For each section, view the course material on CD-rom or WWW.

1. Introduction

2. Overview

Part I. Background to Insect Pest and Vector Management

3. Pests and humans (Reading Assignment: Text, Chapter 1 and Supplementary Readings 1, 2, 3)
   Direct pests, and vectors of plant and animal diseases
   Pest status: major, minor, occasional, migrant, potential
   Human practices and the occurrence of pests
   Not all arthropods are pests: some benefits

4. The causes of pest and vectored disease outbreaks (Reading Assignment: Text, Chapter 2 and Supplementary Reading 11)
   Population biology
   Factors affecting abundance
   Density dependence and independence
   How people cause outbreaks

5. Sampling and monitoring arthropods (Reading Assignment: Supplementary Reading 5)
   Methods of sampling and monitoring
   Components of a sampling plan
   Types of sampling plans
   Allocation of sampling units

Part II. Approaches to Insect Pest and Vector Management

6. Insecticides (Reading Assignment: Text, Chapter 3 and Supplementary Reading 18)
   Background
Issues affecting introduction of new products
Types of insecticides
Formulation
The pesticide label
Toxicity and safety

7. Application of insecticides (Reading Assignment: Text, Chapter 4 and Supplementary Readings 7, 14)
   Targets
   Droplet size
   Application equipment
   Rational application

8. Problems associated with using insecticides (Reading Assignment: Text, Chapter 5 and Supplementary Readings 8, 10)
   Toxicity to humans and wildlife
   Resistance
   Insecticides and disease transmission

9. Environmental and cultural control (Reading Assignment: Text, Chapter 6 and Supplementary Reading 4)
   Mechanical techniques
   Irrigation
   Fertilizer
   Sanitation
   Alternate hosts
   Multiple and intercropping
   Separation in time and space
   Crop geometry

10. Biological control (Reading Assignment: Text, Chapter 7 and Supplementary Readings 23, 25, 27)
   Successes of biocontrol
   Types of biocontrol agents
   Predators
   Parasitoids
   Nematodes
   Techniques of biocontrol
   Inoculation
   Inundation
   Conservation
   Reasons for failure of biocontrol

11. Insect pathogens (Reading Assignment: Text, Chapter 8 and Supplementary Reading 15)
Advantages and disadvantages
Types of pathogens: fungi, viruses, bacteria, microsporidia
Transmission of pathogens

12. **Genetic control and area-wide management** (Reading Assignment: Text, Chapter 9 and “community participation” from Chapter 12, plus Supplementary Reading 6, 12, 13)
Sterile insect technique
Eradication
Other genetic approaches
Area-wide management

13. **Pheromones** (Reading Assignment: Text, Chapter 10 and Supplementary Reading 17, 19)
Pheromones/allelochemicals
Monitoring
Attract-and-kill
Mating disruption/confusion
Alarm pheromones and oviposition deterrents

14. **Host resistance** (Reading Assignment: Text, Chapter 11 and Supplementary Reading 21, 22, 29)
Basis for resistance
Mechanisms of resistance
Compensation
Induced resistance
Problems of using resistance
Repellents

15. **Physical measures** (Reading Assignment: Text, Chapter 12 [except legislative section] and Supplementary Reading 20)
Exclusion and barriers
Traps
Physical disturbance
Sound
Lethal temperature
Controlled atmosphere
Dusts and particulates
Irradiation

16. **Legislation and regulation** (Reading Assignment: Text, Chapter 12 [legislative section] and Supplementary Reading 24)
Exclusion and routes of entry
Risk assessment
Pesticide legislation
Effects of regulation
Genetically modified organisms

17. **Emerging concepts and practices** (Reading Assignment: Text, Chapter 13 and Supplementary Readings 9, 16, 26, 27, 28, 30)
   - The integrated control/ IPM concept
   - Damage thresholds
   - Forecasting
   - Increasing agroecosystem resistance
   - Pesticide selectivity
   - Eradication versus control
   - What limits IPM adoption
   - Decision support
   - Managing desert locusts: a case study

**Course Description**

The principles and practices used in pest management, emphasizing arthropod pests affecting crop and ornamental plants, humans and livestock.

**Prerequisite**

An introductory course in entomology.

**Course Goals and Objectives**

All the class material can be found on WWW at:

[http://entomology.ifas.ufl.edu/capinera/eny5236/pest1/](http://entomology.ifas.ufl.edu/capinera/eny5236/pest1/)

and

[http://entomology.ifas.ufl.edu/capinera/eny5236/pest2/](http://entomology.ifas.ufl.edu/capinera/eny5236/pest2/)

If you read the syllabus closely it should be self-explanatory. Email me if you do not understand something, however. **Do not look for this course on the Sakai course site; it is not found there.**

The course also exists on CD-roms. Because the entire course wouldn't all fit on one CD, I divided the material into two units (chapters 1-10, 11-17), and the WWW material is exactly the same as the CDs; hence, there are two separate WWW sites. The course consists of narrated Powerpoint presentations and some supplemental videos and readings. I recommend the textbook, and reading it will enhance your understanding, but it is not a requirement.
If you have WWW access you are ready to go. In the rare instance that you
you can’t access the course via WWW, I can provide CDs.

