

## **BSPM 365 - INTEGRATED TREE HEALTH MANAGEMENT**

4 credits-----3 lectures/week-----1- 3-hour lab/week-----Prerequisite: One class in basic Biology

**Instructors:** Jane Stewart, Bioagricultural Sci. and Pest Man., C247 Plant Science, 491-8770  
jane.stewart@colostate.edu

### **COURSE OBJECTIVES: Students will:**

1. Know and understand the impact and nature of the change or disturbance to forest ecosystems and forest products caused by insects and diseases.
2. Be able to diagnose the major insect and diseases affecting forest ecosystems of North America.
3. Know and understand the factors affecting the development of diseases and insects in forest ecosystems, the interaction of insect and diseases with each other and with other components of the ecosystem, and the relation of this information to the selection of economically and biologically feasible management strategies and tactics.
4. Be able to present written and oral management solutions for insect and diseases

**Cheating and Plagiarism:** We will follow CSU's policies on cheating and plagiarism. If you have not looked at them please do so. The honor pledge: I have not given, received or used any unauthorized assistance.

**Lectures:** Monday, Wednesday, Friday - 8:00- 8:50 a.m., Room C359 Clark

**Laboratory:** Section 1 - Tuesday - 10:00 am - 1:00 p.m., E-009 Plant Science  
Section 2 - Thursday – 2:00 pm – 4:50 p.m., E- 009 Plant Science

**Text: Required:**

1. BSPM 365, Integrated Tree Health Management Laboratory, University Text- Includes lecture notes- available in CSU Bookstore.
2. Insects and Diseases of Woody Plants of the Central Rockies, Colorado State University, Extension Publication 506a, available at the Cooperative Extension Resource Center, General Services Bldg.

#### **Highly Recommended:**

1. Manion, P.D. 1990, Tree Disease Concepts, Prentice-Hall.
2. Coulson and Witter 1984, Forest Entomology, John Wiley and sons
3. Sinclair, W.A., et al. 2005, Diseases of Trees and Shrubs Second Edition, Cornell Univ. Press.
4. Johnson and Lyon 1988, Insects that Feed on Trees and Shrubs, Cornell University Press
5. Tainter and Baker 1996, Principles of Forest Pathology, Wiley and Sons, INC
6. Edmonds, Agee, and Gara. 2000. Forest Health and Protection. McGraw-Hill, 630 pp
7. Barbosa, P. and Wagner, M. R. 1989. Introduction to forest and shade tree insects. Academic Press, INC.
8. Ciesla, W. M. 2011 Forest Entomology, a Global Perspective 400 pp.

## Course Grading and Requirements:

Lecture exams (2)	200
Final Exam (1)	150
Disease and Insect Factsheets (2@50)	100
Insect and Disease Collection (6@10)	60
Laboratory quizzes (12 of 13 @ 15)	180
Inoculation experiment lab report	25
Lab mastery (checkout) (13@ 5)	65
Campus walk (10) Microscope (5)	15
Field trip report	30
Oral Report on Fact sheet (disease or insect)	25
Lecture Group problems	20-30
<b>Total</b>	<b>870+pts</b>

Grades will follow the plus/minus system. The following percentage ranges will be used.

<i>Grade</i>	<i>Course Credit</i>	<i>Numerical Equivalent</i>	<i>Indicates</i>
<b>A +</b>	4.0	95-100	
<b>A</b>	4.0	90-94.9	<i>Excellent</i>
<b>B+</b>	3.3	85-89.9	
<b>B</b>	3.0	80-84.9	<i>Above Average</i>
<b>C+</b>	2.3	75-79.9	
<b>C</b>	2.0	70-74.9	<i>Average</i>
<b>D</b>	1.0	60-69.9	<i>Below Average</i>
<b>F</b>	0	0-59.9	<i>Failure</i>

