FUNDAMENTALS OF PLANT-PEST MANAGEMENT
IPM 3022
SPRING 2021
Credits: 3

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IMPORTANT INFORMATION:

- The course is comprised of 14 modules. Each module has 1-5 narrated PowerPoint presentations (PPTs) that are 5-30-minute lectures. All presentations and other course materials (except the textbook) and activities are available on UF e-Learning and managed using the Canvas online course system.
- The lecture presentations of each module should be viewed weekly in order to complete all exams and assignments in a timely fashion and participate in the discussions.
- **Office hours:** The student should always contact the instructor or the TAs by Canvas, and **always copy both in the message**. Meeting by zoom can be scheduled if the student needs to discuss a specific topic with the instructor or TA.
- **Communication:** The student **must turn on the notification system** in his/her Canvas in order to receive real time alerts about the course. The student should check the announcement section in Canvas, at least once a day to keep informed about the course.
- **Internet access** is a responsibility of the student. Problems related to access to the internet will not be considered an excuse for failing in exams/assignments, etc. Students having problems accessing Canvas must contact E-learning technical support, and the contact of the **UF computing Help Desk is: 352-392-4357/e-mail: helpdesk@ufl.edu**.
- Students requesting special accommodations should submit the accommodation letter to the instructor during the **first week of the course.**

DESCRIPTION OF THE COURSE: This course will examine the fundamental concepts, philosophies, strategies, and tactics to manage pest populations. Terms, history, and an overview of pest groups will be presented.
Ecological principles and the value of biodiversity in agroecosystems will be examined. Sampling strategies, decision-making criteria, management tactics, area-wide pest management, and insect resistance management will be discussed. Examples of specific cases of pest management in plant production systems will be presented. Videos and readings will provide more in-depth information for responding to questions on exams. Assignments will synthesize information in the lectures and assigned readings and review information available on the Internet. Discussion sessions will allow students to share opinions, perspectives, and experiences about specifics topics.

OVERALL LEARNING OBJECTIVES OF THE COURSE:

1. Recognize insect injuries in plant tissues caused by insects and associate with the life stage of the pest.
2. List and discuss the principles of insect ecology related with pest management.
2. List the historical events of pest control and the concept of Integrated Pest Management (IPM).
3. Define the concept of IPM and Insect Resistance Management (IRM) and list their components.
4. Analyze examples of area-wide pest management programs.
5. Criticize examples of IPM programs.
6. Discuss the application of strategies and tactics in pest management and list their limitations.
7. Formulate IPM tactic recommendations.

TEXTBOOK READING must be done during the same week as the associated module. This course is not entirely based on the textbook so the lectures and other materials provided in each module should be accessed. However, the textbook is an important education material, and the purpose of these readings is to provide supplemental and in-depth information on topics discussed in the module. Topics in the textbook chapters may appear as questions on the exams.
Make sure you use the 7th edition of the textbook:

Pedigo, L.P.; Rice, M.E. Rayda K. Krell, 2021. Entomology and Pest Management, 7th edition, 584 pages. Waveland Press, Inc.

STUDENT PERFORMANCE ASSESSMENT:

Course Orientation Quiz	40 points	4%
Introductory video	40 points	4%
Three discussions (50 points each)	150 points	15%
Four module exams (75 points each)	300 points	30%
Four assignments (80 points each)	320 points	32%
One final exam	150 points	15%
TOTAL	**1000 points**	**100%**

COURSE GRADING SCALE:

Final grade	Scale: percentage
A	**93-100**
A-	**90-92**
B+	**87-89**
B	**83-86**
B-	**80-82**
C+	**77-79**
C	**73-76**
C-	**70-72**
D	**67-69**
E	**<60**

Information on current UF grading policies for assigning grade points is at:
catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx.

