



PLS 6655

Plant/Herbicide Interaction

Spring 2026 (online, asynchronous) 3 credits

Course Schedule Hours and Location

This is an online course, but NOT a go-at-your-own-pace course. Students are expected to watch the lectures and complete the accompanying assignments (quizzes, discussion posts, etc.) during their assigned week. Course material and communication will be provided through the Canvas site.

Instructor

Dr. Greg MacDonald

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Email: pineacre@ufl.edu

Office Hours: By appointment, message through canvas or email

Teaching Assistant

There will not be a teaching assistant associated with this course this semester

Course Description

Herbicides are the backbone for weed management in modern crop production; emphasis is placed on herbicide discovery, environmental fate, mechanisms of activity, selectivity to crops, resistance and biotechnology.

Course Learning Objectives

After completion of this course, you will be able to:

1. Describe the physical-chemical characteristics of herbicide groups and explain how this relates to the physiological processes involved in herbicide uptake and translocation within plants.
2. Evaluate the environmental, biological, and application-related factors that influence herbicide performance.
3. Differentiate among herbicide mechanisms of action and relate them to observed plant responses.
4. Analyze the mechanisms that confer herbicide selectivity and plant tolerance.
5. Assess the causes and consequences of herbicide resistance in weed populations.
6. Apply knowledge of genetically modified crops in modern weed management systems, including benefits and limitations.

Course Overview and Purpose

This 3-credit course will address chemical, biochemical and physiological aspects of herbicides. Application methodology and environmental fate will be discussed. Other aspects of herbicides that will be covered include structure, physical and chemical characteristics, uptake, translocation, mechanism of action, selectivity mechanisms, factors affecting performance, and tolerance. Issues such herbicide resistance and genetically modified crops will also be discussed.

Course Prerequisites

Plant Physiology (HOS 4304, AGR 4512 or equivalent), Organic Chemistry (BCH 3023 or equivalent), introductory weed science (PLS 4601, PLS 5632 or equivalent); or consent of instructor.

Textbooks, Learning Materials, and Supply Fees

No textbook required but students will be provided with assigned readings from various sources including websites, journal articles, and extension publications. There will not be a lab fee.

Course Communication

Announcements related to the course will be made through the Canvas page under Announcements. Direct communication with the instructor can be made through canvas email or Gatorlink and I will respond to emails within 24 hours. All course material including presentations, reference materials, assignments, and quizzes will be posted on the canvas page. Quizzes are closed book and will be timed. Due dates for quizzes and assignments are listed in the weekly topics table at the end of this syllabus.

AI – Artificial Intelligence Policy

The use of AI is not allowed when taking quizzes and exams (quizzes and exams are closed book) or for use in discussion posts. The use of artificial intelligence is allowed, but not required, for assisting in completing assignments and the management plan, however any written submission must be in your own words. You must also cite how you used AI to assist in each assignment. For assistance in using AI please see this link <https://ai.ufl.edu/for-our-students/guidance-for-students/>. You must also adhere to UF policies regarding AI usage and a list of AI provided and approved tools can be found here - <https://it.ufl.edu/ai/>

Grading Policy

Course grading is consistent with [UF grading policies](#).

Course Grading Structure

Assignment Type*	Point Value	Percent of Final Grade
Topic quizzes (13)	13 quizzes at 100 points each (13 x 100) = 1300 points	81.25%
Discussions (3)	20 + 35 + 30 + 35 points = 120 points	7.5%
Symptomology Assignments (9)	9 Assignments at 20 points each (9 x 20) = 180 points	11.25%
1600 points total		100%

*There will be 10 points per day deducted for late submission of assignments, discussion posts and quizzes.

