

CRSS 4340 Weed Science

Fall 2009

3 credits

Lecture/Lab: MWF 9:05-9:55 2401 Miller Plant Sciences

Meeting Place: 2401 Plant Sciences

Professor: William K. Vencill
203 Administration Building
542-9308
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Office hours: Wednesday 10:00-11:00 am in 4103 Plant Sci or by appt.

Course Description:

CRSS 4340/6340 will be taught by Dr. Vencill. The course covers classification, characteristics, reproduction, identification, ecology and management of weeds. We will study mechanical, cultural, biological, and chemical methods of control and the integration of these methods in integrated weed management systems.

Course Goals

This course is designed so the diligent student will know the general principles of Weed Science, and be able to apply them in experimental and practical situations. The specific objectives are for students to be familiar with:

1. fundamental aspects of weed biology and ecology relevant to managed landscapes;
2. the four control methods used in managing weed populations;
3. how control measures can be integrated to accomplish acceptable levels of pest suppression;
4. how herbicides enter and move to their site of action in plants and
5. classifying herbicides by their site of action.

Course Outline

I. Introduction

A. What is a weed?

B. What makes for a good weed?

C. Invasive Weeds

II. Weed Biology

- A. Where do weeds come from?
- B. How long do weed seeds last in the soil?
- C. What is a weed seedbank?
- D. Seed dormancy (Please read article by Benech-Arnold et al. 2000. Environmental control of dormancy in weed seedbanks in soil. Field Crops Research 67: 105-122.)

III. Weed-Crop Competition (Please read article by Rajcan and Swanton. 2001. Understanding maize-weed competition: resource competition, light quality, and the whole plant. Field Crops Research 71: 139-150.)

- A. How do weeds compete with crops?
- B. What do weeds and crops compete for?
- C. How long does it take for weeds to reduce crop yields?
- D. How many weeds does it take to reduce crop yields?
- E. Can plants use chemical warfare? (Please read article by Belz. 2007. Allelopathy in crop/weed interaction – an update. Pest Management Science 63:308-326).

IV. Weed Control Methods (Pages 120-131 in Turgeon et al.)

- A. Prevention
- B. How many ways can you kill a weed?
- C. How can fire, floods and steel kill weeds?
- D. Can we use biological warfare to kill weeds?
- E. Differences in IPM and Organic Weed Control

Exam I – 100 points

D. Chemical (Pages 131-178 in Turgeon et al.)

- 1. Where do herbicides come from?

V. Herbicide Fate in Plants and the Environment

- A. History, Toxicology, and Legislation of Herbicide Use (Pages 37-45 in Turgeon et al.)
- B. Absorption, Translocation, and Selectivity of Herbicides (Pages 46-87 in Turgeon et al.)
- C. Environmental Fate of Herbicides (Pages 90-99 in Turgeon et al.)

Exam II (100 points)

V. Herbicide Families

- A. Herbicide Groups with Significant Foliar Use: Translocated to New Growth
- B. Herbicide Groups with Significant Foliar Use: Translocated to Old Growth
- C. Herbicide Groups with Significant Foliar Use: Non-Translocated
- D. Herbicide Groups Applied Almost Exclusively to Soil

Exam III (100 points)

- VIII. Herbicide Resistant Crops and Weeds

Writing Assignment

The writing assignment is worth 80 points of the total final grade. The writing assignment will consist of a 5-7 page paper providing a comprehensive overview of an aspect of :

- 1) weed biology such as weed competition in crops; invasive species; weed physiology such as dormancy, etc.
- 2) integrated weed management in agronomic or non-agronomic situations
- 3) herbicide physiology issues such as resistance, effect of abiotic stresses on herbicides, etc.
- 4) herbicide fate in the environment

These assignments need to follow the formatting style of the journal Weed Science (instructions can be found at www.wssa.net). Primary literature should be used; that is do not use the web or trade publications as sources.

All sources must be listed per academic honesty regulations.

First draft will be due by 23 October 2009 and will count for 40 points. The final draft will be due 20 November and will count for 40 points.

FINAL EXAM: MONDAY, DECEMBER 14, 8-11 am

Specific course requirements for grading purposes:

Assignments are due on the dates announced in class. Ten percent of the grade for that assignment will be deducted for each day after the due date for in-class assignments.

Grading Policy:

<i>Lecture</i>	
In-class assignments & quizzes	200 pts
8 quizzes (15 pts each)	
Writing assignment (80 pts)	
Three hour exams	300 pts
Final exam	150 pts
TOTAL	650 pts

Grades:

A	605-650 pts (93-100%)
A-	585-604 (90-92%)
B+	566-584 (87-89%)
B	540 – 565 (83-86%)
B-	520-539 (80-82%)
C+	501 – 519 (77-79%)
C	475 – 474 (73-76%)
C-	455-474 (70-72%)
D	390-454 (60-69%)
F	<390 (<60%)

Under the new plus/minus grading, here is the GPA with the grade distribution:

A.....4.0	C+.....2.3
A-.....3.7	C.....2.0
B+.... 3.3	C-.....1.7
B.....3.0	D.....1.0
B-.....2.7	F.....0.0

Attendance Policy:

After teaching this course for >15 years, I can tell you from experience that you cannot do well in this class by getting notes from friends or the WebCT page. There is a strong positive correlation between class attendance (and being on time to class) and grade. Attendance is expected. As per Board of Regents policy, I reserve the right to drop students from the class roll who miss more than 5 class periods. Such students will be given a WF grade.

Required course material, including texts:

There are two required books for this course, one for lecture and one for those taking the lab. The book required for lecture is: "Weed Control in Turf and Ornamentals" by Turgeon et al. This is a useful reference booklet to provide background on some areas of lecture. The other book for lab is "Weeds of the South". For the weed biology part of the course, I have specific readings that will be available on the ELC site for the course.

Policy for make-up of examinations:

There will be no make ups for the weekly quiz. Without an official excuse or overwhelming extenuating circumstances, you will get a zero for missed quizzes. Students can only make up a missed exam with a note from a doctor or extreme circumstance. Any unexcused exam will be recorded as a zero. Any exams used for missed exams will be different than the other students have taken.

Academic Honesty: The policy regarding Academic Honesty in First-year Composition can be found in *First-year Composition at UGA*. Further information about the "UGA Academic Honesty Policy" can be found at the web site of the Office of the Vice President for Instruction: <http://www.uga.edu/ovpi/>

Access Policy: Students with special needs are invited and encouraged to discuss them with the instructor.

The syllabus represents a general plan for this class; deviations may be necessary.