CRITICAL DATES

Deadline	Activity	Points
January 10	Course Orientation Quiz	40 (4%of total)
January 10	Introductory video	40 (4%of total)
January 18	Assignment #3 – part one – Group submission	2 (0.2% of total)
January 24	Discussion #1	50 (5% of total)
January 31 to February 1	Exam 1 (Modules 1, 2, 3, and 4)	75 (7.5% of total)
February 14	Assignment #1	80 (8% of total)
February 21 to 22	Exam 2 (modules 5, 6, and 7)	75 (7.5% of total)
February 28	Assignment #2	80 (8% of total)
March 14	Discussion #2	50 (5% of total)
March 21 to 22	Exam 3 (modules 8, 9, and 10)	75 (7.5% of total)
March 21	Assignment #3 part two	78 (7.8% of total)
April 4	Discussion #3	50 (5% of total)
April 11	Assignment #4	80 (8% of total)
April 11 to 12	Exam 4 (modules 11, 12, and 13)	75 (7.5% of total)
April 25 to 26	Final exam	150 (15% of total)

COURSE SCHEDULE AND ACTIVITIES CHECKLIST

January 5-7:	
	View introductory video of the instructor and the TA
	Obtain textbook
	Read syllabus and take course orientation quiz before 11:59PM January 10
	Post an introductory video: before 11:59PM January 10
	View three PPTs of Module 1: Insect Ecology-Principles Related with Pest Management
Additional readings in textbook:	
Lecture A	Recognize the three general types of insect mouthparts - Chapter 2 - 34 to 39 Recognize at least four insect injuries in plant tissues - Chapter 7 - 236 to 239 Describe different life cycles of insects - Chapter 4- 144 to 148
Lecture B	Compare and contrast r and K survival strategies - Chapter 5 - 236 to 239 List causes of insect mortality - Chapter 5 – 167 to170 Define natural control - Chapter 5 – 183 to 186
January 10-14:	
	View four PPTs of Module 2: Introduction to Pest Management: Major Groups of Pests, Historical Events, and Concepts in Integrated Pest Management
Additional readings in textbook:	
Lecture A	Describe the concept of "pest" and identify the major groups of pests – Chapter 1 – 11 to 30
Lecture C	Recognize the significant events in pest management's history - Chapter 8 -254 to 258
	Know the key people involved in IPM and the pioneer publications to understand - Chapter 8 – 258 to 260
Lecture D	Define integrated pest management – IPM - Chapter 8 – 260 to 261
	Summarize the four strategies of pest management - Chapter 8 – 261 to 264
	List steps to be followed when developing an IPM program - Chapter 8 – 268 to 269
January 18-21:	
	View four PPTs of Module 3: Pests Surveillance and Sampling
	Textbook reading: Chapter 6 pgs. 213-215 and 239-240
	Finish watching student introduction videos, set and submit group for assignment #3

