

FES 457 - TREE PESTS AND DISEASE 2

Spring 2008

DESCRIPTION

Applies concepts of FES 456 to common disease complexes found in Maine and other regions of North America. Along with FES 456, satisfies general education requirement for an intensive writing course. NOTE: Because of overlap, students cannot enroll in FES 557 if students earn degree credit for FES 457. Co-requisite: FES 456 or permission. Credits 2.

MEETING TIMES

Monday afternoons, 3-6 pm, for weeks 6-14 of the semester
An alternate meeting time will be needed to make-up for cancelled days.

213 Nutting Hall

INSTRUCTOR

William H. Livingston, Associate Professor of Forest Resources

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Appointments available by request

COURSE OBJECTIVES AND LEARNING OUTCOMES.

Students will:

1. Be able to recognize and distinguish a healthy tree from a diseased tree.
2. Correctly apply concepts of disease development to actual case studies.
3. Properly evaluate the biological role of tree disease in forests.
4. Demonstrate understanding on how tree pests incite disease.
5. Write reports that demonstrate a successful use of information to support their opinion on tree disease topics.
6. Be able to explain the Health Management Plans for major disease complexes and the rationale for their recommendations.
7. Write a Health Management Plan that completely describes two disease complexes affecting a tree species and how they should be managed.

INSTRUCTIONAL MATERIAL AND METHODS

Required textbook:

Edmonds, R.L., J.K. Agee, and R.I. Gara. 2000. Forest Health and Protection. McGraw-Hill Co., NY. 630 p.

Recommended references:

Adams, K.B., D.C. Allen, P.D. Manion, and L.P. Abrahamson. 1995. The Stewardship of Northern Hardwoods: A Forest Owner's Handbook. SUNY-ESF, Syracuse, NY. 83 p.

Skelly, J.M., et al., editors. 1987. Diagnosing Injury to Eastern Forest Trees. Agric. Inform. Serv., Coll. Agric, Penn. State Univ. and USDA For. Serv. 122 p.

Web Site.

There is a web site for the class at:

<http://www.forest.umaine.edu/education/livingston/fes456/F456CourseInfo.html>

The web site contains class messages, files for lecture notes, links to required readings, recordings of lectures, previous exams, and some of the handouts.

E-Mail.

Each student will be asked to provide the instructor an e-mail address that can be used during the semester. E-mail will be used for sending questions to and messages between the instructors and students.

Lecture Readings and Recordings.

Text readings are available on-line or from e-reserve at the library. You will be emailed the password needed to access the readings. The readings are required. Lecture recordings are also on the web site and need to be viewed prior to class.

Written Reports.

Questions concerning the recorded lecture material and readings will be given the week before the topics will be discussed in class. You must state a clear position (thesis) on a tree disease topic, and then use the rest of the report to critically analyze your position. Assignments will be 2-5 pages long, double spaced, and will be evaluated on correct usage of terms and concepts presented in the readings, recordings, and class activities.

Reports turned in after the due date will be marked down 10 percent of the total points for each day beyond the due date. You are encouraged to discuss your reports with other students, but each student must write his or her own paper.

Additional credit can be earned on graded reports by rewriting the assignment and submitting the revised draft within one week after receiving the graded first draft. You can improve your grade by up to 10% (1 letter grade). **Students earning less than 75% of the points must revise their papers in order to receive full credit. Failure to revise these papers will result in a 0 for the assignment.**

Class Activities

At the start of each class period, you will discuss your written report with 2 or 3 other students. After 10-15 minutes, the reports will be given to the instructor. An open discussion will follow concerning acceptable responses to the assignment and answering questions as needed. The process will be repeated until the end of the class period.

Exams.

One written exam will be scheduled for an evening after the fifth class meeting. Questions will require short, written responses and will cover material from readings, recordings, and class activities. Copies of previous exams will be made available on the class's web site.

There will be a final exam given during final exams week. The exam will be divided into two parts. The first part will have questions over material covered during weeks 11-14 and is worth 80 points. The second part covers material from the entire class and is worth 100 points. The exam format is the same as that described for the first exam.

Semester Paper.

The objective of the semester paper is to utilize knowledge concerning trees, insects, fungi, principals of disease, and principals of integrated pest management to develop a Tree Health Management Plan for improving and maintaining the health of a forest. You will develop the plan through four assignments over the course of the semester by following the Semester Paper Schedule given below.

COURSE GRADING.

