

AGRO 4070 - Weed Science and the Environment
Fall Semester 2008

4070 Weed Science and the Environment (3) F *Prereq: BIOL 1001, 1002, CHEM 1001, 1002; or equivalent; 2 hrs. lecture; 2 hrs. lab.* Weed biology and economic importance of weeds in the diverse agriculture of Louisiana. Weed management programs, characteristics of important herbicides, mechanisms of herbicidal action, fate of herbicides in the environment, and pesticide application, labeling, and safety.

Instructors: Dr. James L. "Jim" Griffin, Lecture
Joey M. Boudreaux and Mariana Bittencourt, Laboratory Assistants

Times: Lecture - Wednesday 12:40 - 2:30 in 135 M.B. Sturgis
Laboratory - Wednesday 2:40 - 4:30 in 135 M.B. Sturgis

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Boudreaux- 218 H.D. Wilson Building (578-1767); jmboudreaux@agcenter.lsu.edu

Course Description:

Weed Science and the Environment (AGRO 4070) will emphasize the history of herbicide development; weed biology and ecology; weed control methods; herbicide-soil interactions; absorption, translocation, and metabolism of herbicides. The various herbicide families, their mode of action, toxicity, and persistence will be discussed. The laboratories will emphasize grass and broadleaf weed identification, sprayer calibration and equipment, herbicide symptomology, pesticide labels, formulations, and safety, and integrated weed management programs for the major agronomic and horticultural crops in Louisiana. Field trips both on and off campus will supplement classroom activities.

Correspondence:

Pertinent class information to include reminders of test dates and due dates for lab practicals, weed collection, and homework assignments will be sent to you through email. Feel free to communicate with me through email.

Informational Sources:

Lecture and laboratory notes and general course information are available on the Weed Science section of the School of Plant, Environmental, and Soil Sciences web site at:

(http://cms.lsuagcenter.net/en/our_offices/departments/SPESS/Weed+Science/index.htm).

At the bottom of the subject matter list is "AGRO 4070: Weed Science and the Environment". This will take you to the lecture and laboratory material for this course.

Weed Science Principles and Applications, W. P. Anderson, 3rd Edition, West Publishing Company

Applied Weed Science, Ross and Lembi, 2nd Edition, Prentice Hall, 1999

Weed Science Principles and Practices, G. C. Klingman and F. M. Ashton, 2nd Edition or F. M. Ashton and T. J. Monaco, 3rd Edition, John Wiley & Sons

Weeds of Southern Turfgrasses, Cooperative Extension Service, University of Georgia, Athens, GA (<http://www.griffin.peachnet.edu/caes/turf/>)

Identifying Seedling and Mature Weeds, North Carolina Agric. Res. Service and North Carolina Agric. Extension Service, North Carolina State, Raleigh, NC

**AGRO 4070 - Weed Science and the Environment
Course Information**

Lecture Requirements:

Test Dates - September 17, November 12, and December 3 with the Final (comprehensive) during the week of December 8-13

Homework Assignments (6) – These will count the same as for one test

Lecture Portion of course - 70% (3 Tests + Final + Homework Assignments @ 20% each); Lab 30%

Laboratory Requirements

Lab practicals are scheduled for October 1 (Pesticide Formulations, Labels, and Safety; Sprayer Hardware and Distribution; and Sprayer Calibration) and October 22 (Broadleaf Identification; Grass and Sedge Identification; and Weed Seed Identification). A weed collection, calibration problem set, individual calibration exercise, and herbicide/weed control recommendation report are also required. The laboratory grading summary is as follows:

<u>Requirement</u>	<u>Percent of Lab Grade</u>
Lab Practical #1 (10/1 lab)	20
Individual Sprayer Calibration (10/1 lab)	10
Lab Practical #2 (10/22 lab)	20
Weed Collection (due 11/26)	30
Herbicide/Weed Control Recommendation Report (due 12/3)	<u>20</u>
TOTAL	100

Note: The Lab grade counts for 30% of your total grade in the course.

Course Grading Scale

90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; less than 60% = F

Note: Some class assignments, updates, reminders, etc. will be sent to you by e-mails with pdf files

Office Hours

Students should schedule and set up appointments with instructors (lecture and lab) as needed.

Class Comments/Rules

This class will start at 12:40 and will end at 4:30. Unless it is an emergency, do not be late for class and do not ask to leave early (we only meet one day each week and will need all the time to cover everything). You are expected to attend all lectures/labs and to turn in assignments on time. Those adhering to this policy will be given the "benefit of doubt" when final grades are assigned.

Scheduled lecture tests and lab practicals (with the exception of Lab Practical #1) will be given the first of the class period. You will be allowed no more than 1 hour and 20 minutes (12:40-2:00) to finish lecture tests and no more than 1 hour (12:40-1:40) to finish the lab practicals. The remaining class time will be used as specified in the course lecture/laboratory syllabus. If for some reason I am unable to cover all of

the lecture information in the time allowed, it will be your responsibility to read and study the notes and to seek help if needed.

