PLANT/HERBICIDE INTERACTION
PLS 6655

Department of Agronomy
University of Florida
Spring Semester, 2013

Instructor: Greg MacDonald
2059 McCarty Hall
Phone: 294-1594
E-mail: pineacre@ufl.edu

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: Period 2 (8:30 to 9:20 am) Monday, Wednesday, Friday. McCarty B room 3108

Class Attendance: Attendance is not mandatory but students will be responsible for all information presented.

Reserved Material: Greg MacDonald - Office (24 hr. checkout)
2. Weed Physiology Volumes 1 and 2 ed. by S. O. Duke
4. Herbicides, Chemistry, Degradation, and Mode of Action, Volumes 1, 2 and 3 by P. C. Kearney and D. D. Kaufman

Grading System: In class quizzes - 6 total, one drop (25%), 3 exams (60%), term paper/literature review (in association with discussion section - 15%)
A = 90-100%  
B+ = 86-89%  D+ = 66-69%  
B = 80-85%  D = 60-65%  
C+ = 76-79% 
Exam dates will be announced in class.

** 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.

**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: Introduction

Herbicide discovery (will include discussion on structure-activity)

Herbicide uptake and translocation
  foliar - herbicide and leaf surface interactions
  soil herbicide interactions
Herbicide mechanisms of selectivity and mechanisms of resistance

Herbicide mechanisms and modes of action
  1. Photosynthesis Inhibition
  2. Amino acid/Protein Synthesis Inhibition
  3. Cell Division/Growth Inhibition
  4. Cell Membrane Disruption
  5. Fatty Acid Inhibition
  6. Pigment Synthesis Inhibition
  7. Growth Regulation

Safeners

Surfactant chemistry and herbicide interaction

Discussion Section: Herbicide symptomology and injury