ES44 ENTOMOLOGY (Morphology, Physiology of Insects) Cr. 3(2+1)

Course Contents

1. General characteristics of insects. Relationship with other Arthropoda,
2. **Hard Parts:** General segmentation, Cuticle: Detailed structure. Epidermal layer; its structure and function. Basement membrane. Colours of insects. Cuticular outgrowths and appendages, sclerotization. Metamorphosis.
3. **Head:** Cephalization, Sclerites, Modifications. Antennae: Different modes of ingestion and types of mouth parts.
4. **Thorax**; legs, their different modifications and functions.
5. **Wings:** Different regions. Development. Basal attachments. Main veins and their branches (generalized insects). Wing coupling apparatus.
6. **Abdomen:** Secondary appendages and external genitalia. Endoskeleton: Head, thorax and abdomen.
7. **Comparative structure of all the systems**, e.g., digestive, excretory, respiratory, circulatory, and nervous system and their physiology. Sense organs: sound and light producing organs. Exocrine and Endocrine glands including pheromones and their functions.
8. **Reproduction:** Reproductive organs and different types of reproduction in insects. Types of larvae and pupae.

Practicals

Preparation of permanent slides. All the hard parts (terminal segments, wings, antennae, legs, mouth parts). Different systems, especially digestive, reproductive of the following insects. American cockroach, grasshopper, housefly, mosquito, any common beetle. Sympathetic nervous system of cockroach.

Textbook

1. General Text Book of Entomology. Imm. Richards and Davies, Vol.1.

Additional Readings

2. The Insects: Structure and Function, 2000. Chapman.
3. Insect Physiology. Wiggles Worth.
4. Insect Physiology. Pattons.
5. Insect Ecology. Price.
6. Ecology: The Experimental Analysist Abundance. Krebs.
7. Modern Entomology, 1997. Tembhare.
8. Ecological Methods; 1978. T.R.E. Southhood.
9. Elements of Insect Ecology, 1997. S.S. Yasbani and M.L. Agarwal.