

## **ENTOMOLOGY 351**

### **Principles of Economic Entomology**

**Fall 2017**

**Class time:** 9:55-10:45 AM, M-W-F

**Room:** 150 Russell Labs

**Instructors:** Chris Williamson ([rcwilliamson@wisc.edu](mailto:rcwilliamson@wisc.edu))

Office: 246 Russell Labs

Phone: 262-4608

Christelle Guédot ([guedot@wisc.edu](mailto:guedot@wisc.edu))

Office: 546 Russell Labs

Phone: 262-0889

**TA:** Audrey Simard ([asimard@wisc.edu](mailto:asimard@wisc.edu))

Office: 246 Russell Labs

Phone: 262-469-4798

**Office hours:** Walk in or make appointment (call or email)

### **Course Description**

Insects are the most common animals on our planet with an estimated 1.5 million species of insects identified. This course will examine the basics of insects structure and function, learn the major groups of insects and the basic principles of insect ecology. We will also learn how and why insects become pests, learn the principles of insect pest management, and explore the impact of pest insects on various agricultural production systems and public health.

### **Student Learning Objectives**

Upon completion of this course, students should have:

- Learned what insects are and how/why they become pests.
- Understood the basics of insect structure and function.
- Learned the major groups of insects.
- Gained an appreciation of the role of insects in the natural world and their interactions with the environment, each other, and other organisms.
- Understood why and when insects need to be controlled.
- Learned methods for detecting insect activity.
- Learned the various strategies for insect management.
- Become familiar with the major types of insecticides and how they function.
- Learned how beneficial insects and other organisms can be manipulated for pest management purposes.
- Become aware of non-chemical alternatives for insect pest management.
- Learned about insecticide resistance.
- Received an introduction to the major insect pests and their control strategies in several broad areas of agricultural production systems.

### **Course Organization**

**Approximate first third of course:** Introduction to Insects, their Biology  
and Ecology

**Approximate second third of course:** Principles of Insect Pest Management

**Final 10 lectures:** Agricultural, Horticultural, and  
Forestry Commodity modules

**Textbook.** There is no required text, but much of the information in the course comes from “Entomology and Pest Management”, L.P. Pedigo & M.E. Rice (6<sup>th</sup> edition, 2009). All class information and communications will be posted on Learn@UW.

### **Commodity Module Instructors**

Turf & Ornamentals: Dr. Chris Williamson ([rcwillie@entomology.wisc.edu](mailto:rcwillie@entomology.wisc.edu))

Field Crops: Bryan Jensen ([bryan.jensen@wisc.edu](mailto:bryan.jensen@wisc.edu))

Forestry: Dr. Rachel Arango ([raarango@wisc.edu](mailto:raarango@wisc.edu))

Vegetable & Dr. Russ Groves ([groves@entomology.wisc.edu](mailto:groves@entomology.wisc.edu))

Fruit Crops: Dr. Christelle Guédot ([guedot@wisc.edu](mailto:guedot@wisc.edu))

### **Course Requirements/Assessment**

**Attendance.** Attendance is strongly encouraged but will not be tracked or graded.

**Personal Information Sheet.** As a way for us to get to know each of you and for recording grades, we are asking you to provide us with some information about you and your interests in taking ENT 351 on an 8½ x 11 inch sheet, portrait orientation. Paste a photograph of your face (photocopy of student id or driver's license is OK) in the upper right corner. Left of the photo print or type your name, major, year in school, email address, hometown, and other things you want to tell us about you. Leave the lower 2/3 of the sheet open where we can write in your grades. **This assignment is due Monday, September 11<sup>th</sup>, and it is worth 10 points.**

**Quizzes** will be given weekly (usually on Friday unless otherwise noted), for a total of 12 quizzes (see course Lecture Schedule for quiz dates). During the Commodity Modules, quizzes will be on Wednesdays. No quiz will be given on Friday, October 13<sup>th</sup> or Friday, November 17<sup>th</sup>. Each quiz is worth 10 points, plus there may be a bonus point offered. Only your best 10 scores (10/12) will be counted. Therefore, you can choose to miss or drop the score of two quizzes without penalty. Quizzes will be given at the beginning of class sessions and will be about 5 minutes in duration. You can arrange to take a quiz early, but normally quizzes cannot be taken late unless you have obtained prior approval.

**Midterms** will be worth 100 points each and will be held during the normal class period (50 minutes). See course Lecture Schedule for dates.

