

**ELECTIVE COURSE I - GENERAL AND APPLIED ENTOMOLOGY**

**Unit I**

Taxonomy : Basics of insect classification – Classification of insects upto super families – Key characteristics with common South Indian examples.

Morphology of a typical insect. Physiology : Integumentary system – structure and chemistry Neuroendocrine system in insects.- physiology of moulting – Endocrine control of moulting and metamorphosis.

**Unit II**

Physiology of Respiration – aerial respiration – aquatic respiration.

Circulatory system – structure of heart, mechanism of haemolymph circulation – haemolymph and its composition. Excretory system : Malpighian tubules and their functions – role of rectum in water and ionic regulation.

**Unit III**

Nervous system : Structure – Structure and function of compound eye. Stridulatory organ.

Reproductive system : Male ;and female reproductive systems – types of ovaries – vitellogenesis – accessory reproductive glands – their secretions and functions .

Viviparity – Role of hormones in male and female reproduction.

**Unit IV**

Economic importance of Insects – Biology of Honey bee, Silk moth and Lac insect - Culture methods for honey bee and, silk worm – Appliances used and problems related to these cultures.

Helpful insects – Pollinators, predators, parasitoids - scavengers – weeds killers

Destructive insects: Biology, damage caused and control methods of any 3 major insect pests of agricultural importance : Pests of paddy, sugar cane, cotton – Pests of stored products.

**Unit V**

Principles of Insect control – Prophylactic measures – cultural, mechanical, physical methods – Genetic control and quarantine.

Biological control : Parasites, Predators and Microbial agents.

Chemical methods : Pesticides, classification – types of formulation – mode of action – toxicity – insecticide resistance – environmental safety.

Non – conventional methods : Use of insect growth regulators (IGR), repellents, anti-feedants, pheromones, chemosterilants and irradiation .

Integrated Pest Management (IPM) – definition, Integration of methods – potential components – need for IPM and uses.

### **Recommended Text Books**

AMBROSE, DUNSTON P. (2004) The Insects: Structure, function and Biodiversity.

Kalyani publishers, Ludhiana – New Delhi – Chennai.

NAYAR, K.K., T.N. ANANTHAKRISHNAN, and B.V. DAVID (1986) General and Applied Entomology, Tata McGraw Hill Publications, New Delhi.

VASANTHARAJ DAVID, B (2001) Elements of Economic Entomology, Popular Book Depot., Chennai – 15.

CHAPMAN R.F.(1998). The Insects structure and function Cambridge University Press

SNODGRASS, R.E. (1985) Principles of Insect Morphology, McGraw Hill and Co., New York.

WIGGLESWORTH, V.B. Principles of Insect Physiology IX Ed., Chapman and Hall, London.