1. We will have two lecture exams and one final that covers the last third of the class (70%) plus comprehensive questions (30%).
2. Two management guides- one for each of two tree health situations, that you found for your insect and disease collection, is due in October- see schedule for due date.
3. An insect and disease collection consisting of 6 items is required in September- see schedule for due date.
4. There will be 13 laboratory quizzes covering the previous lab(s) contents. The lowest quiz grade will be dropped. At least 25% of the quiz material will be "practical" or sight identification.
5. A required all day field trip to the Poudre Canyon and Pingree Park, 7:30 to 4:30 on Saturday. See schedule for date. Good notes are due at end of field trip- quizzes and hour exams will cover this material. If you cannot attend the field trip you will need to provide an additional 3 insect and 3 disease specimens for your collection.

**BSPM 365 - INTEGRATED TREE HEALTH MANAGEMENT**  
**Fall 2017 Schedule**

**DATE**

**TOPIC**

Introduction and Organization & Insects and Disease Basics  
Abiotic, Insect and Disease Basics  
Plant Defense, Management Techniques, History  
Lab 1 - Campus and Clinic tour, Collection Instruction, Management Report, and  
Microscopes, Information Sources

Abiotic Diseases I  
Abiotic Diseases II  
Air Pollution & Climate Change  
Lab 2 - Symptoms & Signs, collections, Mycology I - **Inoculation experiment**

**No Class, University Holiday**

Fungi and disease cycles  
Rusts  
Lab 3 - Mycology I - **Quiz 1 –Library Class room 175 at 12:00 sec 1 or 4 pm sec 2**

Rusts and Cankers  
Cankers  
Mycorrhizae and Root Diseases  
Lab 4 - Mycology II - **Quiz 2**  
**Management Report Outline Due Sept 15**

Decay Type Root Diseases  
Decay in living trees  
Decay recognition – **Review for exam**  
Lab 5 - Rusts and Cankers **Quiz 3**

Foliar Diseases  
Vascular Wilts  
**EXAM 1**  
Lab 6 - Root Diseases and Myccorhizae, **Quiz 4**  
**Saturday Field Trip 7:30-4:30**

Bacterial, Viral and Phytoplasm Diseases  
Entomologists and Pathologists do what? Research Methods  
No class  
Lab 7 - Decay, Stains and Hazard trees - **Quiz 5**

Nursery Pest Management and Pesticide Types and Management  
Principles of Insects I  
Principles of Insects II  
Lab 8 d Foliage, Viral, Bacterial, and Pesticide Safety d **Quiz 6**  
**Collection due in Lab by 4 pm Friday- Oct 13<sup>th</sup>**

Sucking Insects I  
Sucking Insects II  
Cone and seed insects  
Lab 9 - Insect Classification - **Quiz 7**

Bud and Shoot Insects  
Beneficial Insects and Biocontrol Agents  
Gall formers – **Exam Review**  
Lab 10 d Sucking, Cone, Seed, Bud and Shoot Insects d **Quiz 8**  
**Factsheet “Editing Draft” due Friday Oct 27 to Stewart and peer editors**

Defoliators I  
Defoliators II  
**Exam II**  
Lab 11 - Defoliators, Gall Formers and Beneficial Insects - **Quiz 9**

Bark Beetles I  
Bark Beetles II  
Wood Borers  
Lab 12 - Bark Beetles and Vascular Wilts - **Quiz 10**

Animal Damage  
Nematode Diseases  
Tree Declines  
Lab 13 - Wood Borers and Animal Damages - **Quiz 11**

### **Fall Break**

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Parasitic Plants  
Diseases and Insects as Ecotype Shapers  
Impact Assessment Methods, Monitoring and Models  
Lab 14 d Parasitic Plants and Nematodes (**Quiz 12 E Diagnostic/Practical Exam**)  
**Electronic versions of Factsheet, Friday Dec 1<sup>th</sup>**

Microbial communities associated with disease  
Molecular tools in Forest Health  
"Real Live tree health issues"  
**Oral Reports on Fact Sheets - Quiz 13 (covers lab 13 and 14)**

