

Course aims, philosophy, assignments, syllabus, and grading

Spring 2023: Lecture, M W F 11:30 – 12:30; Lab/Discussion, M 1:00 - 3 pm

Course aims and philosophy:

The subject matter of the course >

1) Proximate bases of plant-insect interactions and plant resistance to insects (proximate = immediate causes or mechanisms as opposed to evolutionary causes). Because an understanding of the mechanisms underlying plant-insect interactions requires, at the least, an understanding of plant and insect physiology, plant and insect biochemistry, genetics, and ecology, relevant concepts from each of these disciplines will be integrated in this course.

2) Application of the study of plant-insect interactions to agriculture.

3) Introduction to the primary literatures on plant-insect interactions and host-plant resistance.

4) Adequacy of the conceptual frameworks on which current research in basic and applied plant-insect interactions is based.

5) Basic techniques/methods used in plant resistance research.

The approach of the course>

The course will be student-driven. **Participation by all class members is crucial.**

The lecture portion of the course is divided into a number of units. For each unit, treatment of an aspect of host-plant resistance will be accompanied by a review of the principles of plant and insect biology relevant to that aspect of host-plant resistance. Concepts will be illustrated by numerous examples from the ecological, agricultural, and plant biology literature. Class discussions will highlight current research in the field via critical evaluations of recent research papers.

The emphasis of the course is conceptual, not factual. You will be presented a large amount of information drawn from diverse disciplines. The techniques and concepts used in many of the research papers will extend beyond the subject matter presented during the lecture period. You will not be held responsible for a large number of facts on exams.

Course outcomes:

Students who successfully complete this course will...

- Demonstrate an understanding of foundational facts and concepts in the fields of plant-insect interactions and host-plant resistance

- Gain a familiarity with the primary literature on plant resistance and plant-insect interactions and demonstrate the ability to critically evaluate published research on plant-insect interactions
- Acquire an appreciation for the interdisciplinary and complex nature of the subject, and analyze links between basic and applied research, between theory/concept and “fact”
- Apply principles from the literature on plant-insect interactions literature to their own research and identify areas in need of further research
- Effectively communicate scientific facts and concepts in written and oral formats

Text: Students will be provided with appropriate research and review papers (a preliminary “textbook” has already been posted on Moodle)

Course requirements:

Midterm – 31.25% (125 points)
Final presentation – 18.75% (75 points)
Participation - 50% (200 points)

The midterm exam will be a mixture of short-answer/essay/multiple choice.

Participation (see accompanying rubrics):

Lecture participation – 70 points total: Students are expected to attend all class periods and participate in discussions (30 points). I generally provide notes and/or Powerpoint files for each lecture unit and will assign readings (usually review papers) for each unit as needed. In addition, I will also require one-page (single-spaced) summaries of **two** of the papers filed under the “textbook” section of Moodle for this course. Due dates and guidelines for these summaries will be provided. (20 points for each summary).

Discussion participation – 50 points total: Generally, we will read and discuss one or two research papers (from the primary literature) for each lecture unit. Students are expected to read the papers and participate in discussions (30 points). In addition, each student will be expected to lead the discussion for one paper during the semester (20 points)

Laboratory participation: Laboratory research projects will be done in teams of 3-4 students. Research projects may require work outside of class time. Short oral or written reports on lab projects may be required. 30 points.

Assignments: Assignments will be made periodically during the semester. Assignments will be turned in to me for evaluation. 50 points.

Final presentation: For the final presentation, I will divide the class into three groups, and each group will be responsible for giving a presentation (on the final day of class) on the use of plant resistance in three crop-pest systems. Details about the assignment will be given at a later date.

Grading: A +/- grading scale will be used (i.e., 93-100% = A; 90-92% = A-; 88-89 = B+; 83-89% = B; 80-82 = B-; 78-79 = C+; 73-77 = C).

A+ grades are reserved for exceptional performances and are rarely awarded.