	Assignment #3 – part one – Group submission before 11:59PM January 18
Additional readings in textbook:	
Lecture A	Describe the objectives of sampling - Chapter 6 – 189 to 191
Lecture B	Define sampling unit and sampling universe - Chapter 6 – 191 to 192
	Define the two kinds of pest estimate (absolute and relative) - Chapter 6 – 211 to 212
Lecture C	Identify sampling patterns in field for pest sampling - Chapter 6 – 217 to 218
	List and describe at least five pest sampling techniques - Chapter 6 – 193 to 211
Lecture D	Define and apply pest sequential sampling - Chapter 6 – 221 to 22
January 24-28:	
	View two PPTs of Module 4: Making decisions: The Concepts of Economic Injury Levels and Economic Threshold
	Post Discussion #1 before 11:59PM January 24
Additional readings in textbook:	
Lecture A	Define the concept and the components of the Economic Injury Level - Chapter 7 – 227 to 231
Lecture B	Define Economic Damage - Chapter 7 – 231 to 232
	Define Nominal Threshold, Action Threshold, and Inaction Level - Chapter 7 – 250
	List the limitations of Economic Injury Levels and Economic Thresholds - Chapter 7 – 252 to 253
January 31-February 4 :	
	View three PPTs of Module 5: Regulatory Control
	Exam 1 (Modules 1, 2. 3 and 4) January 31-February 1
Additional readings in textbook:	
Lecture C	List the components of the eradication program of cotton boll weevil - Chapter 16 – 484 to 486
	List the components of the eradication program of pink bollworm - Chapter 16 –486 487
February 7-11:	
	View three PPTs of Module 6: Ecological Management of the Crop Environmental
Lecture A	Explain how using clean equipment and sanitation reduce pest infestation – Chapter 10 – 298, 299 to 305
	Define and describe how crop rotation manages a pest – Chapter 10 – 313 to 316
	Disrupting continuity of pest requisites by crop spacing , crop rotation, and crop rotation – Chapter 10 – 311 to 314
Lecture B	Diverting pest population away from the commodity – Chapter 10 – 317 to 320
February 14-18:	
	View one PPT of Module 7: Host Plant Resistance
	Assignment #1 before 11:59PM February 14
Additional readings in textbook:	
Lecture A	Define the 3 mechanisms of host plant resistance, using at least 1 example of each mechanism - Chapter 13 – 398 to 401
	Define and list the three types of host ecological resistance, also called apparent resistance or pseudo-resistance - Chapter 13 – 398 to 401
	List physical and biological factors that meditate the expression of host resistance - Chapter 13 – 405 to 407
	List cases of compatibility of host plant resistance with other pest management tactics - Chapter 13 – 419 to 420
February 21-25:	
	View the four PPTs of Module 8: Biological Control
	Exam 2 (Modules 5, 6, and 7) February 21-22
Additional readings in textbook:	

Lecture A	Differentiate Define natural control and applied biological control - Chapter 9 – 275 to 278
	Compare the four agents of biological control - Chapter 9 –278 to 284 and Chapter 12 – 380 to 385
Lecture B	Define classical, applied, and conservation biological control - Chapter 9 –284 to 291
February 28 - March 4:	
	View the two PPTs of Module 9: Behavioral Control
	View the two videos of biological control
	Assignment #2 is due 11:59PM February 28
March 7-11:	**Spring break**
March 14-18:	
	View the PPT of Module 10: Biopesticides
Additional readings in textbook:	
Lecture A	Define a biopesticide - Chapter 12 –379 to 385, including table 12
	Post Discussion #2 due before 11:59PM March 14
March 21-25:	
	View three PPTs of Module 11: Chemical Control with Conventional Insecticides
	Textbook reading: Chapters 11 pgs. 370-421 and 430-431; Chapter 17 pg. 602-605
	Exam 3 (Modules 8, 9, and 10) March 21-22
	Assignment #3 – part two due 11:59PM March 21
Additional readings in textbook:	
Lecture A	List and explain the three names used to designated insecticides - Chapter 11 –326 to 327
	List at least 5 pesticides classes and give one example of commercial name for each class - Chapter 11 –328 to 354
	Explain what a pesticide formulation is and list at least 5 kinds of insecticide formulations - Chapter 11 –356 to 358
Lecture B	List the two types of human poisoning response and define LD50 - Chapter 11 –361
	List and explain the three signal words found on all pesticide products - Chapter 11 –361 to 362
	Recognize the key information in pesticide label - Chapter 11 –365 to 367 and search labels in the chemical groups in “Cotton Pests in Florida App”
Lecture C	Recognize the main aspects to be considered in ground application of pesticides - video with Dr Barry Brecke, including the visualization of the parts of a sprayer
	List the types of clothing and Personal Protective Equipment (PPE) used to apply insecticides - Chapter 11 –375 to 377
March 28 – April 1:	
	View two PPTs of Module 12: Genetic Control
Additional readings in textbook:	
Lecture A	List 3 actual targets and 3 potential targets of the sterile insect technique - Chapter 15 –456 to 459
Lecture B	Define biotechnology and list examples of transgenic crops in agriculture - Chapter 12 – 385 to 386 and Chapter 13 –408 to 413
	List at least three advantages and three disadvantages of Bt crops - Chapter 13 –414 to 416
April 4-8:	
	View two PPTs of Module 13: Insect Resistance, Insect Resistance Management (IRM) in an IPM Framework
	Post Discussion #3 due before 11:59PM April 4
Additional readings in textbook:	
Lecture A	Define pest resistance to pesticides in general and the magnitude of the insecticide resistance problem - Chapter 17 –495 to 498
	List and define the three mechanisms of insect resistance to insecticides - Chapter 17 –498 to 499

