



Code	Subject Title	Cr. Hrs	Semester
<b>ZOOL-411</b>	<b>Entomology (Morphology, Physiology of Insects)</b>	<b>2</b>	<b>VII</b>
Year	Discipline		
<b>4</b>	<b>Zoology</b>		

### Course Contents

General characteristics of insects. Relationship with other Arthropoda,

Hard Parts: General segmentation, Cuticle: Detailed structure. Epidermal layer; its structure and function. Basement membrane. Colours of insects. Cuticular outgrowths and appendages, sclerotization. Metamorphosis.

Head: Cephalization, Sclerites, Modifications. Antennae: Different modes of ingestion and types of mouth parts.

Thorax; legs, their different modifications and functions.

Wings: Different regions. Development. Basal attachments. Main veins and their branches (generalized insects). Wing coupling apparatus.

Abdomen: Secondary appendages and external genitalia. Endoskeleton: Head, thorax and abdomen.

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.

Reproduction: Reproductive organs and different types of reproduction in insects. Types of larvae and pupae.

### Recommended Books

- General Text Book of Entomology. Imm. Richards and Davies, Vol.1.
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- Additional Readings
- The Insects: Structure and Function, 2000. Chapman.
- Insect Physiology. Wiggles Worth.
- Insect Physiology. Pattons.
- Insect Ecology. Price.
- Ecology: The Experimental Analysis Abundance. Krebs.
- Modern Entomology, 1997. Tembhare.
- Ecological Methods, 1978. T.R.E. Southood.
- Elements of Insect Ecology, 1997. S.S. Yasbani and M.L. Agarwal.