

# JYOTI NIVAS COLLEGE AUTONOMOUS



## DEPARTMENT OF ZOOLOGY

### FREE VALUE ADDED CERTIFICATE COURSE

on

### Applied Zoology for Entrepreneurs

**Total Contact Hours: 30**


#### Course objectives:

1. Gain knowledge about silkworms, Bee keeping and insect pests.
2. Students will understand dairy animal management, the breeds and diseases of cattle and learn the testing of milk quality.
3. Learn various concepts about Vermiculture and gain basic information about aquaculture and poultry

#### Course Outcomes:

1. Students can start their own business i.e. self-employment.
2. Get employment in different applied sectors of Zoology
3. Students should be able to design an appropriate management strategy with consideration for sustainability

#### COURSE STRUCTURE

 Total Teaching Hours- 30 hrs

##### 1. Sericulture

**5 Hrs**

History and status of sericulture in India, Mulberry and non-mulberry species in Karnataka and India, Mulberry cultivation, Morphology and life cycle of Bombyx mori, Silkworm rearing techniques: Processing of cocoon, reeling, Silkworm diseases and pest control.

## **2. Apiculture**

**5 Hrs**

Introduction, Species of honey bees in India, life cycle of *Apis indica*, division of labour and communication, Bee keeping as an agro based industry, extraction of honey from the comb and processing, Bee pasturage, honey, bees wax and their uses, pests and diseases of bees and their management

## **3. Pest management**

**5 Hrs**

Structural organization of an insect, Categories and types of insect pests, Agricultural pests (pests of crops and stored food products), Veterinary insects, Pests of public health importance (Mosquito, House fly, Louse, Bed bugs), urban pests (cockroach), Basics of pest control

## **4. Live Stock Management:**

**5 Hrs**

Introduction to common dairy animals. Types, loose housing system and conventional barn system, Establishment of dairy farm and choosing suitable dairy animals- Cattle feeds, milk and milk products. Cattle diseases (briefly)

Poultry: Types of breeds - Indigenous and Exotic, Feed formulations for chickens, Nutritive value of egg and meat, Disease of poultry and control measures.

## **5. Vermiculture:**

**5 Hrs**

Scope of vermiculture, Types of earthworms, Methodology of vermicomposting: containers for culturing, raw materials required, preparation of bed, environmental pre-requisites, feeding, harvesting and storage of vermicompost. Advantages of vermicomposting.

## **6. Aquaculture:**

**5 Hrs**

Introduction, Types of aquaculture: Pond culture; carp culture, shrimp culture, shellfish culture, composite fish culture and pearl culture. Common fishes used for culture.

Construction and maintenance of aquarium - materials used, aquarium plants, ornamental objects, cleaning the aquarium.

Culture of fresh and marine water prawns. Preparation of farm. Preservation and processing of prawn, export of prawn.

## **Suggested Activities**

- Identification & study of important pests (Mosquitoes, Housefly, Head lice) and house hold Insects (Cockroach, Silver fish, Crickets)
- Field visits to a Sericulture/Apiculture/Horticulture farm and submission of report.
- An aquarium visit can be organized to facilitate students to have first-hand exposure to the functioning of an aquarium shop
- Workshop on Vermicomposting

## Reference books:

1. Eikichi, H. (1999). Silkworm Breeding (Translated from Japanese). Oxford &
2. IBH Publishing Co.Pvt. Ltd., New Delhi Ganga, G. (2003). Comprehensive Sericulture Vol-II: Silkworm Rearing and Silk Reeling.
3. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi. Å Mahadevappa, D., Halliyal, V.G., Shankar, D.G. and Bhandiwad, R., (2000). Mulberry Silk
5. Reeling Technology Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
6. Roger, M (1990). The ABC and Xyz of Bee Culture: An Encyclopedia of Beekeeping, Kindle Edition.
7. Shukla and Upadhyaya (2002). Economic Zoology, Rastogi Publishers
8. YadavManju (2003). Economic Zoology, Discovery Publishing House.
9. JabdePradip V (2005). Textbook of applied Zoology, Discovery Publishing House, New
10. Cherian & Ramachandran Bee keeping in South Indian Govt. Press, Madras. 11. Sathe, T.V. Vermiculture and Organic farming.
12. Bard. J (1986). Handbook of Tropical Aquaculture.
13. Santhanam, R. A. Manual of Aquaculture.
14. Zuka. R.1 and Hamiyn (1971). Aquarium fishes and plants P.V. (2005) Text Book of Applied Zoology: Vermiculture, Apiculture, Delhi.
15. Jabde, Sericulture, Lacculture.
16. Animal Disease- Bairagi K. N. Anmol Publications Pvt.Ltd 2014 17. Economics Of Aquaculture - Singh(R.K.P) - Danika Publishing Company 2003 18. Applied and Economic Zoology (SWAYAM) web [https://swayam.gov.in/nd2\\_cec20\\_ge23/preview](https://swayam.gov.in/nd2_cec20_ge23/preview) surse Books published in English and Kannada may be prescribed by the liversities and College
- dagogy: Chalk and Talk, PPT, Group discussion, Seminar, Field visit
19. End semester Assessment ZOOE1- Zoology for Entrepreneurs Open
20. General Applied Entomology by B V David and T N Anathakrishnan
21. Entomology and pest management by Larry P Pedigo and Marlin E Rice
22. Principles of Applied Entomology by K N Ragumoorthi, M R Srinivasan, V Balasubramani & N Natrajan
23. Insecta –An Introduction by K N Ragumoorthi, M R Srinivasan, V Balasubramani & N Natrajan