

Fundamentals of Plant Pathology (PLP4905), Fall 2020

COURSE INSTRUCTOR: Dr. Brantlee Spakes Richter

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Office Hours: by appointment

TEACHING ASSISTANTS:

PLP4905: Eva Mulandes, emulandes@ufl.edu

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COURSE: Fundamentals of Plant Pathology (PLP 3002C/4905) and General Plant Pathology (PLP 5005C/6905) are taught with concurrent lectures. Lectures are the same for both courses, but the discussions, exams, and grading structures are different; students enrolled for graduate credit are required to participate in additional discussions, have additional assignments, and have slightly different exams, reflecting the higher expectations for graduate level study. For PLP4905, the discussion section is optional but recommended, especially for those who expect plant problem troubleshooting to be a routine part of their careers, or who wish to pursue further studies in the field of plant health. Due to class size and distancing restrictions related to the current human epidemic (Covid-19, caused by SARS-CoV-2), we are unable to hold the usual laboratory meetings that would be integrated into PLP3002C. The discussion section will offset that loss, allowing deeper exploration of plant pathology concepts, introduction to methods used in the field, and development of observational and critical thinking skills related to plant pathology and disease diagnostics.

PREREQUISITE: BOT 2010 or BSC 2010, knowledge of basic plant anatomy and physiology

CREDITS: 3 (+ 1 for optional discussion section, registered separately)

COURSE WEB SITE (Canvas): <https://lss.at.ufl.edu/>

CLASS TIME/LOCATION: Tuesday and Thursday period 4 @ 10:40-11:30 am, online via MS Teams

DISCUSSION: The discussion sections are registered separately from the lecture section. Contact Jessica Ulloa (julloa@ufl.edu) if you have questions or need help registering for either the lecture or the discussion.

TEXT (Recommended): Plant Pathology 5th Ed. (2005) by G. N. Agrios, Elsevier Academic Press, Inc. The 5th Edition is available at no cost in electronic version through UF Library course reserves for this course. The 4th edition of this book is also acceptable. Other assigned readings will be included within the course Canvas site.

INTRODUCTION & OBJECTIVES: Plant pathology is the science of plant diseases, the microorganisms that cause them, and the interactions between pathogens and hosts. The ultimate goal of plant pathology is to reduce the losses caused by plant diseases, thereby increasing quality and quantity of plant yields. Plant diseases are caused by many of the same types of organisms that cause diseases in animals and humans and, as such, many of the principles that apply to animal and human medicine also apply to plant diseases. This course introduces students to the many different types of plant pathogens, their basic biology, examples of the types of disease they cause, and the basic principles and concepts of disease development, spread, and management. This course will provide students with a solid, foundational understanding of disease cycles, host-pathogen interactions, and pathogen biology, sufficient to prepare them for higher-level coursework in plant pathology and/or entry-level positions in plant health related employment. The learning objectives of this course are:

1. Students are expected to attain sufficient mastery of vocabulary in plant pathology so that they can converse effectively with plant pathologists about disease problems.

2. Students will gain adequate familiarity with the resources and conventions of the field so that they can locate, understand, and evaluate information about plant diseases.
3. Students will develop firm comprehension of the mechanisms underlying disease so that they can effectively use information sources to solve problems that they will encounter in their own fields of work.

ATTENDANCE: You are expected to participate in every class, and there will be daily quizzes and/or class activities which will contribute to your learning, and to your course grade. Missed quiz grades may only be made up for excused absences, at the discretion of the instructor. Absences due to illness or emergency will be excused; documentation may be requested (doctor's note, accident report, etc.). Absences due to observation of religious holidays or participation in official university functions will be excused *only with advance notice*. Absences due to personal planning (i.e., planning to be somewhere other than class during class time) will not be excused, and missed points may not be made up. If you are having technical difficulties which are inhibiting your full and timely participation, please contact the instructor as soon as possible. We will work with you to resolve your issues or identify an alternate location for you to attend classes. Lecture meetings will be recorded, but there may be a lag time between the class meeting and availability of the recording. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

If you are experiencing COVID-19 symptoms ([Click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms](#). Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. [Find more information in the university attendance policies](#).

