

**Seminar: Plant Pathogen and Insect Vector Interactions**  
**ENY 6934, 1 credit**  
**Fall 2019**

**Instructor:** Dr. Xavier Martini  
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**Class period:** Monday, (1:55 pm –3:50 pm)

**Room:** 1031 Steinmetz Hall and by Polycom

**Office hours:** One hour before class (by appointment) and immediately after class. Anytime by phone or email.

**Course Description:** This course is one of the seminar courses offered each semester in the Department of Entomology & Nematology to meet the core course requirements. The purpose of these seminars is to give students practice in preparing and presenting a 35-40 minute seminar on a topic that interests them. Master's students are required to take one credit of seminar and PhD students to take two credits. This seminar focuses on plant pathogen and insect vector interactions. We will cover the ecological and evolutionary context of plant pathogen and insect interactions and their implications for vector-borne disease management.

**Objectives and Goals:**

- Recognize the diversity of interactions between pathogen and their associated vector and environment
- Learn the different ways a pathogen can manipulate its host and vector.
- Review the specificity and challenges of vector-borne pathogen control.
- Investigate some of the 'hot' topics in plant-pathogen/insect interactions.
- Learn to read journal articles critically.
- Gain practice in organizing and delivering a 35-40 minute teaching-type seminar.

**Zoom access:**

The conference ID for this class is <https://ufl.zoom.us/j/126329898>

You can dial in beginning at 1:50. The cutoff will be 3:50 exactly to accommodate the next class that is using the room. Please mute your microphone when not speaking.

**Topics to be covered:**

During the first five weeks of class, the instructor and guest speakers will give lectures introducing students to the field of insect chemical ecology. PDF readings to supplement the lectures will be posted on the course web site in Canvas (<https://lss.at.ufl.edu/> - click on e-Learning in Canvas).

Guest speakers will join us on the second through fifth class to discuss their research in insect behavior and IPM. From the sixth class until the end of the semester, students will present

lectures regarding broad areas of insect behavior applied to IPM and will lead a critique and discussion of one or two scientific articles of their choosing that are related to their topic.

## **August 26**

Introduction

*First hour:* What makes a good seminar presentation?

*Second hour:* Introduction to plant-pathogen and insect interactions.

### Reading

Cory, J. S., & Hoover, K. (2006). Plant-mediated effects in insect–pathogen interactions. *Trends in ecology & evolution*, 21(5), 278-286.

**September 2:** Labor day. No class.

## **September 9**

*First hour:* Guest speaker Kirsten Pelz-Stelinski – Entomology and Nematology Department - University of Florida Citrus Research and Education Center

### Reading

Pelz-Stelinski, K. S., & Killiny, N. (2016). Better together: association with ‘Candidatus Liberibacter asiaticus’ increases the reproductive fitness of its insect vector, *Diaphorina citri* (Hemiptera: Liviidae). *Annals of the Entomological Society of America*, 109(3), 371-376.

*Second hour:* article review

TBD

## **September 16**

*First hour:* Guest speaker Nabil Killiny – Plant Pathology Department - University of Florida Citrus Research and Education Center

### Reading

Killiny, N., Rashed, A., & Almeida, R. P. (2012). Disrupting the transmission of a vector-borne plant pathogen. *Appl. Environ. Microbiol.*, 78(3), 638-643.

*Second hour:* article review

TBD

## **September 23**

*First hour:* Guest speaker: Kerry Mauck – University of California – Riverside.

### Reading:

Mauck, K., Bosque-Pérez, N. A., Eigenbrode, S. D., De Moraes, C. M., & Mescher, M. C. (2012). Transmission mechanisms shape pathogen effects on host–vector interactions: evidence from plant viruses. *Functional Ecology*, 26(5), 1162-1175.

*Second hour: article review*  
TBD

### **Student Presentation Dates**

September 30  
October 7  
October 14  
October 21  
October 28  
November 4  
November 11: Veterans day. No class  
November 18: ESA meeting. No class.  
November 25  
December 2  
December 9 (if needed)

### **Student Presentations**

Students will begin presentations on September 30th. We will have one to two students present per week depending on how many students are in the class. Students should select from one of the following topics. I have chosen these topics because they are broad enough to challenge your information gathering and synthesizing abilities. The topics are also very active areas of research currently so please use recent research papers as examples in your presentation. First come, first served! If you don't find any topics that interest you in the list, you may suggest your own topic after consulting with me.

1. Disruption of plant-pathogen transmission
2. Vector manipulation by pathogen-induced volatiles
3. Interaction of plant pathogens with predators and parasitoids of the vector.
4. Effects of climate change on plant-pathogen and insect interactions
5. Effects of plant-pathogen manipulation on disease epidemiology
6. Biocontrol of insect vectors of plant pathogens
7. Cross talks between systemic defenses in plants: implication for pathogen-insect interactions
8. The genetic bases of plant-pathogen and vector interactions
9. Practical applications of plant pathogen manipulation of hosts and vectors
10. Plant-pathogen effects on host phenotypes
11. Plant pathogen induced changes in vector preference and performance.
12. Interactions between vector's microbiome and pathogens.
13. Fate of the pathogen within the vector body: persistent vs. non-persistently transmitted virus
14. Pathogen manipulation in veterinary and medical entomology
15. Host manipulation by fungi.

