

**SEMESTER IV****ZOOLOGY COMPLEMENTARY COURSE FOR BOTANY (MODEL I) AND SIMILAR PROGRAMMES (HOME SCIENCE/ BIOLOGICAL TECHNIQUES AND SPECIMEN PREPARATION)****ZY4C04U - APPLIED ZOOLOGY**

3hrs/week

54 hrs

Credits 3

**OBJECTIVES**

Equip the students interested in the applied branches of zoology with skills and knowledge which can lead to self employment opportunities.

**Module 1: Aquaculture****24 hrs**

Traditional methods of aquaculture, Advantages and salient features of aquaculture, Types of aquaculture, Biotic and abiotic factors of water, Importance of Alga in aquaculture, Common Cultivable fishes of Kerala Economic importance and morphology of culturable species  
*Catla, Rohu, Mrigal, Cyprinus carpio, Etroplus, & Tilapia* .  
*Penaeus indicus, P. monodon, Perna viridis/Perna indicus, Pinctada fucata*.  
 Pond culture (Construction and maintenance ) Brief Description of Carp culture Composite fish culture. Integrated Fish Culture, Induced breeding in fishes, Important Fish Diseases. Fish preservation and processing  
 Aquarium management, Setting up of an Aquarium, Biological filter and Aeration . Common species of Aquarium fishes.  
 Prawn culture, Mussel culture , Pearl culture

**Core Readings:**

Applied Zoology; (2002) Published by Zoological Society Of Kerala

**Module 2 Sericulture****12 hrs**

Four species of silkworms, Life history of silkworms, Silkworm Rearing Techniques. Diseases and Pests of silkworms. Mounting of worms.  
 Harvesting and stiffling of cocoons. Silkworm diseases. Preventive and control measures.

**Core Readings:**

Applied Zoology; (2002) Published by Zoological Society Of Kerala  
 Sudheeran, M.S. & John P.C., 1989 Economic Zoology (Prathibha Publ.,  
 Kottayam)

**Module 3 Vermiculture****6 hrs**

Species of Earthworms suitable for vermiculture. Reproduction and Life  
 Cycle . Physical and Chemical effects of Vermiculture, Vermicomposting,  
 Site Selection, Cement pit Soil pit . Preparation of pit. Maintenance and  
 Monitoring

**Core Readings:**

Applied Zoology; (2002) Published by Zoological Society Of Kerala  
 Venkitaraman, P.R., 1983, Text Book of Economic Zoology (Sudarsana  
 Publ. Cochin)

**Module 4 Apiculture****12 hrs**

Species of Honey bees. Organization of honeybee colony. Bee keeping  
 methods and equipments Apiary management and maintenance. Bee  
 pasturage, Byproducts of honey bees and their uses. Diseases and pests of  
 honey bees, control measures.

**Core Readings:**

Applied Zoology; (2002) Published by Zoological Society Of Kerala  
 Shukla G.S., & Updhyay V.B., Economic Zoology (Rastogi Publ. Meerut)

**Selected Further Readings**

- Alikunhi, K.h., Fish Cluture in India (ICAR, New Delhi)  
 Bhosh, C.C., 1949, Silk Production and Weaving in India (CSIR), New Delhi)  
 Director. Zoological Survey of India, 1994, earthworms Resources and  
 Vermiculture  
 Edwards, C.A. & Lafty, J.R. 1972 Biology of Earthworms (Chapman and Hall  
 Led. London)  
 Jhingran, V.G., 1985 Fish and Fisheries of India (Hindustan Publ. Corporation,  
 New Delhi)

- Kurien, C.V. & Sebastian V.C., Prawn Fisheries in India (Hindustan Publ. Corporation, New Delhi)
- Krishnaswami, S., 1986 Improved Method of Rearing Young age Silk worms (Central Silk board Bangalore)
- Krishnaswami, S., 1986, New Technology of Silkworm Rearing (Central Silk Board Bangalore )
- Lee, K. E., 1985 Earthworms, Their Ecology and relationships with Soils and Land use. Academics Press.
- Menon, K.N., 1970 Malsyakrishi (State Institute of language, Trivandrum)
- Mysore Silk Association, 1986, Silkworm rearing and Diseases of Silkworms
- Padmanabha Aiyer, K.S., 1992, Records of the Indian Museum Vol. XXXI, Part I, PP. 13-76 An Account of the Oligochacta of the Travancore
- Shiggen, K., 1969, Problems in Prawn Culture (American publ. Co., New Delhi)
- Shukla G.S., & Updhyay V.B., Economic Zoology (Rastogi Publ. Meerut)
- Andhra Pradesh Agricultural University, Hyderabad)
- Sinhan, V.R.P. & Ramachandran, V., 1985, Fresh water Fish Culture (ICAR, New Delhi)
- Singh, S., 1962 Bee keeping in India (ICAR, New Delhi)
- Singh, V.P.P. and Ramachandran, V., 1985 Freshwater Fish Culture (ICAR, New Delhi)
- Sudheeran, M.S. & John P.C., 1989 Economic Zoology (Prathibha Publ., Kottayam)
- Ullal, S. R. and Narasimahanna, M.N., Handbook of Practical Sericulture (Central Silk Board Bombay.)
- Venkitaraman, P.R., 1983, Text Book of Economic Zoology (Sudarsana Publ. Cochin)

**Practicals****ZY4C04U [P] - APPLIED ZOOLOGY**

2 hrs/week

1 credit

36 hrs

1. General Identification, Economic importance, Morphology, scientific names and common names of the following
  - a. Economic importance and morphology of culturable species  
(Catla, Rohu, Mrigal, Grass carp, Common carp, , Etroplus  
Tilapia)  
*Penaeus indicus*,/*P.monodon*,  
*Perna viridis*/*P.indicus*  
*Pinctada fucata*
  - b. 2 species of earthworms used in Vermiculture
  - c. Two species of honey bees
  - d. Silkworm. Cocoon/Adult
2. Castes of bees
3. Bee keeping equipments Beehive, Smoker, honey extractor
4. Beeswax, Honey, Silk, Vermicompost (Identification-Uses)
5. Chandrika /Natrika used in sericulture
- 6. Fish diseases (any 2 diagrams/specimens)**
- 7. Fish Parasite (any one)**