CLASS RECORDINGS: Our class sessions will be audio visually recorded for students in the class to review and for enrolled students who are unable to attend synchronously. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments in real time. The public chat comments will remain in the meeting channel for later viewing by class members, but will not be posted or shared anywhere else. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

EXAMS AND GRADING: Your grades will be weighted as follows:

Component	Percent of Grade
Unit 1 Exam (100 points)	16
Unit 2 Exam (100 points)	16
Unit 3 Exam (100 points)	16
Unit 4 Exam (100 points)	16
Final Exam or Project (150 points)	25
Class Participation & Quizzes	11
TOTAL	100

Exams: There will be five lecture exams (four mid-term exams and a final). Exams 1-4 are not comprehensive; each will focus on material from the preceding set of lectures. The final exam will be semi-comprehensive, with approximately 2/3 of the points from Unit 5 and 1/3 of points reviewing and synthesizing major concepts from the course. The exams will be online in Canvas, using the Honorlock proctoring service. Each exam will be open for a 5 day window, and students may take the exam at any time during the open window. Honorlock does not require you to schedule your exam time in advance, and you may take it at any time of the day or night.

Alternative Project: Students will have the option of doing a disease profile project instead of taking the final exam. The project will allow students to synthesize concepts from throughout the semester, with emphasis on Unit 5 material, by profiling a disease of their choice. This assignment is suitable for inclusion in an ePortfolio. Details may be found on the class website.

Participation & Quizzes: The participation & quizzes grade will come from a combination of in-class quizzes and activities, and short Canvas review quizzes, due after class. Most class meetings will have an associated quiz or activity; these will be open-book and open-discussion. There will be no make-up quizzes for unexcused absences, very-late arrivals, or early departures from a lecture meeting.

Grade Scale: Final grades will be designated according to the following grade scale. This course uses the grade book function in Canvas for records-keeping and grade calculation; your exam and quiz scores will be available to you as soon as they are calculated, so that you may track them throughout the semester. For information on current UF policies for assigning grade points, see: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Letter Grade	Percentage
A	92.00 – 100
A-	90.00 – 91.99
B+	88.00 – 89.99
B	82.00 – 87.99
B-	80.00 – 81.99
C+	78.00 – 79.99
C	72.00 – 77.99
C-	70.00 – 71.99
D+	68.00 – 69.99
D	62.00 – 67.99
D-	60.00 – 61.99
E	00.00 – 59.99

ACADEMIC HONESTY

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. In this course, any violation of the academic integrity expected of you will result in a minimum academic sanction of a failing grade on the assignment or assessment. Any alleged violations of the Student Honor Code will result in a referral to Student Conduct and Conflict Resolution. Please review the Student Honor Code and Student Conduct Code at sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

Some assignments in this course will require collaboration, and collaborative study is generally encouraged. You may discuss your answers on lab hand-in sheets and in-class participation quizzes, unless otherwise notified; however, you may not work or collaborate with others on lab quizzes, lab exams, in-class exams, or any other take-home exams or assignments. If you have any questions about expectations for a particular assignment, about what constitutes plagiarism, or about how to ensure that you are using and crediting sources appropriately, please speak with your instructor or a TA. We are here to help, and we would much rather give you the guidance you need to avoid academic integrity violations, than have to report them after they occur!

SOFTWARE USE

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.

CAMPUS HELPING RESOURCES

The University of Florida provides a wide range of student services to help with common issues which may interfere with your success, including disabilities, physical or mental illness, food insecurity, and personal safety. You can find links to many of these resources at <http://www.ufl.edu/student-life/health-safety/>. If you are experiencing problems that are interfering with your studies and you don't see an appropriate resource listed here, contact the Dean of Students Office (<https://www.dso.ufl.edu/>), and they can help connect you with the appropriate support.

