Syllabus
AGRO/HORT/PLPT 817 Plant Pathology: Principles and Application
Summer, 2016

Instructor
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Dept. of Plant Pathology
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Course summary
3 credit hours. 10-week mini-course; June 6 – August 12.
 Students are expected to have had 12 hours of prior coursework in the plant sciences.
This course provides an introduction to the biology of plant pathogens, pathogen-host plant interactions, and environmental influences on plant diseases. It also examines cultural, resistance, and chemical strategies for plant disease management.

Learning objectives
Upon completing this course, students will be able to:
1. Differentiate the major pathogen groups on the basis of phylogeny, morphology and physiology.
2. Identify stages of disease development and describe the various modes by which each pathogen group accomplish the stages of disease development.
3. Describe how various chemical classes affect physiological function in plant pathogens
4. Describe the mechanisms by which pathogens affect plants and by which plants defend against infection by pathogens
5. Discuss how host resistance to diseases can be improved by altering pathogen-plant interactions
6. Identify the critical environmental factors that affect pathogen activity and host response to infection.
7. Describe the influence of cultural practices on pathogen populations and disease environment
8. Evaluate the opportunities and limitations of applying chemical, host resistance and cultural strategies for management of various disease types

Organization
All materials for this course are available through MyUNL (Blackboard): https://my.unl.edu/webapps/portal/frameset.jsp. This course is divided into 4 modules (see the document Schedule and Topics), each lasting 3 to 4 weeks. Modules will overlap in time to provide flexibility in studying module materials. Each module will have a number of content units (topics) each having a single lecture or a series of short lectures and associated reading. Information covered in a topic will be assessed in a quiz. An essay focusing on content delivered during a module will be due at the end of the module period. Essay topics and other information regarding essays are provided in the document Essay Guidelines. Lectures, reading,
and quizzes for each module will be made available prior to the beginning of the module and can be accessed at any time during the module period. Towards the end of each module, there will be an opportunity to participate in an online meeting to discuss topics and materials presented in the module. Information regarding lectures, readings, quizzes, and discussion sessions is provided below.

**Lectures**
Lectures will be MP4 videos of slides with recorded narrations. Each can be streamed or downloaded. Files containing the slides in PDF format will be provided to allow students to print slides. Each lecture will last less than 50 minutes; some may divided into smaller (20-30 min.) units to facilitate streaming and downloading. Lectures can be viewed at any during a module. It is strongly recommended, however, that topics be studied in the order in which they are presented in Blackboard or list in the schedule.

**Readings**
Readings in the form of research articles and review documents will be provided as PDF files. Web pages, such as those published in scientific and professional websites such as APSnet, will also be assigned as reading. PDF files of or URLs to supplementary reading material also will be provided for those who desire more background information, e.g. basic biology of microorganism groups containing plant pathogens, or who want more in-depth reading.

**Quizzes**
All quizzes will be accessed through Blackboard. There will be two quizzes associated with each topic, each quiz containing 5 True/False, multiple choice, and short answer-type questions. A student may choose to take only the first quiz or both quizzes for a topic. If both quizzes are taken, only the higher score will count in calculating the course grade. Each quiz is worth 5 points. Each will be timed and must be completed in a 15 minute period once it is opened. While quizzes given in a module can be taken any time during the module, the associated video(s) must be viewed first before taking the quiz.

**Online meetings**
During the last week of each module, there will be two time slots during which students can connect and meet online with the instructor. Google Hangout will be the online conferencing method. This a free method, but each student who wishes to participate in the meetings must have a Google account. The intent of the discussions is to provide an avenue for students to pose questions relating to the content presented in lectures and reading and to share ideas and experiences on topics of their particular interest. In addition, the instructor will offer a number of discussion questions at the beginning of each module. Participation in the discussions is voluntary. The discussion sessions will be recorded and the recording will be made available to all students to view.

**Grading**
Students taking the course for university credit are expected to complete all assignments (quizzes and essays). Points will be accumulated over the course in this manner:
Quizzes: 20 X 5 pts each = 100 possible points
Essays: 3 X 40 pts each = 120 possible points
Total = 220 possible points

The final grade will be determined from the cumulative point total according this scale, which may be adjusted downward depending upon the class curve:

Percentage (points out of 220) Letter grade

90% (198) ......................... A
80% (176) ......................... B
70% (154) ......................... C
60% (132) ......................... D
below 60% ....................... F

Graduate students enrolled on a Pass/Fail basis must achieve 80% in order to earn a “Pass”.

Note: Students taking the course for Continuing Education or non-credit basis do not have to complete essay assignments. They must score a minimum of 70% in the quizzes in order to pass the course.

Accommodation for students with disabilities
Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3737 voice or TTY.

Policy regarding academic dishonesty
All students must adhere to Section 4 of UNL’s Student Code of Conduct (http://stuafs.unl.edu/ja/code) for definitions and warnings against cheating and plagiarism. UNL's policy on Academic Dishonesty states that a student may receive a sanction as severe as removal from a course with a failing grade for any type of Academic Dishonesty. The policy in this class is a student will receive a failing grade on the assignment or quiz on which cheating is detected. Students wishing to lodge an appeal may contact the Head of the Department of Plant Pathology, UNL.
<table>
<thead>
<tr>
<th>Module &amp; theme</th>
<th>Dates#</th>
<th>Topics: associated quizzes</th>
<th>Essay no. &amp; due date</th>
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</thead>
<tbody>
<tr>
<td>Orientation</td>
<td>June 6 – June 13*</td>
<td>Welcome lecture: screening quiz (no points)</td>
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| I Introduction to fundamental principles & pathogen biology | June 6 – July 1* | 1. The 3 critical elements of disease: Quiz 1A & 1B  
2. How the 3 elements contribute to monocyclic and polycyclic disease cycles: Quiz 2A & 2B  
3. Fungal and oomycete pathogens: Quiz 3A & 3B  
4. Bacterial pathogens: Quiz 4A & 4B  
5. How fungi and bacteria cause disease: Quiz 5A & 5B  
6. Plant parasitic nematodes: Quiz 6A & 6B  
| II Environmental influences; disease management through cultural practices; chemical control of pathogens | June 27 – July 22* | 8. Effects of the above-ground environment on foliar pathogens: Quiz 8A & 8B  
9. Effects of the below-ground environment on soilborne pathogens: Quiz 9A & 9B  
10. Manipulating the environment to disfavor disease: Quiz 10A & 10B  
11. Biological control: 11A & 11B  
12. Forecasting as a key element of the chemical strategy: Quiz 12A & 12B  
13. Types of chemicals used for disease control: Quiz 13A & 13B  
16. Preformed host defenses: Quiz 16A & 16B  
17. Inducible host defenses against organismal pathogens: Quiz 17A & 17B  

#Overlap in between modules is intentional.
*The last date in a module is the deadline for completion of all quizzes in the module.