	Define insect cross resistance to insecticides - Chapter 17 –499 to 501
	List at least 3 genetic, biological, and operational factors that influence rate of insect resistance development - Chapter 17 –506 to 508
Lecture B	Define and apply components of an IRM program when recommending an insecticide - Chapter 17 – 506 to 508
	Define insect cross resistance to insecticides - Chapter 17 –499 to 501
April 11-15:	
	View the PPT of Module 14: Development of an IPM program
	Exam 4 (Modules 11, 12, and 13) April 11-12
	Assignment #4 due before 11:59PM April 11
Additional readings in textbook:	
Lecture A	Contrast preventive vs therapeutic practices in pest management - Chapter 16 – 472 to 479
	List the sequence of the development of an IPM program - Chapter 16 –479 to 480
	Compare pest injury tolerance vs crop values in an IPM program - Chapter 16 –480 to 481
	List and discuss the approaches to integrate chemical and biological control tactics - Chapter 17 – 515 to 516
April 18 - 20:	
	Discussion #3 due before 11:59PM April 18
April 21 - 22:	
	Reading days
April 25-29:	
	Final Exam April 25-26

STUDENT PERFORMANCE ASSESSMENTS

COURSE ORIENTATION QUIZ

Watch the "Orientation" session on Canvas and read the syllabus completely. Then take a short quiz of 20 multiple choices and/or true/false questions (2 points each) **on or before the deadline**. You are allowed two attempts, and only your top score will be recorded.

INTRODUCTORY VIDEO

You will post an introduction of yourself and learn about your classmates. In your self-introduction, you **must** provide the following information:

1. Name
2. Major
3. Hometown
4. Describe any previous experience with pest management
5. Describe why you are in the course and career goals
6. Describe your workstyle when collaborating in group projects
7. Your hobby or what you like to do in your free time

Find in FILES and in **Introductory Video** (Discussion section) the steps to attach a video to a discussion thread. The **quality of the video** will be graded based on: **answer of the seven items previously listed; sound recording quality; good light (give preference to record outside); and image focus**.

This is an opportunity to get to know the students of the course and contact them by replaying their video post. **You must post your video on or before the deadline.**

MODULE EXAMS

These exams are taken on-line. Students may use notes, books, and the Internet as resources. However, because **the exams are time-limited (50 minutes),** students should prepare themselves for the exam beforehand rather than depend on finding information during the exam. Each exam could include true/false questions, multiple choice questions, fill-in questions, matching question, and short answer questions. There are four module exams, each worth 75 points (7.5%/exam in the final grade). For each module exam, the student is **allowed two attempts**, and the top score will be recorded. In the same way, for each student, the exam with the lowest score among the four modules exams will be discarded and not included in calculating the final course grade.

Each module exam is accessible from **Monday 8:00AM EST to Tuesday 11:59PM EST**. See critical dates and course schedule table for the exam dates.

FINAL EXAM

This exam is taken on-line. Students may use notes, books, and Internet as resources. However, because the exam is time-limited (**50 minutes**), students should prepare themselves for the exam beforehand rather than depend on finding information during the exam. The Final Exam covers all 14 modules and may consist of true/false questions, multiple-choice questions and short answer questions. The student is allowed two attempts, and the top score will be recorded. The Final Exam worth 150 points (15% in the final grade) and is open from **Monday April 25 8:00AM EST to Tuesday 26, 2022, 11:59PM EST**.