**Final exam** will be worth 200 points, 50% (100 points) will consist of questions from your two commodity modules (Final 1/3 or 10 lectures of course), and 50% (100 points) will be comprehensive (first 2/3 of course). The final exam will be held during the scheduled final exam period (see Final Exam below or campus Timetable).

## **Pest Profile Projects – Due Monday, October 30 and Friday, December 8**

Two writing projects are required. These “Pest Profiles” will help you learn detailed information about specific pests of interest. Each Pest Profile is worth 50 points (total of 100 points). Projects must be submitted on time by paper copy, or the Dropbox feature in Learn@UW, and received by the beginning of the class period on the due date. An Early Bird opportunity will be afforded where Pest Profiles can be turned-in about two weeks early (see Lecture Schedule below), **5 bonus points will be awarded for Early Bird participants.**

In summary, for each Pest Profile you will:

- Select a pest insect from the list provided or have your own choice approved by the instructors;

- Write a three page summary including all of the following:

- Description and life cycle
- Geographic range
- Damage

- Crops (Plants) attacked
- Natural enemies
- Monitoring methods and action thresholds
- Recommended control methods or strategies
- Brief summary of what you learned from the scientific literature paper(s)
- 1-2 scientific articles (peer-reviewed articles) and relevant university extension bulletins, books, or university web sites as references must be included (i.e., list of references)

Detailed instructions will be provided separately and are posted on the ENT 351 Learn@UW website.

Late assignments. Time management is an important skill to be developed. Late assignments will be penalized with 5 points for each day of lateness, unless you have obtained prior approval from us, or in the case of an unforeseen emergency.

### Grading

Information Sheet	10 points
Quizzes	100 points (10/12 @ 10 points each)
Midterm I	100 points
Midterm II	100 points
Pest Profiles	100 points (2 @ 50 points each)
<u>Final Exam</u>	<u>200 points</u>
<b>TOTAL</b>	<b>610 points</b>

### Grading Scale

#### Undergraduate Students

A	92% = 561 points
AB	88% = 536 points
B	83% = 506 points
BC	78% = 475 points
C	70% = 427 points

#### Graduate Students

A	94% = 573 points
AB	90% = 549 points
B	85% = 518 points
BC	80% = 488 points
C	70% = 427 points

CD 65% = 396 points

D 60% = 366 points

F <60%

CD 65% = 396 points

D 60% = 366 points

F <60%

### **Class Behavior**

Out of consideration for your classmates, please, turn off your cell phones at the beginning of class. Laptops may be used only for note-taking purposes. The use of other electronic devices is not permitted. Please refrain from carrying on conversations with your neighbors during lectures.

Questions and comments are welcome at any time during lectures, just raise your hand!

### **ENT 351 Lecture Schedule**

#### **GENERAL ENTOMOLOGY**

- Sept. 6 (W) Introduction, Course and Syllabus Overview
- Sept. 8 (F) Success of Insects, Positive Relationships to Humans
- Sept. 11 (M) Insects as Pests (**Personal Information Sheet Due**)
- Sept. 13 (W) Insect Structure and Function
- Sept. 15 (F) Insect Structure and Function (**Quiz 1**)
- Sept. 18 (M) Insect Structure and Function [**Dr. Groves lecturing**]
- Sept. 20 (W) Insect Growth, Metamorphosis and Life Cycles [**Dr. Groves lecturing**]
- Sept. 22 (F) Insect Diversity (**Quiz 2**) [**Dr. Groves lecturing**]
- Sept. 25 (M) Insect Diversity
- Sept. 27 (W) Insect Diversity
- Sept. 29 (F) Insect Diversity (**Quiz 3**)
- Oct. 2 (M) Insect Ecology
- Oct. 4 (W) Insect Ecology
- Oct. 6 (F) Insect Ecology (**Quiz 4**)
- Oct. 9 (M) **Midterm I**

#### **INSECT PEST MANAGEMENT PRINCIPLES**

- Oct. 11 (W) Introduction to Principles of Pest Management  
Oct. 13 (F) Chemical Control  
Oct. 16 (M) Insecticides: Names, Formulas and Mode of Action (MoA)  
**(Pest Profile Project 1 Early Bird Due)**

