

SYLLABUS: DISEASES OF TREES AND SHRUBS

F&WE/HORT/LANDARC/PLPATH 309, Fall semester 2014, 3 credits

Meets Mondays, double lecture 5:30-7:10 pm, laboratory 7:20—9:20 pm (order may be reversed)

Optional lab access by email request *in advance* on Friday afternoons (noon to 4 pm)

Professor Glen R. Stanosz, A131 Russell Laboratories, gstanosz@wisc.edu

Assisted by Plant Pest and Disease Specialist JoAnne Stanosz, jstanosz@wisc.edu

UNLESS OTHERWISE EXCUSED, CLASS ATTENDANCE IS MANDATORY

and reductions in grade may result for tardiness and absence without advance permission (see Prof. Stanosz)

DATE	LECTURE/DISCUSSION	READING	LAB
Sep 8	Course Organization and Objectives Introduction to Tree and Shrub Pathology Koch's Postulates Principles of Plant Disease Management	M:1, 22	Use of microscopes
Sep 15	Continuation of week 1 topics; Fungus video	M:8	Field Trip (campus): Symptoms and Signs
Sep 22	Tree Pathogenic Fungi (structure and function, growth and development, classification)	M:8	Fungal structures
Sep 29	Leaf Diseases (fungi)	M:10	Leaf Diseases (fungi)
Oct 6	Rust Diseases	M:11	Rust Diseases
Oct 13	A Concept of Tree Decline Diseases	M:18	Field Trip (campus, weather permitting) or diagnoses assistance in lab
Oct 20	Lecture Exam #1		First diagnosis form due
Oct 27	Vascular Wilts (fungi)	M:13	Vascular Wilts (fungi), vectors
Nov 3	Twig, Branch, and Stem cankers Mistletoes	M:12, 17	Canker fungi, Mistletoes
Nov 10	Introduction to Wood Decay Compartmentalization of Decay in Trees Tree Risk Assessment	M:14, 16	Decay fungi, Lab review
Nov 17	No lecture/discussion (lab exam begins at 5:30 pm)		LAB EXAM
Nov 24	Viruses, Bacteria and Phytoplasmas Soilborne Nursery/Fine Root Fungi Nematodes and Mycorrhizae	M:6,7 M:21 M:5, 9	Entire collection and all remaining diagnoses due
Dec 1	continuation of Nov 25 topics Abiotic Factors and Tree Health Review and Course Evaluation	M:2, 3, 4	
Dec 8	LECTURE EXAM #2 Summary, Integrating Tree and Shrub Pathology into the Landscape and Forest		

M refers to Manion, P. D. 1991. Tree Disease Concepts, Prentice-Hall

Use of cellular telephones prohibited: Except for capture of images **as described below**, cell phones may not be used at any time. Turn cell phones off and put away prior to the start of these class meetings. See Prof. Stanosz for exceptions related to family emergencies.

Use of computers or other devices for audio or video recording or notetaking during any lectures, laboratories, or field trips is prohibited, except to capture still images during laboratories or on field trips. Professor Stanosz will consider requests for exceptions in cases of disability. Please note that electronic capture of an image and typing do not provide the same learning opportunity as the process of taking handwritten notes and making careful, detailed drawings, both of which are strongly recommended.

Readings for Diseases of Trees and Shrubs

Recommended and on reserve in Steenbock Library.

1. **Containing required reading:** Tree Disease Concepts, P. D. Manion. 1991. Prentice Hall.
2. **Recommended reference:** Diseases of Trees and Shrubs, Sinclair, W. A., and Lyon, H. H., 2005 (2nd ed.). Cornell University Press.
3. **Very helpful general textbook:** Plant Pathology, Agrios, G. N. 2005 (5th ed.). Academic Press.