Class Activities	17%
Semester Paper	33%
Exam 1	17%
Final Exam	33%
Total	100%

CLASS SCHEDULE

Semester	Introduce Semester Paper; review available literature; begin literature search
Week 6	
Week 7	White Pine Health Management Plant (HMP): Blister Rust, Weevil, Decline
Week 8	American Chestnut HMP: Blight; American Elm HMP: Dutch Elm Disease, Elm Yellows
Week 9	Spruce/fir HMP: Spruce Budworm, Spruce Beetle, Decay, Balsam Woolly Adelgid
Week 10	White Oak HMP: Gypsy Moth; Armillaria Root Disease; American Beech HMP: Beech Bark Disease
Week 11	Douglas Fir HMP: Dwarf Mistletoe, Phellinus Root Disease; Loblolly Pine HMP: Fusiform Rust, Southern Pine Beetle
Week 12	Eastern Hemlock HMP: Woolly Adelgid; Drought Stress; White Ash HMP: Emerald Ash Borer; Ash Yellows
Week 13	Pacific Oaks HMP: Sudden Oak Death
Week 14	Review

Semester Paper Schedule and Grade Weight

Semester Week 7	Semester Paper Topics & References (5%)
Week 9	Semester Paper Information on Tree Biology and Pests (Stresses) (25%)
Week 11	Semester Paper Draft #1 (30%)
Week 14	Semester Paper Draft #2 (40%)

COMPLETION OF WORK

To earn credit for this class, all work must be completed. Also, any assignment turned in late will lose 10% of the grade value for each day late unless lateness is due to an excused absence.

DISABILITY NOTICE

If you have a disability for which you may be requesting an accommodation, please contact Ann Smith, Director of Disabilities Services, 121 East Annex, 581-2319, as early as possible in the term.

STUDENT BEHAVIOR

Every student in the class is expected to be familiar with the University's Student Conduct Code (<http://www.umaine.edu/handbook/>) part of which states, "It is expected that students will conduct their affairs with proper regard for the rights of others and of the University. All members of the University community share a responsibility for maintaining an environment

where actions are guided by mutual respect, integrity, and reason." If the instructor believes that a student's behavior is violating this code or other codes in the Handbook, the instructor has the option to ask that the behavior cease and will seek advice from the appropriate office on campus on how to deal with the student's behavior.

ACADEMIC INTEGRITY

Academic dishonesty includes cheating, plagiarism and all forms of misrepresentation in academic work, and is unacceptable at The University of Maine. As stated in the University of Maine's Student Conduct Code, plagiarism (the submission of another's work without appropriate attribution) and cheating are violations of the code. An instructor who has probable cause or reason to believe a student has cheated may act upon such evidence, and should report the case to the supervising faculty member or the Department Chair for appropriate action.

If you have questions about this policy or want examples on what is acceptable and unacceptable behavior, please speak with the instructor.

Semester Paper
FES 457/557 - Tree Pests and Disease
Spring 2008

I. Objective.

Write a Health Management Plan that completely describes two disease complexes affecting a tree species and how they should be managed. .

II. Due dates:

Semester Week 7	Semester Paper Topics & References (5%)
Week 9	Semester Paper Information on Tree Biology and Pests (Stresses) (25%)
Week 11	Semester Paper Draft #1 (30%)
Week 14	Semester Paper Draft #2 (40%)

III. Procedure.

- A. Each student will choose a set of pests (stresses) for a single tree species. The type of stand management (natural or plantation) will be designated by the student in the paper.
- B. You can work in groups for researching and discussing the background material. However, each student must write his or her own paper.
- C. What to include in the paper (use the headings in bold in your paper).

1. **Introduction:**

- a) State the economic and/or ecological importance of the tree species.
- b) Indicate what are some of the problems, economic or biological, for the tree species and why. This is when you can mention:
 - (i) The disease complexes that will be the focus of the paper.
 - (ii) The need for developing a health management plan.

2. **Management Objective:** statement on expectation for forests.

3. **Tree species adaptations.**

4. **Disease Complex information:** (complete for each complex)

- a) Fungus or abiotic stress complex.
- b) Insect complex.

5. **Health Management Plan:** Integrated approach for managing the tree species in order to minimize the damage/disease caused by both pests (stresses).

- a) Discuss available options.
 - (i) Pre-emptive strategies.
 - (ii) Monitor and survey.

- (iii) Reactive strategies.
 - (iv) Feasibility.
- b) Provide rationale for what you recommend.
6. **Conclusion:** Summarize the important points of the paper.
7. **References:**
- a) You will need to use **published** references to find the information that you need.
 - b) Web references are **not** acceptable. Use the library!
 - c) Any information that is taken from these references will have to be cited in the text at the place where it is used. **Do this by placing the last name(s) of the authors with the date that it was published.**
Examples:
 - (i) (Manion 1991).
 - (ii) (Blanchard and Tatter 1981).
 - (iii) (Johnson and others 1992).
 - (iv) Use "and others" if more than two authors.
 - d) For minimum information on trees, check the "Silvics of North American Trees" which is on reserve in the library. A copy of the manual can be viewed on the internet at http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm
 - e) **Additional references should also be used.**
 - f) For pests (stresses), use the computer data bases (AGRICOLA, Forestry Abstracts) in the library. Also, you can ask the instructors for information that they may have. Because more than one student may need to use the same reference, please do not check references out of the library. If you are having difficulty in finding a reference, please see one of the instructors.
 - g) Reference list: List the authors, year of publication, title, journal or publisher name, and pages used for each reference that you used. Some examples:
 - (i) Government Publication:
Wright, J.W., and H.M. Rauscher. 1990. Black ash. pp. 344-347 in R.S. Burns and B.H. Honkala (eds). Silvics of North America, Vol. 2, Hardwoods. USDA, For. Serv., Agric. Handb. 654.
(Authors, year of publication, Title, source - be sure to include publication type.)
 - (ii) Book:
Manion, P.D. 1991. Tree Disease Concepts. Prentice-Hall, Inc., Englewood Cliffs, NJ. 402 pp.
(Author, year of publication, title, source, # of pages.)
 - (iii) Journal article:
Livingston, W.H. 1990. *Armillaria ostoyae* in young spruce plantations. Can. J. For. Res. 20:1773-1778.