List of potential lecture topics, labs, and assignments:

Unit	Dates (tentative)	Topic	Assignments& lab	Text Readings	Discussion Reading
1	Jan 13-24	What is plant resistance and how has it been studied?	Definition of resistance assignment	Erb Assigned review	Bray et al. 2016 Agrawal et al. 2012
2	Jan 27-Feb 3	How costly is herbivory: Tolerance	Tolerance assignment	Peterson et al. 2017	Lin et al.2021 TBD
3	Feb 5-10	What plant traits are related to resistance?	Secondary chemistry lab demonstrations: phenolic analysis, dhurrin assay, cucurbitacins, antibiosis vs antixenosis February 20 or February 27 – seminar reflection	Carmona et al. 2010	Hunziker et al. 2021
4	Feb 12 -24 (Feb 19 – no class)	Antixenosis: How do herbivores find their hosts?			Kanno and Harris 2000 Cronin and Abrahamson 2001
5	Feb 26 – March 21	Antibiosis: How does plant resistance affect herbivores?		Kariyat and Portman 2016	Liu et al. 2023
	March 3 - 5	Mardi Gras			
	March 10 -12	SEB ESA	SEB-ESA reflections Deterrence vs. toxicity lab “Textbook” summaries		
	March 24	Midterm Exam			
6	March 26 – April 9	What factors influence plant resistance?		TBA	Rasmann et al. 2005
	March 31 – April 4	Spring Break			
7	April 11 – 14	How is plant resistance governed and inherited?		TBA	Chatterjee et al. (2023)
8	April 16 - 25	How can plant resistance help manage pests?		TBA	Penn and Read 2023 TBD
	April 18	Good Friday			
10	April 28 – 30	Conceptual basis for HPR and insect-plant interactions research		TBA	
	TBA	Final presentations			

SEB ESA: 3/12 – 3/15; RTWG 2/17 – 2/20

Student obligations and credit hour statement: *It is your responsibility to participate fully in this course!* "Participating fully" entails, at minimum, attending lectures and labs and doing the required readings and assignments. You are also expected to be engaged in class discussions and lab/group activities. As a general policy, for each hour you are in class (or two hours spent in lab), you should expect at least two hours preparing for the next class and completing homework, reading, and lab assignments. Since this course consists of three hours of lecture and two hours of lab/discussion per week, you should expect to spend six to eight hours outside of the classroom on work related to this course.

Moodle & Class Notes: This course is on "Moodle", which you can access using your PAWS account. Reading assignments, lecture Powerpoint files, written assignments, and many other important components of the course will be posted on Moodle. **Check Moodle regularly.**

Academic Integrity:

General Statement on Academic Integrity:

Louisiana State University adopted the Commitment to Community in 1995 to set forth guidelines for student behavior both inside and outside of the classroom. The Commitment to Community charges students to maintain high standards of academic and personal integrity. All students are expected to read and be familiar with the LSU Code of Student Conduct and Commitment to Community, found online at www.lsu.edu/saa. It is your responsibility as a student at LSU to know and understand the academic standards for our community.

Students who are suspected of violating the Code of Conduct will be referred to the office of Student Advocacy & Accountability. For undergraduate students, a first academic violation could result in a zero grade on the assignment or failing the class and disciplinary probation until graduation. For a second academic violation, the result could be suspension from LSU.

Plagiarism and Citation Method:

As a student at LSU, it is your responsibility to refrain from plagiarizing the academic property of another and to utilize appropriate citation method for all coursework. In this class, it is recommended that you use the Entomological Society of America Style Guide for citing references (http://www.entsoc.org/pubs/publish/style/#References_Cited). Ignorance of the citation method is not an excuse for academic misconduct. Remember there is a difference between paraphrasing and quoting and how to properly cite each respectively.

Group work and unauthorized assistance:

All work must be completed without assistance unless explicit permission for group or partner work is given by the faculty member. When group work is assigned, I will include provisions for determining the contributions of each member of the group.

Permissible Use of Generative AI

As a partner in your learning, it is important to both of us that any assignment submission is a pure reflection of your work and understanding. In this course, using AI programs such as ChatGPT is permitted for the purposes of enhancing your understanding of course materials, encouraging creative exploration and supporting academic growth. These programs should not be used to produce work that misrepresents your abilities or deceives as to the conditions under which the work was completed.

If you choose to utilize AI programs to generate content, you must clearly acknowledge the use of AI generated material. Proper attribution of AI program use should include an explanation of how the program contributed to the assignment and/or your academic growth. Failing to give proper attribution to the use of AI programs in academic work will be reported to Student Advocacy & Accountability for review under the Code of Student Conduct and may result in impacts to your assignment and/or course grades.

