

# RUTGERS

Department of Entomology



## *Syllabus for (11:370:352)*

### **TOXICOLOGY OF INSECTICIDES**

**(3.0 credits)**

---

**Instructor:** Dr L. B. Brattsten [lb.brattsten@rutgers.edu](mailto:lb.brattsten@rutgers.edu)

**Offered:** In the SPRING semester of odd-numbered years; **Next offered:** Spring 2021

**Lectures:** M, W 2 (10:55 – 12:15);

**Location:** Thompson Hall, Room 201

**Text:** TBA, papers from the current literature; the course will be posted on a Rutgers Canvas website.

#### **Tentative Lecture Topics**

- 01 Overview of the course
  - 02 History of insecticide use
  - 03 Classes & structures of insecticides
  - 04 Classes & structures of insecticides
  - 05 Synthetic vs natural compounds
  - 06 Biological vs Chemical methods
  - 07 Plant compounds vs synthetic compounds
  - 08 Plants as sources for insecticides
  - 09 Detoxification mechanisms
  - 10 Detoxification mechanisms
  - 11 Detoxification mechanisms
  - 12 Enzyme adaptations
  - 13 Molecular target sites & their adaptations
  - 14 Molecular target sites & their adaptations
  - 15 Measuring acute toxicity
  - 16 Demo of toxicity assays
  - 17 Chronic toxicity & side effects
  - 18 When is it resistance
  - 19 Counteracting resistance
  - 20 Areawide spraying vs local applications
  - 21 Incorporation into IPM strategies
  - 22 Transgenic plants
- Plus 6 lectures of discussions & reviews in preparation for quizzes

### Learning Goals:

- Knowledge of the structural diversity of compounds designed to kill insect disease vectors and competitors for human food, fiber, and shelter.
- Understanding the mode of biochemical action of the different classes of compounds and how insects defend themselves against such compounds by molecular modifications of the target sites and by metabolism.
- Understanding how and why insecticidal compounds can be included in IPM control strategies and how insecticide efficacy is influenced by compounds used to control weeds and pathogenic fungi
- To learn the molecular structures that enable their modes of action and detoxification mechanisms, the commercial naming strategies of insecticides and the industrial strategies for discovering and devising new compounds and to appreciate their value, usefulness, limitations, and risks.

### Testing and grading: [% of final grade]

- 6 online quizzes [90%]
- Lecture attendance [10%]

### Contact Information:

Dr L. B. Brattsten, Room 133, Thompson Hall

e-mail: [lb.brattsten@rutgers.edu](mailto:lb.brattsten@rutgers.edu)

phone: 848-932- 8166, 732-921-0131

Office Hours: by appointment