PLP 3103c. PLANT DISEASE CONTROL - Spring semester, 2015

Instructor: Dr. Jerry A. Bartz

Office: Room 2725 Fifield Hall--Hours: Drop in - 10:00 AM to 12:00 PM Tuesday-Thursday
Appointment - any time but please call at least 48 hrs in advance.

Phone: 352-273-4671

Email: softbart@.ufl.edu

Credits: 3.

Class meetings. Tuesday & Thursday Periods 6-7.
Period 6, Tuesday & Thursday, lecture/discussion.
Period 7, Tuesday & Thursday, guest lecture, discussion, demonstration.

Examination schedule:
First exam = lecture period on Feb. 3.
Second exam = lecture period on March 12.
Final exam = April 28, 7:30-9:30 AM

Quiz schedule:
First 10 min of each discussion meeting (no discussion periods on Feb. 3 or March 12).

Note: Students enrolled via polycom will take exams and quizzes at the same time as students traditionally enrolled. The exam/quiz will be posted to individuals at their email address at the beginning of a test period. These students will email their answers to softbart@ufl.edu immediately upon completion. The date and time of the email will certify that the criterion set forth has been met. Electronic devices can be used during all class activities except for quizzes and exams as indicated (we'll poll the class concerning whether the final will be open or closed).

Prerequisites: Has completed PLP 3002 or equivalent or with permission of the instructor.

Required Textbook: None. A written text supports each topic. This supporting material will be posted on and should be read prior to lecture/discussion of topics.

Required assignments and readings: Lectures will be posted. Class meetings will be recorded on polycom (students can access these recordings during the semester).

Course description: Most plant diseases are controlled through the application of one or more practices that, in a successful operation, are integrated into an overall pest management scheme. This scheme, known as integrated pest management, must be compatible with the owners' intent which involves the end use of a crop or plant. Here, we begin with a discussion of disease development in a population of plants (elements of epidemiology) and note what parts must be manipulated if the course of the disease is to be altered for the plant's benefit. Next, we review the six principles of plant disease control and then evaluate control measures in the three categories of methods (physical, biological, chemical). For each individual method we'll progress from

1) description
2) application
3) uses
4) efficacy
5) costs
6) long-term stability of method
7) non-target effects
    a. positive
    b. negative

Course objectives:
1. To list and discuss common disease control methods including mode of action, types of diseases controlled, when they should be applied, how well they work and are they safe and sustainable.

2. To explore new control practices.

3. To construct disease control strategies for different types of agricultural operations including the home, home garden and landscaping, small farm, greenhouse and large farm.

Written reports: Disease control recommendations for four different diseases integrated into a crop production scheme. Select a likely and reasonable production area and time of year. On-line resources may be consulted for these reports, but **cut and paste** copying from those resources into your reports is prohibited. Appropriate quotes may be copied into your reports as long as they are properly referenced. A general set of references including on-line websites should be attached to each report. These reports are due prior to the final exam. Limit reports to two typewritten pages (single space/ Word files or equivalent) not including figures or photos.

Oral reports: Beginning mid-April, students will begin giving an oral report on one of the four diseases that are or will be submitted as a written report. This report should include a description of the disease, an estimation of the potential impact of the disease on the crop, and an integrated plan for controlling the disease. A Powerpoint presentation is recommended. The entire report should last no longer than 10 min and will be followed by a 5-min discussion.

Grading policy:

Quiz grades:	10%
First exam:	20%
Second exam:	20%
Final exam:	35%
Reports:	
written	10%
oral	5%

Conversion of total summed percentage to letter grade:

A = 90 to 100%
B^+= 85 to 89.9%
B = 80 to 84.9 %
C^+= 75 to 79.9%
C = 70 to 74.5%
D^+= 65 to 69.9%
D = 60 to 64.5%
E = < 59.9%

"Total summed percentage" = sum of percentage for each item. The three exams will be curved based on the highest raw score = 100.

The **exams and quizzes** will be on topics covered in the lecture, assigned readings and respective discussion sections. The style will be multiple choice, true-false, and short answer. **Reports** will be graded on the basis of completeness, correctness and originality. Brevity is usually a virtue.