Prohibited Use of Generative AI

As a partner in your learning, it is important to both of us that any assignment submission is a pure reflection of your work and understanding. The introduction of artificial intelligence options to complete academic work jeopardizes my ability to evaluate your understanding of our course content and robs you of the ability to master the subject matter. Therefore, the use of generative AI programs for the purpose of completing course work is prohibited. This includes, but is not limited to, using AI-generated essays, reports, code, or any other submissions as a substitute for your own original work. If you have questions about the use of specific tools or technologies in relation to course work, seek guidance from your instructor beforehand.

Suspensions of the use of AI programs in academic work will be reported to Student Advocacy & Accountability for review under the Code of Student Conduct and may result in impacts to your assignment and/or course grades.

Ground Rules for Behavior in Class:

- Show respect to your fellow classmates.
- Cell phones off during class.
- Use laptops appropriately.
- No talking to classmates unless instructed to do so.
- Come to class on time and stay until the end. In return, we promise to let you out on time.
- Be civil. Meaningful and constructive dialogue is encouraged in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. Respect for individual differences and alternative viewpoints will be maintained at all times in this class.

Disabilities: Students with disabilities are advised to register with the Office of Disability Services B112 Johnston Hall, 578-5919 (voice) or 578-2600 (TDD), and to share, in writing, any specific needs with instructors.

Rubric – class and discussion participation

Element	Exceptional	Satisfactory	Underdeveloped/Limited
Attendance	Student misses no more than two lecture or discussion sessions	Student misses no more than four lecture or discussion sessions	Student misses 5 or more lecture or discussion sessions
Participation	Student frequently participates by asking questions or making comments that clearly demonstrate that he/she is doing required readings and reflecting on course material	Student occasionally asks questions or makes comments; suggesting that he/she is not doing all required readings	Student almost never makes comments or asks questions; lack of participation indicates that student is not reading papers or reflecting on course materials
Leading of discussion	Student provides a concise overview of the paper (using appropriate visual aids) that demonstrates a thorough understanding of the major points of the paper and that provides a framework for class discussion that stimulates fruitful participation	Student provides an adequate overview of the paper that demonstrates an understanding of the paper that is mostly correct; leader is able to stimulate some conversation	Overview of the paper is inadequate with several errors of interpretation; visual aids are rudimentary and not thoughtfully prepared; no framework for discussion is provided

ENTM 7002 – Host-Plant Resistance Spring 2025

“Textbook” summary/reflection assignment

Choose two of the review papers found in the “Textbook” section of Moodle for this course (20 points each review). For each review paper, write a one-page (single-spaced) overview and assessment that includes the following elements:

- An overview or synopsis of the paper that summarizes the major points made by the authors.
- An assessment of the disciplinary viewpoint of the authors and the tradition from which the review emerges. Which of the three approaches discussed in class does this review represent? This assessment can be made by considering the definition of resistance or conceptual framework used by the authors, the degree of emphasis placed on fundamental versus applied problems, the audience to which the review is directed, etc.
- A critical evaluation of the quality of the review. For example, was the review clearly written? Were there gaps in the coverage of the diverse phenomena involved in host-plant resistance? Did the authors provide insights that helped you understand the phenomenon of plant resistance more clearly?

Rubric – textbook summary/reflection

Element	Exceptional	Satisfactory	Underdeveloped/Limited
Synopsis/Overview (8 points)	Student provides a comprehensive but concise overview of the major points of the review that demonstrates an in-depth understanding of the major points	Student provides an overview of major points that demonstrates an adequate comprehension of the major points of the review but is not both comprehensive and concise	Overview is superficial and/or not concise; demonstrates an inadequate understanding of the major points of the review
Assessment of disciplinary viewpoint (4 points)	Student provides a correct and well-justified assessment of the disciplinary viewpoint of the review	Student places the review in the context of the literature with adequate justification	Student fails to provide a coherent assessment of the disciplinary viewpoint of the review
Critical evaluation (4 points)	Student provides an insightful and critical evaluation of the review that demonstrates a broad understanding of host-plant resistance	Student’s criticisms are valid but superficial or trivial	Student fails to identify shortcomings or weaknesses in the review
Composition, format, and grammar (4 points)	Assignment is clearly written in complete sentences with no or few errors in grammar, punctuation, syntax, etc.	Assignment is mostly well-written with a few errors in grammar, punctuation, etc.	Assignment is not well written with multiple errors

Due dates: one of the reflections will be due by the time of the midterm exam; the other due by the end of the semester.