Assignment Details

****note – all due dates can be found on the weekly outline table at the end of this syllabus***

1. Quizzes – will be given for selected modules on specific topics covered during presentations and associated materials. Quizzes will be timed (30 minutes) and will open on Friday and close the following Monday evening. Format for the quizzes will be discussed in the introductory presentation. There are 13 quizzes at 100 points, totaling 1300 points.
2. Discussions – there are 4 discussion posts ($20 + 35 + 30 + 35 = 120$ points) at the beginning of the semester. Students are expected to post at least twice and provide meaningful dialog and feedback to receive full credit. Details will be posted on the canvas page, including grading rubric.
3. Symptomology Assignments – there are 9 assignments related to herbicide symptomology at 20 points each, totaling 180 points. These will be open all week and due on Friday of that same week. Instructions on how to complete the assignments will be posted on the canvas page and assignment details, including grading rubric, will be posted on canvas.

Grading Scale

Grade	Points	Percentage
A	≥ 1488	93.0 - 100
A-	1440-1487	90.0 – 92.9
B+	1392 – 1439	87.0 – 89.9
B	1280 – 1391	80.0 – 86.9
C+	1232 - 1279	77.0 - 79.9
C	1120 – 1231	70.0 – 76.9
D+	1072 – 1119	67.0 – 69.9
D	960 – 1071	60.0 – 66.9
E	< 960	< 60

Technical Support

UF Computing Help Desk & Ticket Number: All technical issues require a UF Helpdesk Ticket Number. The UF Helpdesk is available 24 hours a day, 7 days a week. <https://helpdesk.ufl.edu/> | 352-392-4357

Academic Policies and Resources

Academic policies for this course are consistent with university policies. See <https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/>

Campus Health and Wellness Resources

Visit <https://one.uf.edu/whole-gator/topics> for resources that are designed to help you thrive physically, mentally, and emotionally at UF.

Please contact [UMatterWeCare](#) for additional and immediate support.

Software Use

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing 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.

Privacy and Accessibility Policies

[required for online courses, list all technology used]

- Instructure (Canvas)
 - [Instructure Privacy Policy](#)
 - [Instructure Accessibility](#)
- Zoom
 - [Zoom Privacy Policy](#)
 - [Zoom Accessibility](#)

Weekly Course Schedule

Week	Topic	Assessment	Due Dates	Points*
January 12 - 16	Introduction to Course, Review of Herbicide Basics	Discussion post, Quiz 1	January 17, 21	20, 100
January 20 – 23	Herbicide Discovery, Development	Quiz 2, Discussion on Herbicide Discovery	January 26, 28	100, 35
January 26 – 30	Herbicides - Physiological Activity	Quiz 3, Discussion on Herbicide Activity	February 2, 4	100, 30
February 2 – 6	Environmental Fate of Herbicides	Quiz 4, Discussion on Carrier Volume	February 9, 11	100, 35
February 9 – 13	Photosynthesis Inhibition	Symptomology Assignment, Quiz 5	February 13, 16	20, 100
February 16-20	Amino acid/Protein Inhibition	Symptomology Assignment, Quiz 6	February 20, 23	20, 100
February 23 – 27	Cell Division/Growth Inhibition	Symptomology Assignment, Quiz 7	Feb. 27, March 2	20, 100
March 2 – 6	Cell Membrane Disruption	Symptomology Assignment, Quiz 8	March 6, 9	20, 100
March 9 – 13	Fatty Acid Inhibition	Symptomology Assignment, Quiz 9	March 13, 16	20, 100
March 16 -20	SPRING BREAK – no class	No assessment	----	----
March 23 – 27	Pigment Synthesis Inhibition	Symptomology Assignment, Quiz 10	March 27, 30	20, 100
March 30 – April 3	Growth Regulators	Symptomology Assignment, Quiz 11	April 3, 6	20, 100
April 6 – 10	Miscellaneous Herbicides	Symptomology Assignment, Quiz 12	April 10, 13	20, 100
April 13 – 17	Surfactants, Adjuvants and Formulations	Symptomology Assignment, Quiz 13	April 17, 20	20, 100

* 1600 points total