Grading Diseases of Trees and Shrubs

LECTURE EXAMS (closed book): **40 points** (Exam 1, 20; Exam 2, 20)

HOMEWORK ASSIGNMENTS (open book): **10 points** (ten at 1 point each, due at start of class on dates indicated when assigned, deduction if late)

LABORATORIES/FIELD TRIPS and COLLECTION/DIAGNOSES: **50 points** (Lab/field trip exam, closed book, **20**; Collection/Diagnoses, take home/open book, **30***)

*Includes **20** tree or shrub disease diagnoses for each pair of students (additional information provided below). **Each student in a pair will be credited with the same point total.** Any exception to working in pairs must be approved by Prof. Stanosz.

The goal for this course is to enhance the abilities of students to continue to learn about tree and shrub health problems and apply that knowledge to new situations.

Grades are assigned using the scale below that is at the Registrar's site, for points earned as detailed above.

A (Excellent), AB (Intermediate Grade), B (Good), BC (Intermediate Grade), C (Fair), D (Poor), and F (Failure). UW-Madison has no official, rigid point system for assignment of these grades. Although the following scale for point totals is used as a guide, students whose point totals are within a one tenth or a few tenths of each other are generally not assigned different grades.

A 93-100, AB 88-92.9, B 82-87.9, BC 78-81.9, C 70-77.9, D 60-69.9, F Below 60

Graduate students are assessed separately from undergraduate students. In addition to work above, graduate students are evaluated on contributions to discussions of diagnostic tools outside of those used in this class and disease biology underlying principles and practices of disease management.

***Tree and Shrub Disease Collection/Diagnoses Guidelines and Requirements**

1. **Substantial independent work outside of class periods, including use of laboratory microscopes and reference materials, is necessary to successfully complete the collection/diagnoses.** The lab (187 Russell Labs) can be opened 30-60 minutes early on most Mondays and will be open by email request in advance most Friday afternoons (12 noon to 4 pm). Other classes use the lab on other days, and access at other times will be limited.
2. Student pairs should work independently of other pairs and the diagnosis forms should be completed by that pair without consultation with other students. All material must have been collected by these students in the semester during which the course is offered.
3. a. Each specimen should be accompanied by digital images showing the host tree or shrub situation, any symptoms on the affected part(s), and any signs visible in the field. When important for the identification of a pathogen, a semipermanent microscope slide is also required (instruction and assistance will be provided in lab). Strict saprophytes that decay dead material, but are not pathogens of living trees or shrubs and mycorrhizal fungi will not be accepted. No more than 10 specimens of wood decay macrofungi (mushrooms or conks) and no more than three specimens of powdery mildews may be submitted.
b. The first ten (10) of the twenty (20) required disease samples must be accompanied by a completed diagnosis form (a sample will be distributed in lab and the blank form is online). This form will be graded for readability and spelling, completeness, and correctness, and must be completed using a word-processing program (not handwritten). As appropriate to the particular disease, inclusion of images captured in the field or lab and the student's hand-drawn illustrations of important features (e.g., spore shape) will be required for full credit. No more than three of the diagnosis forms for wood decay macrofungi (mushrooms or annual or perennial "conks) and now more than two diagnosis forms for powdery mildews may be submitted.
4. Each sample should represent a different agent or pathogen associated with a tree or shrub (i.e., the same pathogen or agent associated with five different trees or shrubs or different tree or shrub species may earn "extra credit", but will be counted only once). Diagnoses may include at most one representative sample for a tree or shrub disease caused by an abiotic agent,
5. Specimens, images, and slides must be appropriately preserved, numbered (1-20), organized, and neatly labeled. Difficult to preserve material can be submitted earlier than the collection due date with permission of Professor Stanosz. A collection comprised merely of specimens of diseases observed on class field trips will not earn as much credit as one with more original collections. Up to 10 percent of the collection grade will be determined by the overall organization and presentation.
6. Specimens, images, slides, and diagnosis forms are due on dates indicated on syllabus with reduction in grade for late submission.