I suggest that you print out the Powerpoint notes and use them to make any
additional notes or comments/questions as you listen to the CD. If something is
not clear, do not hesitate to email me with questions.

There are 2 exams and a project for this course. **I can schedule the exams at
any time**, but you should plan on having one at about, or before, the mid-point
of the semester (covering sections 1-9) and another before the end (sections
10-17). Note that the distribution of the class material on the CDs does not
exactly reflect the exam content; exam 1 covers only sections 1-9.

**Deadlines and due-dates are given in the a ‘welcome to the course’ letter.**

You should indicate to me when you want to take the exam, and I will email
the questions to you. You should provide the answers to me within a week. The
project is due two weeks before the end of the semester.

Exams are open-book, and will be sent to you by email. You can use any
written materials to help you with the exams, but **you must work alone; do not
consult other people**. You can return the exams to me, as well as your
project, as an email attachment. Please return the exams within a week. **IT IS
IMPORTANT** that you acknowledge my emails, and I will acknowledge yours;
otherwise we will be uncertain of receipt of materials. The only way you can be
assured that your tests and project have been submitted successfully is to have
my acknowledgment.

As you complete your exams and project, keep in mind that because it is open-
book, and you are not time-limited, so I expect that spelling and grammar will
be correct.

**Grading for Course**

The course grade is based on performance on 2 exams and a project.
Each exam represents 40% and the paper 20%. The final grade will be
assigned as:
A=>93
A-=90-92.9
B+=87-89.9
B=83-86.9
B-=80-82.9
C+=77-79.9
C=73-76.9
Questions are provided in each of the lessons. They are based on the material presented on the CD and text readings, and the supplementary readings. They are designed to help you understand some of what is important for you to know. However, this course is not simply a memorization activity, I expect you to analyze/interpret the information and to answer my test questions creatively. Because you are not under a time constraint (you have a week to complete the exam,

Grade point equivalencies for grades are found at:
http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html

**Project requirement**

This requirement is to prepare a 5-10 page analysis of one type of pest management technique. You can choose any technique in which you have an interest, so long as it is not too narrow. You should explain how it works, where it is applied, and its advantages and disadvantages. Cite references using standard journal citation format (consult and scientific paper such as the supplemental reading contained herein for examples). Remember, you have electronic access to journals and books in the UF library, so there should be journal and/or review (book) article citations, not simply 'grey' literature from the WWW.

Examples might be topics such as:
- Predatory fish for mosquito suppression
- Animal dung destruction by beetles for suppression of biting flies
- Nematodes for suppression of below-ground insect pests
- Hormone analogs for selective control of insects
- The use of *Bacillus thuringiensis* for insect control
- Molecular manipulation of toxins for enhanced plant resistance.
- Fire as an insect management tool
- Water management for insect control
- Pheromones for fruit pest management
- Augmentative release of beneficial insects in greenhouses.
- The safety of insecticides freely available to the public.

Check with me about your paper topic BEFORE you start, please.

This report can be submitted in either electronic or hard copy form, and must be received by the instructor before the end of the semester (see the
welcome to the course letter for specific date). Late submissions automatically will receive one lower letter grade.

Textbook/Readings


Other readings as assigned (see supplemental reading list).

List of supplemental readings (Note: Required reading)

These readings are on your CD. You should print and read them.


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**Academic Honesty, Software Use, Services for Students with Disabilities, UF Counseling Services**

**Academic Honesty:**

The University requires all members of its community to be honest in all endeavors. Cheating, plagiarism, and other acts diminish the process of learning. When students enroll at UF they commit themselves to honesty and integrity. Your instructor fully expects you to adhere to the academic honesty guidelines you signed when you were admitted to UF.
Plagiarism is the use of ideas or writings produced by someone else. You should not use the writings of another person, including material from the internet WWW, without putting the ideas in your own words, or placing the copied material in quotes and attributing authorship. In the scientific literature, quotations are rarely used. You should use your own words for answering questions on exams, and in your class project.

As a result of completing the registration form at the University of Florida, every student has signed the following statement:

“I understand the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University. Furthermore, on work submitted for credit by UF students, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

It is to be assumed that all work will be completed independently unless the assignment is defined as a group project, in writing by the professor.

This policy will be vigorously upheld at all times in this course.

Software Use:

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator.

Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university’s counseling resources. These are confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- University Counseling and Wellness Center, 3192 Radio Road, 392-1575, [www.counseling.ufl.edu/cwc](http://www.counseling.ufl.edu/cwc)
Alcohol and Substance Abuse Program (ASAP)

Attention Deficit Hyperactivity Disorder (ADHD)

Center for Sexual Assault / Abuse Recovery & Education (CARE)

Eating Disorders Program

Employee Assistance Program

Suicide Prevention Program

- Career Resource Center, CR-100 JWRU, 392-1601 ext: 0, www.crc.ufl.edu/

- Student Complaints http://www.distance.ufl.edu/student-complaints

- E-learning help desk http://helpdesk.ufl.edu/

Students With Disabilities Act:

The Dean of Students Office coordinates the needed accommodations of students with disabilities. This includes the registration of disabilities, academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services, and mediating faculty-student disability related issues.

- Disability Resource Center http://www.dso.ufl.edu/drc/

- Dean of Students Office, 202 Peabody Hall, 392-7066, www.dso.ufl.edu