ASSIGNMENTS

The assignments #1, #2, #3 part one, and #4 are to be done individually, not as a group. The assignment #3 part two is to be done as a group. **Use of information gathered from Wikipedia is not allowed. Citation of Wikipedia will automatically result in a 0 on the assignment.** All assignments must be delivered via UF e-Learning by 11:59PM **EST** of the due date. An assignment delivered after the due date will be penalized 2 points for each calendar day it is late. **Grammar, neatness, formatting, and spelling will be considered in the evaluation of these assignments.**

ASSIGNMENT #1: Portfolio with plant injury caused by different insect mouthparts.

The learning objectives of this assignment are to be able to identify the three general types of insect mouthparts and recognize the most common injuries on plant tissues caused by different insect mouthparts.

For this assignment, you will prepare a photo-based portfolio with 8 photos of plant tissue injuries caused by insects.

The photos should display an identifying characteristic of the plant injury representing the following categories (according to Chapter 7 of the textbook): 1) defoliation; 2) sapper assimilation; 3) fruit feeding; and 4) Plant architecture modifier.

You will need to prepare 2 pictures for each insect plant injury category.

For each photo, you will provide the following information in the caption (an example is provided on Canvas):

a) Name of the plant injury category

b) Type of the insect mouthpart that causes the plant injury portrayed in the photo

c) Name of the insect Orders of pests that can cause the plant injury portrayed in the photo

d) Name of the insect life cycle stage (larva/nymph or adult) in each insect Order listed in "c)" that causes the plant injury portrayed in the photo.

Important rules:

1) It is recommended that you take your own photos as a good exercise to recognize different plant injuries and different mouthparts of insect pests in different systems. In case you are not able to do that, and you need to use

photo taken by others from the internet, you should observe copyrights when using them (always cite the source of the picture). The authorship of the photos needs to be recognized and cited.

2) photos with bad composition or bad focus will receive no credit. We need to be able to tell what it is, otherwise, it is not a good enough photo.

3) you can use photos of plant injury caused by immature insect pests.

4) illustrate the portfolio with appropriately sized images, figure number, and caption including the information previously indicated (see the example is provided on Canvas).

5) prepare your portfolio in power point, use Arial or Tahoma, font size 14 for title, font size 12 for your name, font size 12 for body, with uniform, pale background (see the example is provided on Canvas).

6) Name the file with your last name_assig1 and submit the PDF via Canvas.

An assignment delivered after the due date will be penalized 2 points for each calendar day it is late.

ASSIGNMENT #2: Extension poster for identifying and monitoring a pest

The learning objectives of this assignment are to appraise the importance of a correct pest identification; selection of different pest sampling techniques for pest population monitoring; and to be familiar with economic damage thresholds established for pests.

Research **one of the** plant pest species **listed** below and develop an extension poster using PowerPoint. A sample poster is on the Canvas site of the course. Address the following topics in the poster:

1) Identification, brief biology, host plants, injury, and economic impact caused by the pest.

2) Detailed sampling method(s) to monitor the pest and whether the sampling method(s) measures absolute density or relative abundance.

3) Other information besides pest numbers that should be monitored (*e.g.*, rainfall, plant stage, beneficial organisms) and how these factors are monitored. **DO NOT** mention control methods.

4) References cited. The information should be paraphrased (do not use quotations) and the literature source should be cited, following the Entomology of America Society guidelines at https://academic.oup.com/ee/pages/Manuscript_Preparation#References.

Use the poster template available on the UF e-Learning site (see Assignment #2 instructions). Illustrate the poster with appropriately sized images, graphs, and/or tables. When completed, convert the PowerPoint slide to a one-page PDF. EVERYTHING (including references) should fit comfortably on the one page.

Important rules:

1) use font Arial or Tahoma, font size 72 for title, font size 40 for your name, font size 32 or 36 for text;
2) use a uniform, pale background with dark letters in bold (no shadowing);
3) give each figure (image, graph, or table) a number (*e.g.*, Fig. 1, Table 2) and a brief caption, and cite each figure (as Fig. 1 or Table 2) in the text;
4) Cite the sources of all pictures;
5) Since it is an extension poster, make it attractive yet concisely informative to the extension client;
5) when completed, the one-page PowerPoint slide should be named with your **last name_assig2** and submitted via Canvas.