16. Pathogen manipulation of vector movement.
17. Insect defenses and plant-pathogen interactions.

**Article review**

You will assign your fellow students one research article on the subject that you want them to read critically and discuss with you after the presentation. You will present the article and moderate a critical discussion with your classmates.

**Prerequisites:** Basic course in entomology (ENY 3005) or invertebrate zoology (ZOO 3203).

**Textbook:** None

**Assignments and methods by which the student will be evaluated and grades determined:**

- Present a 35-40 minute seminar on a topic of interest chosen from the list above. Grades will be assigned based on the grading rubric on p. 8. Instructor evaluation of presentation (50 points); peer evaluation of presentation (15 points).
- Provide one journal article for classmates; facilitate discussion of at least 10-15 min after the presentation (15 points).
- Attendance is mandatory at all class periods (10 points).
- Participation to article review (10 points).

**Grading:** This course will be graded on the following scale.

A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D	60-69
E	<60

**Critical Dates for Exams or Other Work:** Student presentations will begin on September 30<sup>th</sup>. We will draw numbers to determine presentation order. After the drawing, you may switch dates with another student if you wish, but let me know.

**Policy Related to Class Attendance:** Attendance is mandatory. We meet for only 12 class periods so every class is critical. It is also considerate to attend the presentations of fellow students.

**Policy Related to Make-Up Exams or Other Work:** Missed presentations cannot be made up except in the case of a prior excused absence or family/medical emergencies.

**Class Demeanor Expected by Instructor:** Please be considerate of your classmates by not chatting or texting during class. The banging of doors is very distracting to both students and the

professor, therefore, please arrive on time and do not leave early. Turn off cell phones before coming into the classroom.

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**Additional General Information:** The following information applies to all courses at the University of Florida.

**We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standard of honesty and integrity.**

**Academic Honesty:** As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

**Copyrighted Materials and Software Use:** All students are required and expected to obey the laws and legal agreements governing copyrighted material and software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

**Accommodations for Students with Disabilities:** Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

**University Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:

1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling;
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling;
3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual counseling; and
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

## Critical Reading of Scientific Articles

Whenever you read a journal article, think about the following questions. Just because a paper has been published in a scientific journal, does not necessarily mean it was good science or it was well-written. As you are reading the assigned journal articles, think about these questions. We will use the answers to these questions as a starting point for our discussion of the assigned paper(s).

So, please come to class with the answers to these questions in your head or on a piece of paper and be prepared to talk about them.

1. What are the specific hypotheses (and alternative hypotheses) or questions that are being explored?
2. Do the authors relate the specific hypotheses to a larger area of science (i.e., the “big picture”)?
3. Do the hypotheses follow logically from the background material that is presented in the Introduction section?
4. Do the authors make specific predictions of outcomes after manipulative experiments or was their study purely descriptive or comparative?
5. Are the experimental design and the methods used appropriate to answer their questions?
6. Are the methods described well enough to be repeated by other research groups?
7. How were the data analyzed? Was the analysis appropriate or can you think of a better way to do it? Think also if the data could have been collected differently to facilitate the analysis.
8. Are the data portrayed effectively in figures and tables? Are they clear and necessary or could the data have been presented in the text?
9. Do the results match the predictions the authors made?
10. If results differ from predictions or from the published research of other groups, do they address the differences and suggest reasons?
11. What are the authors’ conclusions? Would you have reached the same conclusion from these results? Have they made a strong case for their conclusions? What else could you propose to bolster their conclusions? What kinds of data would have convinced you?
12. What are the implications of these findings for the subfield and entomology more generally? How can these findings be extended into the “big picture”.
13. Where should this research go next? What should the next experiments be?
14. You may also think about the quality of the presentation of the article. Does the paper tell a nicely packaged “story” with sound reasoning throughout the paper? Are there areas where the paper wanders from the argument? Are the major points of the paper accurately and consistently presented in the title, abstract, key words, introduction and conclusions? Was the writing easy to understand, interesting, and not too wordy?

## Evaluation of Oral Presentations in Insect Behavior for IPM

Student name \_\_\_\_\_

Title \_\_\_\_\_

Presentation components	Grade 1.....10 Poor....Excellent	Comments
<b>Content</b> (40%) - interesting subject matter; significance well established; informative introduction; well developed body of the presentation; strong ending and conclusions; 35-40 minutes		
<b>Organization</b> (20%) - no redundancy; logical and smooth transitions and flow		
<b>Delivery</b> (20%) - good eye contact; relaxed manner; appropriate pace of speech and use of pauses; effective use of pointer		
<b>Visual aids</b> (10%) - visually-pleasing slides (helpful, not distracting); good use of photos or diagrams as appropriate; well organized slide layout; font adequate size; well proofed		
<b>Handling questions</b> (10%) - repeat question; polite, concise and friendly response; seemingly at ease		

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