General Class Comments

- Questions/comments are always welcome
- I am genuinely concerned with your performance in this class and I will make every effort to assist you in learning the course material. Hence, there is no excuse for poor performance
- Class attendance is positively correlated with performance (i.e. your course grade)
- This course will involve thinking and applying concepts not just regurgitation of facts
- Reading over the notes to be covered in lecture beforehand will help in understanding the material
- Exams will be very thorough but fair. Waiting to prepare for exams the night before or the morning before can lead to confusion and poor performance.
- It is your responsibility to make up missed class/lab time and to meet assigned deadlines
- Cell phone ringers are to be turned off in class and cell phone use in class is prohibited.

Note: You are encouraged to visit the School of Plant, Environmental, and Soil Sciences web site at http://cms.lsuagcenter.net/en/our_offices/departments/SPESS/About+Us/.

Weed Science and the Environment
Lecture and Laboratory Syllabus for 2008
Theme: Apply What You Learn

Date	Lecture/Laboratory Subject Matter
8/27	Introduce the course and course syllabus Chapter 1 - Weed Science and Weeds (notes to be provided) Distribute and introduce Weed Control Guide; Distribute Homework Assignment #1
9/3	Chapter 2 - Weed Biology and Ecology Chapter 3 - General Methods of Weed Control Chapter 4 - Herbicide/Soil Interactions
9/10	Homework Assignment #1 due Chapter 5 - Herbicide/Plant Interactions - Absorption and Translocation of Herbicides Applied to Soil (End of Test 1) Discuss laboratory grading criteria, lab practicals, and weed collection Pesticide Formulations, Labels, and Safety Laboratory; Sprayer Hardware and Spray Distribution; Introduce Sprayer Calibration
9/17	Test 1 Sprayer Calibration Laboratory; weed seeds planted for weed identification lab
9/24	Continue Sprayer Calibration - Hands on Calibration Exercise #1; Hands on Calibration Exercise #2; discuss calibration "practice" problem set/answers; Distribute Homework Assignment #2
10/1	Homework Assignment #2 due Continue Sprayer Calibration to include spreaders; discuss practice calibration problem sets and homework assignment; review calibration; individual sprayer calibration exercise Lab Practical #1 (end of class)
10/8	Broadleaf, Grass, and Sedge Weed Identification Laboratory
10/15	Broadleaf, Grass, and Sedge Weed Identification Laboratory (continued); Weed Seed Identification; Burden Farm visit (Ron Strahan); collect weeds
10/22	Lab Practical #2 Chapter 6 – Herbicide/Plant Interactions – Absorption and Translocation of Herbicides Applied to Foliage Chapter 7 – Factors Affecting Foliar Absorption of Herbicides (not covered) Chapter 8 - Metabolism of Herbicides in Plants
10/29	Chapter 9 – Review of Organic Chemistry and Herbicide Chemistry Chapter 10 - The Plant Cell and Physiological Processes Chapter 11- Inhibition of Photosynthesis – Inhibition at PS I Chapter 12 – Inhibition of Photosynthesis – Inhibition at PS II Distribute Homework Assignment #3
11/5	Homework Assignment #3 due Chapter 13 - Inhibition of Protoporphyrinogen Oxidase Chapter 14 – Auxin-Type Plant Growth Regulators (End of Test 2) Using the Weed Control Guide review herbicides and uses: PS I, PS II, and PPO'ase inhibitors and auxin-type plant growth regulators; Distribute Homework Assignment #4

11/12	Test #2; Homework Assignment #4 due Chapter 15 - Disruption of Mitosis Chapter 16 - Seedling Root/Shoot Inhibition Using the Weed Control Guide, review herbicides and uses: mitosis inhibition and seedling root/shoot inhibition Herbicide Symptomology and Surfactant Technology Laboratory; Distribute Homework Assignment #5
11/19	Homework Assignment #5 due Chapter 17 - Inhibition of Pigment Synthesis (Bleaching Herbicides) Chapter 18 – Inhibition of Amino Acid Synthesis Chapter 19 - Inhibition of Lipid Synthesis (End of Test 3) Using the Weed Control Guide, review herbicides and uses: inhibition of pigment synthesis, amino acid synthesis, and lipid synthesis Distribute Homework Assignment #6
11/26	Homework Assignment #6 due; Weed Collection due Individual sessions to finalize weed collection and work on “Herbicide/Weed Control Recommendation Report” (Thursday starts Thanksgiving holiday)
12/3	Test #3; Herbicide/Weed Control Recommendation Report due; last class Herbicide resistant crops and weeds; new weed management technologies; other weed science topics; course evaluation Use the Weed Guide to conduct weed control recommendation exercises
12/8-13	Final comprehensive exam
12/19	Commencement day