Pest species

Cabbage looper – *Trichoplusia ni*
Brown marmorated stink bug – *Halyomorpha halys*
Chilli thrips or yellow tea thrips - *Scirtothrips dorsalis*
American serpentine leafminer - *Liriomyza trifolii*
Cabbage aphid – *Brevicoryne brassicae*
Spotted cucumber beetle – *Diabrotica undecimpunctata*

Soybean looper – *Chrysodeixis includens*

An assignment delivered after the due date will be penalized 2 points for each calendar day it is late.

ASSIGNMENT #3: group project - commercial natural enemies and formulations available for pest biological control to manage insect pests - comparative analysis of six commercially available natural enemies/biopesticides.

The learning objective of this assignment is to be familiar and make decisions when adopting commercial natural enemies and formulations available to **management insect pests**. The project paper should be a synthesis (see table below) of information commercial natural enemies and formulations available to pest biological control, providing a comparative analysis of six commercially available natural enemies/pesticides.

Students will form teams of four members to collectively research, prepare, and present a table for each of the six agents of biological control listed below with the name of three companies on-line (including their website address) that sell commercial formulations of them (**Assignment #3 – part one**).

You will be able to get to know the students of the course by the Introduction Video and contact them by replaying their video post. **The team should have four students**. The list of the name of the students and the name of the group (the members should decide a group name) should be submitted to Canvas before or on the deadline. The name of the group will be used in the file when submitting the part two of the assignment #3. The four members of the team shall decide how to divide among themselves the six parts of the group project. Then, they will need to prepare a table for each of the six agents of biological control listed below with the name of three companies on-line (including their website address) that sell commercial formulations of them. The information should be combined in a table (see example of table below) (**Assignment #3 – part two**). The three companies do not need to be the same for all six agents of biological control.

For each commercial biological control agent, the group will need to list the products among the three companies (see example of a table below), including information about:
1) pricing.
2) target pests.
3) release/application recommendation and any availability of supporting information.
4) packaging (*e.g.*, stage shipped).
5) which company you would purchase the natural enemy from and briefly explain your choice.

The tables should be prepared and combined in a Word document, named with your groupname_assig3 and submit via Canvas.

The six agents of biological control are:

- *Trichogramma* spp.: There are several species, but all attack insect eggs; select ONE species and compare it across the three companies. Be sure to provide the name of the species.
- *Chrysopa*/*Chrysoperla* (predators commonly called aphid lions and green lacewings): There are several species; select ONE species and compare it across the three companies. Be sure to provide the name of the species.
- Any species of lady beetle (Coccinellidae): There are several species; select ONE species and compare it across the three companies. Be sure to provide the name of the species.
- Any species of predatory mite: There are several species, but all attack insect eggs; select ONE species and compare it across the three companies. Be sure to provide the name of the species.
- Bacteria-based biopesticide: There are several bacteria species sold for **insect management**; select and compare three products that contain the same bacteria species.
- Fungus-based biopesticide: There are several fungus species sold for **insect management**; select and

compare three products that contain the same fungus species.

Example of table (the second part of the assignment #3 worth 78 points):

Agent of biological control	Company name	Commercial name	Price $US	Target pests	Quantity/ formulation available	Stage shipped	Release /application recommendation	Company choice and explanation
Chrysoperla carnea	1							
	2							
	3							

An assignment delivered after the due date will be penalized 2 points for each calendar day it is late.

ASSIGNMENT #3 part one and ASSIGNMENT #3 part Two have different submission deadlines.
An assignment delivered after the due date will be penalized 2 points for each calendar day it is late.

ASSIGNMENT #4: Understanding the pesticide label and prescribing pest management control to decrease selection of pest resistant populations

The learning objectives of this assignment are to understand the major components of a pesticide label, the aspects to be considered when choosing an insecticide for chemical control of pests, and recommend management tactic based on the analysis of the pest problem.