Counseling Services: Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Training Programs
 - Community Provider Database
- *Career Resource Center, Second Floor JWRU, 392-1601, www.crc.ufl.edu/*
 - Career planning
 - Resume preparation
 - Internship and job search assistance
 - Professional development workshops
 - Mentoring programs

Services for Students with Disabilities: 0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student

disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

COURSE EVALUATIONS

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

THE INSTRUCTOR RESERVES THE RIGHT TO CHANGE OR MODIFY INFORMATION PROVIDED IN THE SYLLABUS. CLASS ANNOUNCEMENTS SUPERSEDE SYLLABUS STATEMENTS.

Page numbers given in the course schedule refer to chapters/pages of Agrios 5th edition text which correspond to the lecture topics. You will not be responsible for materials within these chapters that are not also covered in lecture and/or discussion. The Agrios text covers many more examples than will be highlighted in this class; use the course slides as a guide to direct your reading.

COURSE LECTURE SCHEDULE Fall 2020

Date	Topic	Reading (Agrios 5 th ed.)*
Unit 1: Central Concepts in Plant Pathology		
Sept 01	Introduction to Plant Pathology, terminology	Ch. 1: 4-42, 71-75
Sept 03	Diagnosis & Abiotic diseases	Ch.10: 358-383
Sept 08	History of Plant Pathology	Ch. 1: 4-42, 71-75
Sept 10	Disease development and cycles	Ch. 2: 77-89, 96-102
Sept 15	Effects of pathogens on plant physiology	Ch. 3: 106-121
Unit 2: Fungal & Bacterial Pathogens		
Sept 17	Intro Plant Pathogenic Fungi & Fungal diseases	Ch. 11: 385-404
Sept 22	Fungal Pathogens I: Zytrids, Mucoromycota, Ascomycota	Ch. 11: 433-561
Sept 24	Fungal Pathogens II: Basidiomycota	Ch. 11: 593-610
Sept 29	Fungal Pathogens III: Rusts & Smuts	Ch. 11: 562-592
Oct 01	Non-Fungi Fungal Pathogens: Oomycota & Co.	Ch. 11: 404-433
Oct 06	Intro Plant Pathogenic Bacteria & Bacterial Diseases	Ch. 12: 615-627
Oct 08	Bacterial Pathogens	Ch. 12: 627-703
Unit 3: Virus & Nematode Pathogens		
Oct 13	Intro Plant Pathogenic Viruses & Viral Diseases I	Ch. 14: 724-756
Oct 15	Intro Plant Pathogenic Viruses & Viral Diseases II	Ch. 14: 724-756
Oct 20	Virus Pathogens	Ch. 14: 757-824
Oct 22	Plant Pathogenic Nematodes	Ch. 15: 826-836
Oct 27	Nematode Pathogens	Ch. 15: 838-874
Unit 4: Pathogenicity & Host Defense		
Oct 29	Genetics of Plant disease	Ch. 4: 125-174
Nov 03	Genetics of Plant disease	Ch. 4: 125-174
Nov 05	How pathogens attack plants	Ch. 5: 176-203
Nov 10	Plant defenses – structural & biochemical	Ch. 6: 210-236
Unit 5: Epidemiology & Management		
Nov 12	Environmental factors & infectious diseases	Ch. 7: 249-265
Nov 17	Plant disease epidemiology	Ch. 8: 266-289
Nov 19	Cultural control of plant diseases	Ch. 9: 295-348
Nov 24	Biocontrol of plant diseases	Ch. 9: 295-348
Nov 26	<i>Thanksgiving break – No class</i>	
Dec 01	Chemical control of plant diseases	Ch. 9: 295-348
Dec 03	Integrated approaches to disease management	Ch. 9: 295-348
Dec 08	Exam Review	