BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI - 620 024.

ALLIED ZOOLOGY

(For the candidates admitted from the academic year 2022-2023 onwards)

ALLIED COURSE I
BIOLOGY OF INVERTEBRATES AND CHORDATES

Code: **(Theory)** **Credit: 4**

COURSE OBJECTIVES:

- To provide the principle and rules for taxonomic position of any species.
- To impart knowledge on body organization, its evolutionary relationship relating examples.
- To give a preliminary idea of basic characteristics of invertebrates and chordates.
- To enlighten the students on extant and extinct form of invertebrates and chordates.
- To make them realize the importance of diversity of a species in an ecosystem.

UNIT – I PHYLUM - PROTOZOA, PORIFERA AND COELENTERATA:

General characters and classification of phylum Protozoa, Porifera and Coelenterata (upto class) with suitable examples. Type study: Amoeba, Ascon sponge, Sea anemone. General Topic: Corals and coral reefs.

UNIT – II PHYLUM - PLATYHELMINTHES, NEMATHELMINTHES, ANNELIDA AND ARTHROPODA:

General characters and classification of phylum Platyhelminthes, Nematelminthes, Annelida and Arthropoda. Types study: Tapeworm, Ascaris - Earthworm and Cockroach. General topic: Parasitic adaptation of Ascaris. Mouth parts of insects.

UNIT – III PHYLUM - MOLLUSCA AND ECHINODERMATA:

General characters and classification of phylum Mollusca and Echinodermata. Type of study: Pila and Star fish. General topic: Torsion in Gastropods. Water vascular system of Echinodermata.

UNIT – IV CLASS – PISCES, AMPHIBIA AND REPTILIA:

General characters and classification of Class Pisces, Amphibia and Reptilia. Type study: Shark, Frog and Calotes. General topic: Migration in fishes. Parental care in amphibia. Poisonous and non-poisonous snakes in India.

UNIT – V CLASS - AVES AND MAMMALIA:

General characters and classification of Class Aves and Mammalia. Types study: Pigeon, Rabbit. General topic: Flightless birds (Ratitae). Dentition in Mammals.

UNIT – VI CURRENT CONTOURS (For continuous internal assessment only):

Recent discoveries / research / reviews on diversity of invertebrates and vertebrates and its application in various fields of biology and in conservation related to species- specific-Conservation Conundrums.

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COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Learn the classification and evolution of invertebrates and chordates.
- Gain knowledge on the general structure of invertebrates and vertebrates.
- Develop and relate the functional physiology of species.
- Know the economic, ecological importance of invertebrates and chordates.
- Analyse by observing various organisms using microscopes.

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ALLIED PRACTICAL
BIOLOGY OF INVERTEBRATES AND
CHORDATES AND OCCUPATIONAL ZOOLOGY

Code: **(Practical)** **Credit: 2**

COURSE OBJECTIVES:

- To make them familiarize with basic laboratory techniques in related to Zoology.
- To make them understand the taxonomic position, body organization and evolutionary relationship of species.
- To inculcate the significance of various invertebrates and chordates in their ecosystem.
- To highlight the information on economic aspects of Zoology.
- To comprehend the theoretical and practical applications of species diversity.

DISSECTION / DEMO / CD / VIRTUAL:

1. Earthworm - Digestive and Nervous system.
2. Cockroach- Digestive and Nervous system.
3. Fish - Digestive and Nervous system.

MOUNTING:

1. Mouth parts – honeybee, cockroach and mosquito (slide).
2. Earthworm – body setae and penial setae.
3. Fish – cycloid scale, ctenoid scale and placoid scale.
4. Pila – Radula (Slide)

Spotters: Invertebrata - Amoeba, Paramecium, Trypanosoma, Euglena, Plasmodium, Leucosolenia, Sycon sponge, Aurelia, Obelia, planaria, Liver fluke, Tapeworm, Cockroach, Planaria, Earthworm, Nereis, Leech, Prawn/Shrimp, Scorpion, Grasshopper, Fresh water mussel, Pila, Starfish. Protochordata and Vertebrata – Amphioxus, Shark, Catla, Frog, Salamander, Calotes, Chamaeleon, Turtle, Cobra, Viper, Pigeon, Rat, Bat, Rabbit.

Commercial important species:

Apiculture (Apiary devices) - Newton's beehive, honey extracting devices, honey, wax

Sericulture - *Bombyx mori*, cocoons, silk thread, rearing appliances.

Aquaculture - Catla, Rohu, Mrigal, fresh water prawn *(Macrobrachium rosenbergii)*, marine shrimp– *(Penaeus monodon / Litopenaeus vannamei)*.

Poultry - Eggs of different types of poultry birds, broiler chicks, layer chicks.

Vermiculture – Vermicompost and earthworm species - types.

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COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Practically identify species (fresh and preserved) along with its larval forms.
- Analyze the relationship among animals to their habitat.
- Recognize the diversity of invertebrate species from Protozoa to Echinodermata.
- Recognize the significance and economic value of sericulture and apiculture.
- Gain knowledge on significance of aquaculture and their economic role.
- Be clear on poultry farm management principles/practices.
- Understand the significance of vermiculture technology and their ecological and economic importance.

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ALLIED COURSE II
OCCUPATIONAL ZOOLOGY

Code: **(Theory)** **Credit: 4**

COURSE OBJECTIVES:

- To encourage young learners to take up small-scale industries.
- To generate motivation for self- employment.
- To impart information on economic aspects of Zoology.
- To inculcate knowledge on economically important species.
- To satisfy the learners with modern techniques/advancements in aquaculture, apiculture, sericulture, poultry and vermiculture.

UNIT – I APICULTURE:

Apiculture - introduction - scope - species of honeybee – colony organization and life cycle – bee keeping equipments - Newton's bee hive - honey extraction – production and economic value - marketing of quality honey - medicinal value of honey.

UNIT – II SERICULTURE:

Sericulture - introduction - scope - rearing of silkworm – voltinism and moultinism – study of different types of silk and silkworms in India - life cycle of silkworm. **Moriculture** - mulberry cultivation – recent techniques in rearing - harvesting and storage.

UNIT – III FISH CULTURE:

Fish culture **-** introduction - scope - commercial culture of Indian major carps. Techniques of induced breeding in fish - Farm design- construction, culture -Water quality and disease management. Culture technique of fresh water prawn (*Macrobrachium rosenberigii*) - culture technique of marine shrimp (*Penaeus monodon/ Litopenaeus vannamei*).

UNIT – IV POULTRY:

Poultry culture **-** introduction - scope - types of poultry - management - brooding and rearing– poultry nutrition. Disease management and their prevention methods - economic importance of poultry production.

UNIT – V VERMICULTURE:

Vermiculture **-** introduction - scope - classification of earthworm – methods of collection of earthworm – mechanism of vermicomposting – nutritive value of vermicomposting. Economic importance of vermicomposting.

UNIT – VI CURRENT CONTOURS (For continuous internal assessment only):

Modern Bee keeping management – Robotic Bee-Hive tracks - Buzz box. Recent articles on introduction and conservation of new species into economics - agro-based technological opportunities for rearing - disease free production / culture of economic species - present scenario of silk production in India - Blue revolution and its economic importance.

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COURSE OUTCOMES:

Upon successful completion of this course the students would be able to:

- Understand the significance and economic value of sericulture and apiculture.
- Gain knowledge on agro-based rearing like aquaculture and their economic importance.
- Introduce new strategies on the poultry farm management and its principles.
- Perform vermiculture and make up value added products in a small scale.
- Conclude the importance of regionally available rearing techniques and can learn advanced training for better sericulture.

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