(Author, year of publication, title, journal vol #:pages.)

h) The reference list should be attached as the last page(s) to your report.

D. Assignments: All assignments should be typed, double spaced.

1. **Due Week 7.**

- a) List of references for the tree, fungal or abiotic stress, and insect.
- b) For a “C” grade, include 2-3 references for the tree (1 can be the “Silvics” chapter), and 4-5 each for the fungus (or abiotic stress) and insect.

2. **Due Week 9**

- a) Write the information from the references (use citations!) that can be used in the final report.
- b) Write your introduction and management objective
- c) Provide information on the disease complex involving a fungal pathogen (or abiotic stress).
- d) Write the disease complex information needed for the insect.

3. **Due Week 11.**

- a) Complete a first draft of the paper.
- b) Revise the introduction, objective, and pest descriptions as needed.
- c) Write the information needed for your Health Management Plan
 - (i) Preemptive control.
 - (ii) Monitor and survey.
 - (iii) Reactive control.
 - (iv) Provide rationale for what you recommend.
- d) Write your conclusions (summary).
- e) Include a list of cited references.

4. **Due Week 14**

- a) Revise the first draft as needed.
- b) Reports will be graded on a percent scale (0-100).

IV. Semester Paper: Tree/Pest (Stress) Topics

Choose one of the following topics for your paper. If you want to work on a different topic, please see one of the instructors.

- A. Sugar Maple (*Acer saccharum*) Management (Sugar Bush).**
 - 1. Saddled prominent (*Heterocampa guttivitta*).
 - 2. Tapping wounds or sap streak (*Ceratocystis coerulea*).
- B. Black spruce (*Picea mariana*) plantations.**
 - 1. Yellowheaded spruce sawfly (*Pikonema alaskensis*).
 - 2. *Armillaria ostoyae* root disease.
- C. Trembling aspen (*Populus tremuloides*)**
 - 1. Forest tent caterpillar (*Malacosoma disstria*).
 - 2. *Hypoxylon mamatum* canker.
- D. Balsam fir Christmas tree plantations.**
 - 1. Twig aphid (*Mindarus abietinus*) or spider mites (*Oligonychus ununguis*).
 - 2. Fir-broom rust (*Melampsorella caryophyllacearum*).
- E. Douglas-fir plantation in Pacific Northwest.**
 - 1. Douglas-fir tussock moth (*Orgyia pseudotsugata*).
 - 2. *Phellinus* root disease (*Phellinus weirrii*).
- F. Coastal spruce (red and white).**
 - 1. Spruce bark beetle (*Dendroctonus rufipennis*)
 - 2. Eastern dwarf mistletoe (*Arceuthobium pusillum*)
- G. Red pine plantations.**
 - 1. Saratogo spittlebug (*Aphrophora saratogensis*)
 - 2. Scleroderris canker (*Ascocalyx abietina* = *Gremmeniella abietina*)
- H. Other?**

Grading Table for FES 457/557 Semester Paper

Name: _____

	Poor	Average	Good	Score
Content (66 pt)	XXX	XXX	XXX	
Introduction: Introduces topic; focuses on obj				XXX
Management Objective: Clearly stated				XXX
Tree Adaptations	XXX	XXX	XXX	XXX
Description				XXX
Relevance to disease complexes				XXX
Fungal Disease Complex	XXX	XXX	XXX	XXX
Symptoms, signs, environment				XXX
Predisposing (life cycle), inciting, contr.				XXX
Control options				XXX
Insect Disease Complex	XXX	XXX	XXX	XXX
Symptoms, signs, environment				XXX
Predisposing (life cycle), inciting, contr.				XXX
Control options				XXX
HMP Recommendations	XXX	XXX	XXX	XXX
Pre-emptive				XXX
Monitoring-survey				XXX
Reactive				XXX
Feasibility and Rationale				XXX
Conclusion (emphasizes main points)				XXX
References (Number, quality, how cited)				XXX
Style (33 pt)	XXX	XXX	XXX	
Organized well – logical flow of ideas. paragraph objective, relationship between paragraphs				XXX
Proper grammar & spelling: Use of words, punctuation, sentence structure, spelling				XXX
TOTAL SCORE	XXX	XXX	XXX	