV (Pisces to Mammalia and Comparative Anatomy)

Z- 402 Paper II Animal Behaviour and Economic Zoology

Z- 403 Practical (Exercise based on papers I and II)

B.Sc. – IV Semester (Zoology)

Z – 401 Paper I Animal Diversity IV

(Pisces to Mammalia and Comparative Anatomy)

UNIT-I

1. Pisces: Difference between cartilaginous and bony fishes; *Latimaria*; Dipnoans. Aquatic adaptations in fishes. General morphology of *Scoliodon* and *Labeo rohita*, types of scales and fins in fishes.
2. Pisciculture: Introductory knowledge of Pisciculture, important fresh water and marine fishes as food.

UNIT-II

1. Amphibia: Adaptations for amphibious life, neoteny and paedogenesis.
2. Reptilia: Adaptations for terrestrial life, Identification of poisonous and non-poisonous snakes, biting mechanism in snakes, snake venom, Dinosaurs.

UNIT-III

1. Aves: Flight mechanism, flight adaptations, perching mechanism, migration, *Archaeopteyx* as a connecting link.
2. Mammalia: oviparity; ovo-viviparity and viviparity in mammals; adaptive radiation; convergent evolution of placental and Australian mammals.

UNIT-IV

Comparative anatomy of the following organ systems of *Scoliodon*, *Rana*, *Varanus*, *Columba* and *Oryctolagus*:

1. Integument and integumentary derivatives.
2. Alimentary canal and accessory digestive glands.
3. Respiratory organs.

UNIT-V

Comparative anatomy of the following organ systems of *Scoliodon*, *Rana*, *Varanus*, *Columba* and *Oryctolagus*:

1. Sense organs.
2. Heart, aortic arches and their evolution.
3. Urinogenital system (pro-, meso- and meta-nephric kidney and genital ducts in male and female vertebrates).

Z – 402 Paper II: Animal Behaviour and Economic Zoology

UNIT- I

1. Introduction, Significance and history of behaviour, Branches of Ethology.
2. Methods of studying animal behavior, Role of Nervous system in behaviour.
3. Hormones (including pheromones).

UNIT- II

1. Patterns of behaviours.
2. Biological clocks: Circannual, Circatidal, Circalunar, Circasyzygic clocks and circadian rhythms.
3. Orientation, Migration in fishes and birds.

UNIT- III

1. Communication: types and significance.
2. Feeding behaviour, Search of food in Honey bee, rhesus monkey and langur.
3. Antipredator behaviour.
4. Aggressive and Territorial Behaviour. Conflict.

UNIT- IV

1. Social behaviour and social organization.
2. Motivation and Learning behaviour.
3. Reproductive (Courtship and mating) and Parental behaviour.
4. Applied Ethology: Stress, Social aggression, Wars and Drug addiction (with treatment and rehabilitation).

UNIT - V

1. Economic Zoology: definition, scope and importance.
2. Harmful Animals - Parasites, pests and vectors: pathogenicity, including diseases, causes, symptoms and control.
3. Beneficial Animals – (culturable and domesticated animals): Aquaculture, Pearl and Prawn culture, Sericulture, Apiculture, Lac-culture; Dairy and Poultry practices.

Z – 403 Practical (based on Z – 401 and Z – 402)

1. Study of museum specimens / models / chart / photograph:

Acipenser, Amia, Anguilla Clarius, Lepidosteus, Labeo, Hippocampus, Exocoetus, Echeneis, Ichthyophis, Protopterus, Proteus, Ambystoma, axolotl larva, Siren, Alytes, Hyla, Haplobatrachus, Bufo (Duttafrancis), Chelone, Testudo, tortoise, Sphenodon, Hemidactylus, Phrynosoma, Draco, Chamaelion, Eryx, Hydrophis, Naja, Vipera, Bungarus, Cocodylus, Alligator, Archaeopteryx, Pavo cristatus, Psittacula, Collumba, Mylvus, great Indian bustard, sarus crane, vulture, crow, Ornithorhynchus, Tachyglossus, Macropus, bat, Loris, Manis, Herpestes, Erinaceous (hedgehog), Camel, Tiger and Panther.

2. Dissection: Through Chart / Model / Photograph / CD.

Any bony fish: External features, general anatomy, afferent and efferent branchial vessels, brain, cranial nerves, eye ball, its muscles and innervations, internal ear, urinogenital system.

3. Permanent mounting:

Cycloid and ctenoid scales, striated and non-striated muscle fibers, filoplume, placoid scales.

4. Osteology:

A comparative study of articulated and disarticulated (original / artificial) bones of frog, *Varanus*, fowl and rabbit.

5. Animal Behaviour:

- a. Thigmotactic, phototactic, and chemotactic response of Paramecium.
- b. Antennal grooming in cockroach.
- c. Geotactic response in *Tribolium* and *earthworm*.
- d. Chemotactic response of Cockroach and Ant. (using synthetic pheromone).
- e. Social behavior of monkey/deer/bee/termite/langur.
- f. Food preference in any insect.
- g. Observation and description of animals in wild/captivity and submission of report of this work.

Skeleton paper and Marking scheme

Duration: 4 Hrs.

Max. M 50

Q1. Major dissection	05
Q2. Minor dissection	04
Q3. Slide preparation	04
Q4. Exercise on animal behavior	05
Q5. Spotting (2X10)	20
Q6. Class record	07
Q7. Viva-voce	05
Total	50
