

Plant Disease Resistance and Application
PLANT PATHOLOGY 5660
SPRING SEMESTER 2014

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Office hours: 11:00am-12:00pm on Mondays and Wednesdays and also by appointment

Lectures: 1:00-2:15pm on Mondays and Wednesdays in 491 Borlaug Hall

Discussion: 2:20-3:10pm on Wednesdays in 491 Borlaug Hall

Credits: Three (3.0)

Course objectives: My goal is to provide information on the fundamentals of disease resistance in plants and the genetics of host-parasite interactions as they relate to the sustainable control of plant diseases. Examples will be explored at the Mendelian, populational, and molecular level of organization. Additionally, practical information will be presented to aid students in studying host-parasite systems and developing disease control strategies using genetic resistance.

Prerequisites: Students must have a thorough understanding of the basic concepts of plant disease, pathogen biology, genetics, and epidemiology. The courses of PIPa 2001 “Introductory Plant Pathology” and Biol 4003 “Genetics” (or equivalents) are prerequisites.

Text: None required. Reference materials and assigned papers are required reading and are available from electronic reserve, the class Moodle site, or in some cases the instructor via e-mail. To access the electronic reserve, go to the following link (<https://reserves.lib.umn.edu/>) and enter your UM x500 number and password.

Under PIPa 5660, you will see a list of readings saved as pdfs, scanned documents, or web links. The articles are organized in alphabetical order by the senior author’s last name. You may elect to save a tree by not printing the article and reading it on the computer screen!

Course requirements: The **mid-term exam** is scheduled for the eighth week of class (**March 10**). The **final exam** will be according to the schedule set forth by the university based on the day and time of the lecture (**May 14**). If there is complete agreement among all students, the exam could be given at an earlier date.

In addition to these exams, students will be required to:

1) **write a mock USDA-NIFA grant proposal** on a topic dealing with any aspect of plant resistance, pathogen virulence, or host-parasite genetics and **give a 15-minute presentation** about it to class

OR

2) **present a full 35-minute lecture** on any aspect of plant resistance, pathogen virulence, or host-parasite genetics and **prepare an accompanying lecture study guide**.

The topics for these exercises are open and may include plant genomics as it relates to resistance, microbial genomics as it relates to pathogenicity or virulence, *and* other topics dealing with genetics and the interactions of plants and parasites. Specific instructions about these exercises are provided in a separate handout.

Participation in the discussion sessions is also mandatory. Starting on **January 29**, the second class period on most Wednesdays will consist chiefly of student-led or guest lecturer-led discussions. For this exercise, one student (or sometimes pairs of students) in the class will take the lead in selecting a recent paper on the suggested general topic area listed for the week. In class, the discussion leader will present a summary of the selected work (Powerpoints are encouraged, but certainly not essential) covering the background, rationale, general methodology, results, and significance of the research. The discussion leader should prepare at least four questions about the topic paper(s) for the week. They will then call on their fellow students to answer these questions as a means to generate a vigorous discussion.

Students who are not discussion leaders must a) read the assigned paper, b) come fully prepared to answer the questions posed during the discussion, and c) write a one-page summary/critique of the research paper ahead of the class period. **The writing assignment is due in class after the discussion section.** Five percent (5%) of your grade is based on leading and participating in the discussion sections and ten percent (10%) is based on your summary/critiques of the discussion papers.

Class participation is encouraged! If you have a comment or question about anything related to the course, please feel free to share it so we can all learn from your perspectives.