A. Access the homepage https://wfrec.ifas.ufl.edu/directory/dr-silvana-v-paula-moraes/ and select the logon "Cotton Pests in Florida App" (you can also download the App in your cellphone):

Go to "Pest Management options", "Insecticides for cotton", select "pest", and enter Cotton bollworm. A list of insecticides labeled to manage this pest in Florida will be provide.

Download the labels of insecticides listed in the table below in "Label i" and answer the following questions:

Question number	Question	Insecticide Lannate	Insecticide Mustang Max	Insecticide Abamectin	Insecticide Admire Pro
1.	What is the brand name of the insecticide?				
2.	Who is the manufacturer of the insecticide?				
3.	What is the common name of the active ingredient of the insecticide?				
4.	What is the chemical class of the insecticide?				
5.	What is the mode of action of the insecticide (IRAC group)?				
6.	What is the signal word				

	listed on the insecticide?				
7.	What is the formulation of the insecticide (liquid, powder, etc.)?				
8.	What is the re-entry period of the insecticide?				
9.	What is the PPE required when applying the insecticide?				

B. You are a pest consultor working in the cotton production area in the Florida Panhandle and the average size of the cotton fields is 100 acres. Farmers from the region contact you complaining about an infestation of cotton aphids, *Aphis gossypii* cotton during the vegetative stage. They report the presence of nymphs and adults on the top canopy of the plants, with leaves curling downward. Some of the plants are presenting wilting and discoloration. Search in the "Cotton Pests in Florida App" the list of insecticides labeled for the management of this pest. Select and recommend one insecticide to manage this pest, providing the following indicated in the table below. Make sure you read the label and consider the impact of the insecticide in natural enemies and pollinators.

Question number	Question	Answer
1.	**Brand and common name of the insecticide**	
2.	**Recommended rate in ground application**	
3.	**Directions for Insect Resistance management (decrease the risk of insect resistance)**	

The answers to items **A and B**, of the assignment #4 should be prepared in a **Word document**, named with your **lastname_assig4** and submit via Canvas.

An assignment delivered after the due date will be penalized 2 points for each calendar day.

4.	**List one reason for the selection of the insecticide.**	

DISCUSSION BOARD

The Discussions are your opportunities to interact, share thoughts and ideas, agree and disagree, and learn

from each other about concepts and applications of IPM. During the period that the discussions are open, you should take time for a thoughtful, researched, yet personal response. After you provide your response, you should read the postings from others in your group and reply with your thoughts and opinions in an academic manner. "I agree" type of reply is not enough to receive a grade. You will need to replay at least three statements posted by your classmates.

UNIVERSITY OF FLORIDA POLICIES AND ASSISTANCE

Absences and Make-Up Work
Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx."

Online Course Evaluation Process
Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at evaluations.ufl.edu/results/.

Academic Honesty
As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: "*We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, 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 assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g., assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: www.dso.ufl.edu/SCCR/honorcodes/honorcode.php.

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 Resources:

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit umatter.ufl.edu/ to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need or visit shcc.ufl.edu/.

University Police Department: Visit police.ufl.edu/ or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; ufhealth.org/emergency-room-trauma-center.

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services career.ufl.edu/.

Library Support: cms.uflib.ufl.edu/ask various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring. teachingcenter.ufl.edu/

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers. writing.ufl.edu/writing-studio/

Student Complaints On-Campus: sccr.dso.ufl.edu/policies/student-honor- codestudent-conduct-code/

On-Line Students Complaints: distance.ufl.edu/student-complaint-process/

- *Career Resource Center,* First Floor JWRU, 392-1601, **www.crc.ufl.edu/**

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, **www.dso.ufl.edu/drc/)** by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Distance Courses

Each online distance learning program has a process for, and will make every attempt to resolve, student complaints within its academic and administrative departments at the program level. See www.distance.ufl.edu/student-complaint-process.