

Course Objectives:

The objectives of the course are:-

1. To describe the reasons for evolutionary success of insects.
2. To establish the understanding about body structure of insects.
3. To familiarize the students about different physiological processes of insect.
4. To introduce concepts of insect ecology.

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. **ACQUIRE** the basic knowledge of the body structure of insects.
2. **UNDERSTAND** the role of structures in different life processes of insects.
3. **CLASSIFY** the insects at order level.
4. **ASSOCIATE** the insect structure, physiology and ecological interactions with their abundance and huge diversity.
5. **DIFFERENTIATE** the structural differences between different insects.
6. **ANALYZE** the impact of environmental factors on insect life.

Course Contents:

General characteristics of insects. Relationship with other Arthropoda, splitting up into different evolutionary lines. Reasons for success of the insects in diverse environments.

Hard Parts: General segmentation, Tagmatosis and organization.

Cuticle: Detailed structure along with its biochemistry. Epidermal layer; its structure and function. Basement membrane. Colours of insects. Cuticular outgrowths and appendages sclerotization.

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

Neck: Sclerites.

Thorax: Sclerites: legs, their different modifications and functions.

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

Abdomen: Secondary appendages and external genitalia. Flight: types of flight. Aerodynamics. Fuels.

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work:	25 marks
Midterm Exam:	35 marks
Final term Exam:	40 marks

Books Recommended

1. General text book of entomology. Imm. Richards and davies, vol.1. 2012
2. The insects: structure and function, 2000. Chapman.
3. Wiggles worth Principles of Insect Physiology. 2018
4. Insect physiology. Pattons. R. L 1963
5. Insect ecology. Price. 2011
6. Ecology: the experimental analysis abundance. Krebs. 2012
7. Modern entomology, 1997. Tembhare.
8. Ecological methods, 1978. T.r.e. Southood.
9. Elements of insect ecology, 1997. S.S. Yasdani and M.L. Agarwal.

UZO-548 Morphology, Physiology and Ecology(Lab.)

Cr. (1)

Course Objectives:

The objectives of the course are:-

1. To describe the reasons for evolutionary success of insects.
2. To establish the understanding about body structure of insects.
3. To familiarize the students about different physiological processes of insect.
4. To introduce concepts of insect ecology.

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. **ACQUIRE** the basic knowledge of the body structure of insects.
2. **UNDERSTAND** the role of structures in different life processes of insects.
3. **CLASSIFY** the insects at order level.
4. **ASSOCIATE** the insect structure, physiology and ecological interactions with their abundance and huge diversity.
5. **DIFFERENTIATE** the structural differences between different insects.
6. **ANALYZE** the impact of environmental factors on insect life.

Course Contents:

Preparation of permanent slides. All the hard parts (terminal segments, wings, antennae, legs, mouth parts and genitalia). Different systems, especially digestive, reproductive of the following insects. American cockroach, Gryllus, grasshopper

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work: 25 marks

Midterm Exam: 35 marks

Final term Exam: 40 marks