PLANT/HERBICIDE INTERACTION

PLS 6655

ON-LINE VERSION

Department of Agronomy

University of Florida

Spring Semester, 2016

Instructor: Greg MacDonald

2059 McCarty Hall

Phone: 294-1594

E-mail: [pineacre@ufl.edu](file:///F:\new%20desktop%20-%202011\old%20files\old%20my%20files\拡㸥Ɩ)

Credits: 3

Suggested

Prerequisites: Plant Physiology and Biochemistry

Introduction to Weed Science

Organic Chemistry

Course Description: The course will address chemical and physiological aspects of herbicides. 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. Current issues such herbicide resistance and genetically modified crops will also be discussed.

Course Objectives: To familiarize graduate students with basic and applied chemical and physiological aspects of herbicides. Students will also participate in activities to assess symptomology and injury from various herbicides.

Office Hours: By appointment

Class Schedule: Canvas site

Class Attendance: online.

Textbook: Herbicide Handbook of the Weed Science Society of America (10th edition 2014). <https://psfebus.allenpress.com/wssa/Products/BookStore.aspx>

(NOT REQUIRED BUT VERY USEFUL- GOOD REFERENCE)

Grading System: There will be 10 quizzes on the lecture material. These will be in Sakai and will be open over a 2 day period – quiz length will be 45 minutes. See next page for quiz schedule.

A = 90-100% C = 70-75%

B+ = 86-89% D+ = 66-69%

B = 80-85% D = 60-65%

C+ = 76-79%

**\*\* Academic Honesty**

As a result of completing the registration form at the University of Florida, every student has signed the following statements: “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.”

**UF 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, Student Health Care Center, 392-1171. Sexual assault counseling.

1. Career Resource Center, Reitz Union, 291-1601. Career development assistance and counseling.

**Software Use**

All faculty, staff and students of the University of Florida 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.

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

Course Outline: Powerpoint Lectures that detail several aspects of herbicides with a primary focus on mode of action. 16 total lectures.

Herbicide mechanisms and topics:

1. Herbicide History and Discovery

2. Herbicide Physiology and Environmental Fate

3. Photosynthesis Inhibition

4. Amino acid/Protein Inhibition – Acetolactate Synthase Inhibitors

5. Amino acid/Protein Inhibition – Glyphosate

6. Cell Division/Growth Inhibition – Mitotic Inhibitors

7. Cell Division/Growth Inhibition - Cellulose Biosynthesis Inhibitors

8. Cell Membrane Disruption – Electron Diverters – Bipyridilliums

9. Cell Membrane Disruption – Protox (PPO) Inhibitors

10. Cell Membrane Disruption - Glufosinate

11. Fatty Acid Inhibition - Very Long Chain Fatty Acid Syn. Inhibition

12. Fatty Acid Inhibition - Acetyl CoA Carboxylase Inhibition

13. Pigment Synthesis Inhibition

14. Growth Regulators

15. Miscellaneous Herbicides

16. Surfactants, Adjuvants and Formulations

Quiz Schedule:

Module # Quiz Dates

1 January 21-22

2 January 28-29

3 February 4-5

4 February 11-12

5 February 18-19

6 February 25-26

7 March 10-11

8 March 17-18

9 March 24-25

10 March 31 - April 1

Symptomology Collection Due – April 15