

# PLANT SCIENCE 408

## TURFGRASS PEST SCIENCE (4 cr.)

Biology, ecology, etiology, and management of turfgrass pests including pathogens, insects, nematodes, vertebrates, and weeds

- Instructors:** **Bruce Clarke**, Rm 338 Foran Hall;  
2-9400 ext. 337; [clarke@aesop.rutgers.edu](mailto:clarke@aesop.rutgers.edu)
- Albrecht Koppenhöfer**, Rm 219 Blake Hall;  
2-9342; [koppenhofer@aesop.rutgers.edu](mailto:koppenhofer@aesop.rutgers.edu)
- Office Hours:** By appointment; Unannounced visits are subject to our availability
- Class:** Foran Hall II, Rm 194  
Lectures: Tuesdays & Fridays 9:15 -10:35 AM.  
Labs: Wednesdays 9:15 AM -12:15 PM.
- Quizzes:** Six quizzes will be given.
- Lab:** Students are required to hand in their work at the end of each lab period. Lab grades (10% of total grade) are subjective assessments of how well the student demonstrates a grasp of the assignment.
- Term Paper:** Topics may be selected from the list provided below. Graduate students must select topics from outside their major. A detailed outline of your paper is due **28 March**. Papers are due **24 April**; late papers will be penalized one grade per day.
- All term papers must also be submitted on a disk saved as a MS Word file for subsequent analysis with plagiarism software

**Suggested Term Paper Topics (alternative topics may be selected but must be approved by the instructors):**

- ❖ Status and key constraints for developing IPM programs for turfgrass.
- ❖ Management implications of white grubs in low vs. high maintenance turf.
- ❖ Attitudes and actions of golf course superintendents versus homeowners in managing turf pests.
- ❖ Regulatory issues impacting management of avian pests of turf.
- ❖ Short and long-term impacts on turfgrass management of the Food Quality Protection Act of 1996.
- ❖ Strategies for preventing fungicide resistance in turfgrass management.
- ❖ Impact of greens construction on pest control.
- ❖ Earthworms and golf course management: friend or foe?
- ❖ Influence of the new bentgrasses on disease management and fungicide usage on golf courses.
- ❖ Implications of current management practices on the occurrence and severity of stress-related diseases of turf.

**Excellent Term Papers:**

- ❖ Strive for depth, not breadth -- select your topic with great care.
- ❖ Do not rely solely on the internet for information. Utilize "in depth" papers from scientific and trade journals to fully cover the topic.
- ❖ Demonstrate that you have thought about and gained a clear, thorough, accurate perspective on your topic.
- ❖ Do not contain errors in grammar, punctuation, syntax, or spelling.
- ❖ Receive feedback from others followed by revision -- feedback helps identify those parts that work and those that don't.
- ❖ Anticipate a reader's questions and addresses them.
- ❖ Show command of the relevant literature by recognizing the contributions of others with properly formatted citations.
- ❖ Tend to be organized logically, with good transitions between sections.
- ❖ Contain a summary at the end that restates the conclusions.
- ❖ Treat the facts and ideas objectively, noting strengths and weaknesses of the literature cited.
- ❖ Offer a synthesis rather than merely a presentation of the facts, providing future a direction and perspective.

# SYLLABUS

## LECTURE OUTLINE -- SPRING, 2009

<u>DATE</u>	<u>LECTURE OR LABORATORY TOPIC</u>	<u>INSTRUCTOR</u>
<b><u>January</u></b>		
16 Tue	Intro to Turfgrasses: Value, Benefits, Anatomy, Physiology	Hurley
17 Wed	<b>LAB:</b> Turfgrass ID / Resistant Grasses	Meyer/Bokmeyer
19 Fri	Integrated Pest Management	Koppenhöfer
23 Tue	Tactics I	Koppenhöfer
24 Wed	<b>LAB:</b> IPM & Chemical Pesticide Fundamentals	Koppenhöfer
26 Fri	Tactics II	Koppenhöfer
30 Tue	Fundamentals of Entomology	Koppenhöfer
31 Wed	<b>LAB:</b> Insect Basics [Quiz #1]	Koppenhöfer
<b><u>February</u></b>		
2 Fri	Leaf & Stem Chewing Pests I	Koppenhöfer
6 Tue	Leaf & Stem Chewing Pests II / Sucking Pests	Koppenhöfer
7 Wed	<b>LAB:</b> Insect Diagnostics	Koppenhöfer
9 Fri	Root-Infesting Pests I	Koppenhöfer
13 Tue	Weed Management in Cool-Season Turf	Hart
14 Wed	<b>LAB:</b> Case Studies in Turfgrass Entomology	Koppenhöfer
16 Fri	Root-Infesting Pests II	Koppenhöfer
20 Tue	Fundamentals of Nematology	Koppenhöfer
21 Wed	<b>LAB:</b> Biocontrol & Nematode Methodology [QUIZ #2]	Koppenhöfer
23 Fri	Biology of Turf Nematodes I	Koppenhöfer
27 Tue	Stem/crown burrowing insects	McGraw
28 Wed	<b>LAB:</b> Nematode Diagnostics	Koppenhöfer
<b><u>March</u></b>		
2 Fri	Biology of Turf Nematodes II	Koppenhöfer
6 Tue	Innocuous / Annoying Invertebrates & Vertebrate Varmints	Koppenhöfer
7 Wed	<b>NO LAB</b> (In class review for exam)	----
9 Fri	<b>MID-TERM EXAM</b>	----
13 Tue	SPRING BREAK!	----
14 Wed	SPRING BREAK!	----
16 Fri	SPRING BREAK!	----
20 Tue	Fundamentals of Plant Pathology & Disease Management	Clarke

21 Wed	<b>LAB:</b> Disease Diagnostics]	Clarke
23 Fri	Fungicide Resistance Management Strategies	Clarke
27 Tue	Cool Weather Diseases I	Clarke
28 Wed	<b>LAB:</b> Microscope ID of Turf Pathogens I (Outlines Due)	Clarke
30 Fri	Cool Weather Diseases II	Clarke

### **April**

3 Tue	Foliar Diseases: Ascomycota I [Quiz #3]	Clarke
4 Wed	<b>LAB:</b> Microscopic ID of Turf Pathogens II	Clarke
6 Fri	Root Diseases: Ascomycota II	Clarke
10 Tue	Root Diseases: Ascomycota III	Clarke
11 Wed	<b>LAB:</b> Case Studies in Turfgrass Pathology I	Clarke
13 Fri	Foliar Diseases: Basidiomycota [Quiz #4]	Clarke
17 Tue	Foliar Diseases: Deuteromycota	Clarke
18 Wed	<b>LAB:</b> Case Studies in Turfgrass Pathology II	Clarke
20 Fri	Foliar and Root Diseases: Oomycota and Protists	Clarke
24 Tue	Biological Control of Turfgrass Diseases and Non-Target Effects of Pesticides [Paper Due]	Clarke
25 Wed	<b>LAB:</b> Field Trip & Review	<i>Clarke/ Koppenhöfer</i>
27 Fri	Impact of Cultural Practices on Turf Diseases [QUIZ #5]	Clarke

### **May**

1 Tue	In class review for exam (optional)	Clarke
7 Mon	<b>FINAL EXAM (8:00 – 11:00 AM)</b>	----

### **Grading:**

Mid-Term Exam - 25%  
 Term paper - 15%  
 Quizzes - 25%  
 Lab - 10%  
 Final Exam (not comprehensive) - 25%

***Borderline final grades are heavily influenced  
 by student attendance and participation***