**ENT 351 Lecture Schedule (cont.)**

- Oct. 18 (W) Names, Formulas and MoA continued  
Oct. 20 (F) Insecticide Label and Formulations **(Quiz 5)**  
Oct. 23 (M) Pesticide Laws and Regulations + Safety  
Oct. 25 (W) Natural Enemies and Biological Control  
Oct. 27 (F) Biological Control: Practical Examples **(Quiz 6)**  
Oct. 30 (M) Cultural Control: Mechanical and Physical Tactics  
**(Pest Profile Project 1 Due)**  
Nov. 1 (W) Non-Lethal Control: Semiochemicals  
Nov. 3 (F) Host Plant Resistance **(Quiz 7)**  
Nov. 6 (M) Genetically Modified Organisms/Transgenic Crops **[Audrey Lecturing]**  
Nov. 8 (W) RNAi Interference and Insect Management **[Audrey Lecturing]**  
Nov. 10 (F) Insecticide Resistance and Resistance Management **(Quiz 8)**  
Nov. 13 (M) Pest Sampling, Surveillance and Surveys  
Nov. 15 (W) Economic Decision Levels for Pest Populations (Bioeconomics)  
Nov. 17 (F) **Midterm II (Pest Management)**

**COMMODITY MODULES**

- Nov. 20 (M) Session I  
Nov. 22 (W) Session I **(Quiz 9) (Pest Profile Project 2 Early Bird)**  
Nov. 24 (F) **Thanksgiving Break, NO CLASS!**  
Nov. 27 (M) Session I  
Nov. 29 (W) Session I **(Quiz 10)**

Nov. 31 (F)     Session I  
Dec. 4 (M)     Session II  
Dec. 6 (W)     Session II (**Quiz 11**)  
Dec. 8 (F)     Session II (**Pest Profile Project 2 Due**)  
Dec. 11 (M)    Session II  
Dec. 13 (W)    Session II (**Quiz 12**)

**Instructors for modules (choose only ONE module for each session)**

<b>Session I:</b>	Vegetable Crops	Dr. Russ Groves
	Fruit Crops	Dr. Christelle Guédot
<b>Session I:</b>	Forestry	Dr. Rachel Arango
<b>Session II:</b>	Turf & Ornamentals	Dr. Chris Williamson
<b>Session II:</b>	Field Crops	Bryan Jensen

**FINAL EXAM**

Dec. 15, 10:05 AM – 12:05 PM                      (Location will be announced when finalized)

**UW-Madison Policies and Resources**

The University of Wisconsin - Madison is dedicated to a safe, supportive and non-discriminatory learning environment. It is the responsibility of all undergraduate and graduate students to familiarize themselves with University policies regarding Network Use, Disability Accommodations, Misconduct, Religious Beliefs Accommodation, and FERPA.

**Network Use Policies**

Please read the UW-Madison's [Responsible Use of Information Technology Policy](#).

**Disability Accommodations**

The University of Wisconsin - Madison is dedicated to a safe, supportive and non-discriminatory learning environment. Students requesting special accommodations should contact the McBurney Disability Resource Center as soon as possible regarding a Verified Individualized Services and Accommodations plan (VISA). Once your accommodation plan has been

determined and approved, you will need to contact your professor. Additional information is available at the McBurney Disability Resource Center:  
<http://www.mcburney.wisc.edu/students/howto.php>.

### **Academic Misconduct**

The University believes that academic honesty and integrity are fundamental to the mission of higher education and of the University of Wisconsin System. The University has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards are subject to disciplinary action. UWS Chapter 14 identifies procedures to be followed when a student is accused of academic misconduct. For additional information, please refer to the section in the Student Handbook entitled Student Academic Disciplinary Procedures. Please review the [Student Academic Misconduct Policy and Procedures](#) and the [Student Non-academic Misconduct Policy](#).

### **Religious Beliefs Accommodation**

Board of Regents policy states that students' sincerely held religious beliefs shall be reasonably accommodated with respect to scheduling all examinations and other academic requirements. Students must notify the instructor within the first three weeks of the beginning of classes of the specific days or dates on which they will request accommodation from an examination or academic requirement. For additional information, please refer to [Chapter UWS 22: Accommodation of Religious Beliefs \(Links to an external site.\)](#)[Links to an external site..](#)

### **FERPA**

FERPA – the Family Educational Rights and Privacy Act of 1974, as amended – is a federal law that governs the privacy of student educational records, access to those records, and disclosure of information from them. For more information, please refer to [Student Privacy Rights \(FERPA\)](#)