Syllabus

HRT 280 Field Entomology with Integrated Pest Management

General Information

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Department Conservation

Course Prefix HRT

Course Number 280

Course Title Field Entomology with Integrated Pest Management

Course Information

Catalog Description A practical investigation of insect structure and function, ecology, behavior, and life history, as well as strategies of integrated pest management (IPM). The class will discuss various pesticides, modes of action and toxicity, environmental impact and possible effects on the applicator. Students will report on current topics such as vectors of plant and animal diseases, and the challenges to pollinator populations. Training in identification, monitoring, sampling methods, biological control and conventional crop protection approaches prepare the student for professional opportunities.

Credit Hours 4

Lecture Contact Hours 4

Lab Contact Hours 0

Other Contact Hours 0

Grading Scheme Letter

Prerequisites

BIO 121 or BIO 125

Co-requisites

None

First Year Experience/Capstone Designation

This course DOES NOT satisfy the outcomes applicable for status as a FYE or Capstone.

SUNY General Education

This course is designated as satisfying a requirement in the following SUNY Gen Ed category
None

FLCC Values

Institutional Learning Outcomes Addressed by the Course
None

Course Learning Outcomes

Course Learning Outcomes

1. Identify insects (beneficial and harmful) to phylogenetic order.
2. Recognize the dynamic equilibrium that exists between plants, insects and wildlife.
3. Relate the vital impacts that humans (e.g. farmers, pesticide applicators, homeowners) and insects have on one another.
4. Integrate pest management concepts into the development of seasonal land use plans (e.g. landscape or crop production).

Outline of Topics Covered

1. Importance of insects and other arthropods to life on earth; the numbers and diversity of insects as well as their roles in the ecosystem.

2. Identify the specific threat to a damaged plant applying a process of research and analysis to first describe the damage, place the insect in a feeding guild and then to learn which insects can feed on that plant species.

3. Insect development first as a feature of the order to which it belongs, then from the perspective of physiological changes during successive molts during the transition from egg to immature to adult.

4. Insect external anatomy as it relates to identification, the vocabulary for description of mouthparts, antennae, limbs and wings.

5. Examples of Integrated Pest Management (IPM) of economically important insects, especially the more recent invasive species for which there are few natural enemies and

chemical applications may be necessary for management of crop damage.

6. Monitoring of insects, including growing degree days (GDD), and visual recognition of damage caused by insects; development of a logical and efficient strategy for assessing insect pests in greenhouse, nursery or landscape.

7. Insect biological control (parasites and predators), species which are likely to be present and those natural enemies available for sale to introduce into the environment.

8. Structural and chemical plant defenses, including constitutively expressed traits like secondary cell walls and lignification, defense compounds like phenolics that deter insect feeding, and induced defenses ramped up when a plant is attacked.

9. Current research into the status and roles of honeybees and other pollinators as well as the basics of beginning beekeeping and routine management of honeybee pests.

10. Evaluate organic and conventional options for plant protection so that the student understands wise choices in New York labeled products that vary from insecticidal soaps and oils, and insect growth regulators with low mammalian toxicity to poisons that impact the central nervous system.

Program Affiliation

This course is required as a core program course in the following program(s)

AAS Horticulture