The College of Agricultural and Life Sciences has requested that the following be included in this syllabus:

Information for Students for Syllabi / Course Policy

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 Center, 392-1171, personal counseling; 3. Sexual Assault Recovery Services (SARS), Student Health Care Center, 392-1161, sexual assault counseling; and 4) Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

ACCOMMODATION: Students requesting classroom accommodation must first register with the Dean of Students Office (Students with Disabilities Office, Peabody 202 at 352-392-1261). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. Further information is available from the Disability Resource Center at http://www.dso.ufl.edu/OSD/.

SOFTWARE USE / COPYRIGHT: 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.

ACADEMIC HONESTY: As a result of completing the registration form at the University of Florida, every student has signed the following statement: "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." We agree to comply with the new Honor Code, which specifies that "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."

University policy regarding "Standard of Ethical Conduct" is available from the 2002-2003 Student Guide at: http://www.dso.ufl.edu/stg/

Further information on academic honesty and integrity is available from the Graduate School at: http://gradschool.rgp.ufl.edu/handbook/graduate_student_handbook/integrity.html

UF POLICY ON E-MAIL: "Official University business email will be communicated to students using the University GatorLink email account. That is, official email will be sent exclusively to GatorLinkUserName@ufl.edu. The preferred email address recorded for all students will be the GatorLink address. This is the email address displayed in the online phonebook. Students may continue to use the forwarding mechanism to deliver their email to other mail services, if they wish. However, it is the student's responsibility to insure that the forwarding address is current so that they receive official communications from the University."

Tentative Discussion/Demonstration Schedule (subject to change)

Jan 6. A discussion of "disease control."
Jan 8. Terms used to describe disease control agents
Jan 13. Discuss restraints on control posed by alternative production systems (perspective on modern agriculture).
Jan. 15-20. Pathogen resistance to disease control agents and FRAC codes
Jan. 22. Discussion of sanitation.
Jan. 27. Sulfur
Jan 29. Copper
Feb. 3. No discussion/first exam.
Feb. 5. Dithiocarbamates
Feb. 10. Phthalimides.
Feb. 12. Surface active fungicides.
Feb. 17. Carbendazim fungicides
Feb. 19. Oxathiins
Feb. 24. Sterol biosynthesis inhibitors
Feb. 26. Sterol biosynthesis inhibitors, part 2
SPRING BREAK – Feb. 28—March 7.
Mar. 10. RNA synthesis inhibitors
Mar. 12. Second exam
March 17. Respiration inhibitors part 1
March 14 Respiration inhibitors part 2
March 19 No discussion/second exam
March 24 Second exam.
March 26 Bacterial disease control agents
March 31 Fungal disease control agents
April 2. Plant based pesticides (essences)
April 7. Stimulators of systemic acquired resistance
April 2. Molecular strategies
April 7. First set of oral reports
April 9. Second set of Oral reports
April 14. Third set of oral reports
April 16. Final set of oral reports including those enrolled in 3103c
April 21. Review. Last class period

Final exam: Tuesday, April 28, 7:30-9:30 AM. Note: often it has been necessary to schedule an early exam for those graduating at the end of the Spring semester or those with exam conflicts. Date and time for this early exam will be discussed in class. Any student can opt to take the early exam, regardless of graduation status.

Lecture topics:

1) Breaking down plant disease development into components that are useful for designing and implementing disease control.
    a) What general information about a particular disease is necessary?
    b) The six principles of plant disease control.
    c) Forecasting disease
2) Cost:benefit ratio.
3) Physical methods:
    a) Quarantines
    b) Eradication campaigns
    c) Tort laws
    d) Selection of planting sites.
    e) Field preparation.
    f) Crop planting
    g) Irrigation method and timing
    h) Fertilization
    i) Specific cultural practices
        i) Training methods
        ii) Pruning, rogueing.
        iii) Harvest methods and timing
        iv) Postharvest handling and storage
4) The use of biological agents for disease control.
5) The use of host resistance to control diseases including genetics, mode of action, stability and management of pathogen races.
6) The use of a genetic modification of plants to control diseases
7) The use of chemicals to control diseases including safety, following regulations, mode of action, selection of appropriate chemical, application methods, and management of chemical resistances in pathogen populations.
8) Time permitting: Creating effective strategies for the control of specific types of diseases and guest lectures.