The breakdown for grading in the course is as follows:

Grading:	
<i>Mid-term exam:</i>	20% 8th week of class: March 10
<i>Final exam:</i>	25% Scheduled for May 14
<i>Leading/participating in discussion sessions</i>	5% Most Wednesdays from 2 nd week on
<i>Writing 1-page summary of discussion papers</i>	10% Most Wednesdays from 2 nd week on
 <i>PLUS</i>	
<i>Grant Proposal</i>	30% Due: May 9 at 5:00PM
<i>Grant Proposal Presentation</i>	10% Last two class periods
 <i>OR</i>	
<i>Lecture Presentation</i>	20% Last two class periods
<i>Lecture Study Guide</i>	20% Due: May 9 at 5:00PM

Other Important Information:

Academic misconduct:

The Conduct Code of the University of Minnesota details matters of scholastic dishonesty to include the following: submission of false records of academic achievement; cheating on assignments or examinations; plagiarizing; altering, forging or misusing a University academic record; taking, acquiring or using test materials without faculty permission; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement. Academic dishonesty in any form will not be tolerated.

<http://onestop.umn.edu/faculty/teaching/policies.html>

Discrimination and sexual harassment:

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, religion, color, sex, national origin, handicap, age, or veteran status. Questions regarding these issues should be directed to the appropriate officer in the university's equal opportunity office (419 Morrill Hall, Phone: 624-9547) or see <http://www.eoaffact.umn.edu/>.

Student Conduct Code:

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community.

As a student at the University, you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see:

http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Use of Personal Electronic Devices in the Classroom:

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. Instructors may determine if personal electronic devices (such as cell phones and laptops) are allowed in the classroom. Students may be directed to turn off personal electronic devices if the devices are not being used for class purposes. Students are not permitted to record any part of a class/lab/other session unless explicitly granted permission by the instructor. If the student does not comply, the student may be asked to leave the classroom. For

complete information, please reference:

<http://www.policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>

Scholastic Dishonesty:

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html)

If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: <http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html>.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty:

<http://www1.umn.edu/oscai/integrity/student/index.html>.

If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Makeup Work for Legitimate Absences:

Students will not be penalized for absence during the semester due to unavoidable or legitimate circumstances. Such circumstances include verified illness, participation in intercollegiate athletic events, subpoenas, jury duty, military service, bereavement, and religious observances. Such circumstances do not include voting in local, state, or national elections. For complete information, please see: <http://policy.umn.edu/Policies/Education/Education/MAKEUPWORK.html>.

Appropriate Student Use of Class Notes and Course Materials:

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see:

<http://www.policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>

Grading and Transcripts:

The University utilizes plus and minus grading on a 4.000 cumulative grade point scale in accordance with the following:

- A 4.000 - Represents achievement that is outstanding relative to the level necessary to meet course requirements
- A- 3.667
- B+ 3.333
- B 3.000 - Represents achievement that is significantly above the level necessary to meet course requirements
- B- 2.667
- C+ 2.333
- C 2.000 - Represents achievement that meets the course requirements in every respect
- C- 1.667
- D+ 1.333
- D 1.000 - Represents achievement that is worthy of credit even though it fails to meet fully the course requirements
- S Represents achievement that is satisfactory, which is equivalent to a C- or better.

The University of Minnesota Uniform Grading and Transcript Policy can be found at <http://www.fpd.finop.umn.edu/groups/senate/documents/policy/gradingpolicy.html>

Sexual Harassment

"Sexual harassment" means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy:

<http://www1.umn.edu/regents/policies/humanresources/SexHarassment.html>

Equity, Diversity, Equal Opportunity, and Affirmative Action:

The University will provide equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy:

http://www1.umn.edu/regents/policies/administrative/Equity_Diversity_EO_AA.html.

Disability Accommodations:

The University is committed to providing quality education to all students regardless of ability. Determining appropriate disability accommodations is a collaborative process. You as a student

must register with Disability Services and provide documentation of your disability. The course instructor must provide information regarding a course's content, methods, and essential components. The combination of this information will be used by Disability Services to determine appropriate accommodations for a particular student in a particular course. Contact the Disability Services Office (McNamara Alumni Center; Suite 180; Phone: 612-626-1333) or see <https://diversity.umn.edu/disability/>

Mental Health Services:

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: <http://www.mentalhealth.umn.edu>.