

PLANT PATHOLOGY 570**TECHNIQUES IN PLANT PATHOLOGY 3 Credits**

Johnson Hall 343

Lecture TU 1:25-2:15;

Lab TU 2:25-4:55; TH 2:25-4:55

INSTRUCTORS: Dr. Lori Carris (329 Johnson Hall; carris@wsu.edu)
 Dr. Cynthia Gleason (335 Johnson Hall;
cynthia.gleason@wsu.edu)
 Dr. Maren Friesen (319 Johnson Hall; m.friesen@wsu.edu)
 Dr. Hanu Pappu (353 Johnson Hall; hrp@wsu.edu)
 Dr. Kyrill Savchenko (323 Johnson Hall; kyryll.savchenko@wsu.edu)

COURSE OBJECTIVE: To provide a basic understanding of the techniques for isolating, cultivating and identifying the major groups of plant pathogenic organisms.

REQUIRED TEXT: None

COURSE WEBSITE: BLACKBOARD, accessed from MyWSU

GENERAL FORMAT: The course will consist of one lecture (TU 1:25-2:15) and two laboratories (TU/TH 2:25-4:55) each week.

Student Learning Outcomes At the end of this course, students should be able to:	Course Topics/Dates The following topic(s)/dates(s) will address this outcome:	Evaluation of Outcome: This outcome will be evaluated primarily by:
Demonstrate scientific literacy in major groups of plant pathogenic organisms	Throughout the semester	Three midterms and final exam
Identify plant associated fungi by morphological and other characteristics.	Week 1-5	Exam 1 and lab reports for weeks 1-5.
Demonstrate familiarity and understanding of techniques in plant virus detection and diagnosis	Week 6-9	Exam 2 and lab reports for weeks 6-9
Become familiar with plant pathogenic nematodes and the plant symptoms of infection.	Week 10-13	Exam 3 and lab reports from weeks 10-13
Approach disease diagnostics in a scientific manner.	Throughout the semester	Exam 3. Lab reports for weeks 14-16

COURSE OUTLINE

WEEK

- 1** Lecture: Overview of major groups of plant pathogens; Lab: Requirements & lab safety; microscopy (**Aug. 22**)
Lab: Fungal pathogens—mitosporic fungi (**Aug. 24**)
- 2** Lecture: Introduction to Ascomycota; Lab: Yeasts (**Aug. 29**)
Lab: Sordariomycetes (**Aug. 31**)
- 3** Lecture: Dothidiomycetes; Lab: Dothidiomycetes (**Sept. 5**)
Lab: Cup Fungi and Lichens (**Sept. 7**)
- 4** Lecture: Introduction to Basidiomycota; Lab: Rusts & Smuts (**Sept. 12**)

Lab: Agaricomycetes (**Sept. 14**)
- 5** Lecture: Introduction to Zygomycota and Oomycota; Lab: Zygomycota (**Sept. 19**)
Lab: Oomycota (**Sept. 21**)
- 6** **Exam 1—Fungi and fungal-like organisms (Sept. 26)**

Lecture: Introduction to viruses and viral diseases; Lab: Virus-induced symptoms (**Sept. 26**)
Lab: Virus transmission –biological assay (**Sept. 28**)
- 7** Lecture: Over view of virus detection methods; Lab: Serological assays (**Oct. 3**)
Lab: Serological assay (**Oct. 5**)
- 8** Lecture: Molecular techniques for virus detection; Lab: PCR (**Oct. 10**)
Lab: Sequence databases for virus identification and characterization (**Oct. 12**)
- 9** Lecture: Overview of molecular characterization. Lab: Next Generation Sequencing in virus discovery (**Oct. 17**)
Lab: Bioinformatics (**Oct. 19**)

10 Exam 2—Viruses (Oct. 24)

Lecture: Nematode morphology; Lab: Nematode identification (**Oct. 24**)
Lab: Nematode identification, molecular tools (**Oct. 26**)

11 Lecture: Root knot and cyst nematodes; Lab: Root knot nematodes (**Oct. 31**)
Lab: Cyst nematodes (**Nov. 2**)

12 Lecture: Migratory endoparasites and ectoparasites; Lab: Migratory endoparasites (**Nov. 7**)
Lab: Ectoparasitic nematodes (**Nov. 9**)

13 Lecture: Nematode reproduction and development; Lab: Plant-nematode interactions (**Nov. 14**)

14 Lab: Plant-nematode interactions (**Nov. 16**)



Thanksgiving break



15 Lecture and Lab: Bacteria basics of identification (**Nov. 28**)
Lab: Bacteria isolation and purification **Nov. 30**)

16 Lecture and Lab: Disease diagnosis (**Dec. 5**)
Exam 3—Nematodes, bacteria, disease diagnosis (Dec. 7)

Grading:

Three midterm exams covering the lecture material (50 points each) will be given during the semester according to the schedule above. The exams will cover material from lectures, and laboratories..

You will also be expected to write lab reports (150 points total). Lab reports for each week are due at the beginning of class on Tuesday the following week. The required elements of the lab reports include:

Lab Topic and Date

Student Name

Objective of lab

Organisms examined

Observations, drawings and/or images illustrating key features

References

Point Summary:

	Number	Points each	Total points
Lecture Midterms	3	50	150
Lab reports	15	10	<u>150</u>
Total			300

Grade Assignment

94.0 – 100%	A
90.0 – 93.9	A-
87.0 – 89.9	B+
83.0 – 86.9	B
80.0 – 82.9	B-
77.0 – 79.9	C+
73.0 – 76.9	C
70.0 – 72.9	C-
60.0 – 69.9	D
< 59.9	F

Academic Integrity Statement

Academic integrity is the cornerstone of the university. Any student who attempts to gain an unfair advantage over other students by cheating, will fail the assignment and be reported to the Office Student Standards and Accountability. Cheating is defined in the Standards for Student Conduct WAC 504-26-010 (3).

Plagiarism Policy

Please make sure you understand what is plagiarism and familiarize yourself with the WSU Plagiarism Policy at these web sites: <http://libraries.wsu.edu/library-instruction/plagiarism> <https://gradschool.wsu.edu/plagiarism/> Each student is expected to work on your own assignments including lab reports, and no group effort is allowed.

WSU Disability Statement

Students with Disabilities: Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417)

to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center. For more information contact a Disability Specialist: 509-335-3417 <http://accesscenter.wsu.edu>, Access.Center@wsu.edu

WSU Safety and Emergency Notification:

Washington State University is committed to enhancing the safety of the students, faculty, staff, and visitors. It is highly recommended that you review the Campus Safety Plan (<http://safetyplan.wsu.edu/>) and visit the Office of Emergency Management web site (<http://oem.wsu.edu/>) for a comprehensive listing of university policies, procedures, statistics, and information related to campus safety, emergency management, and the health and welfare of the campus community.

