

## E-content:

- <http://publichealth.lacounty.gov/acd/Vector.htm>
- <https://www.cdc.gov/ncezid/dvbd/index.html>

**Note:** Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

### GENERIC ELECTIVE (GE-03)

#### Credit distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
<b>Techniques for Insect Collection, Rearing and Preservation ALS ZOO GE 03</b>	4	2	0	2	NIL	NIL

#### Objectives:

The course aims to give knowledge to the student about the broad categories of insects. They will be taught about the various insect collection techniques as well as their preservation for future studies. They will also be trained about the maintenance of insectary and rearing of insects for their use in research as well as for commercial purposes.

#### Learning outcomes:

- Students will understand the use of different tools and techniques for the collection and preservation of insects belonging to various economically important insect orders.
- Students will be equipped with rearing techniques of insects.
- They will be able to set up an insectary.

#### Theory:

**Unit 1:** **Hours: 04**

Class Insecta

Characteristics of class Insecta and outline classification upto orders

**Unit 2:** **Hours: 06**

Insect collection Techniques :

Tools and techniques: Collecting bag and other containers, Insect nets, collecting jars, alcohol vials, Envelopes, Forceps, Sieve, Aspirator, various types of Traps, Berlese funnel, beating tray, Beat sheet

**Unit 3: Hours: 08**

Insect Preservation

Dry preservation: Different types of Killing bottles- Cyanide bottle, Chloroform bottle, Ethyl acetate, Preservation in triangles, Gutting, Drying, Relaxing, Pinning (direct and micro pinning), Staging, Carding, Spreading, Setting; Wet Preservation: Ethanol and Lactic acid preservatives, Fixatives, Microscope slide mounting: stains, mountants; Mountings and preservation of individual orders; curation: labelling, insect box, Riker Mounts and cabinets, care of collection, Identification keys.

**Unit 4: Hours: 05**

Rearing of Lepidopteran and Dipteran pests

Methods for the rearing: *Spodopteralitura/Helicoverpaarmigera* both in natural and semi-synthetic diet, House fly and Mosquitoes.

**Unit 5: Hours: 04**

Rearing of stored grain Insect pests

Rice meal moths (*Crcyracephalonica*), Red cotton bugs (*Dysdercuscingulatus*), Pulse beetle (*Callosobruchuschinensis*).

**Unit 6: Hours: 03**

Maintenance of Insectary Containers for rearing, rearing condition and problems: Moisture, Temperature, Light, Food, Dormancy and Diapause. Glass house Insectary, Sterilization techniques/ fumigation.

**Practical:**

1. Study of Insect collection equipment through specimens/ Photographs
2. Dry mounting, labelling and preservation of insects.
3. Study of insect box and it's preparation.
4. Temporary preparation of slide of microscopic insects.
5. Study of different types of traps through specimens/ photographs.

6. Culture of any one pest (agriculture/ stored grain) and submission of different life stages.
7. Visit to any Insectary and submission of project report.


#### **Essential/recommended readings**

- Atwal, A. S., & Dhaliwal, G. S. (2015). *Agricultural pest South Asia and their management* (8<sup>th</sup> Ed.). Kalyani publishers.
- Padhan, S. (2016). *Agricultural Entomology and Pest Control*. ICAR publication.

#### **Suggestive readings**

- Gullan, P. J., & Cranston, Peter (2004). *The Insects: An Outline of Entomology* (3rd Ed.). Edition. Blackwell publication.
- Tembhare, D. B. (2017). *Modern Entomology*. Himalaya Publishing House Pvt. Ltd.

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**REGISTRAR**