



EH 60 - Principles of Integrated Pest Management

Catalog Description

Transfer Status: CSU

Unit(s): 3.00

Lecture: 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Total: 51.00 Contact hours/102.00 Out of class hours/153.00 Total hours/3.00 Unit(s)

Course Description: Examines the origin, history, and management of insect, plant pathogen, weed, and other pests of agricultural, horticultural, and landscape crops. Consideration of Integrated Pest Management (IPM) principles and practices in conventional, organic, residue-free, and sustainable agriculture. Pest biology and ecology is studied to demonstrate the various IPM technologies used for economic crop production. Pesticide regulations, toxicity, application, and materials for specific uses are examined.

Objectives

Upon successful completion of this course, the student should be able to:

1. Explain the terms plant protection and IPM as they relate to agriculture systems such as conventional, organic, residue-free, and sustainable.
2. Describe the role of government agencies and regulations as they relate to plant protection, IPM and food safety.
3. Apply the principles and concepts of IPM to agricultural crop examples in California.
4. Identify insects and related pests, diagnose and analyze crop injury, and select appropriate management techniques.
5. Identify plant pathogens and related pests, diagnose and analyze crop injury, and select appropriate management techniques.
6. Identify weeds, diagnose and analyze crop injury, and select appropriate management techniques.
7. Explain pesticide toxicity in terms of mode of action, pesticide absorption by the human body, and the importance of poisoning measurements.
8. Create a pesticide recommendation for a commercially-grown agricultural, horticultural, or landscape crop in California.

Course Content

Topic Titles / Suggested Time Topic	
Lecture	
Topics	Lec Hrs
Introduction	6.00
a. History of plant protection	
b. History of integrated pest management (IPM)	
c. Ecological principles of IPM	
d. Principles and practices of IPM in various agriculture systems	
Entomology IPM	9.00
a. Insect biology and life cycles	
b. California insect identification	
c. Insect outbreak prevention	
d. IPM techniques and strategies with beneficial insects	
e. Managing primary and secondary insect outbreaks	
Plant Pathology IPM	9.00
a. Pathogen biology, life cycles and infection	
b. California pathogen, host and disease identification	
c. Damage and impact on production	
d. Disease outbreak prevention	
e. Managing disease outbreaks	
Weeds IPM	9.00
a. Weed biology and life cycles	
b. California weed identification	
c. Weed outbreak prevention	
d. Managing weed infestation	

Total Hours: 51.00

Topics	Lec Hrs
IPM of other pests	5.00
a. Mollusks life cycles and management	
b. Vertebrates life cycles and management	
c. Nematodes life cycles and management	
d. Prevention of other pest infestation	
Pesticides and IPM	6.00
a. Laws and regulations	
b. The role of government agencies	
c. Types of pesticides	
d. Pesticide toxicity and mode of action	
e. Pesticide application and safety	
IPM Programs	7.00
a. Monitoring and decision-making	
b. Monitoring programs and field trials	
d. Year-round IPM Programs	
Total Hours: 51.00	

Methods of Instruction

- A. Group Discussions
- B. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- C. Lecture
- D. Reading Assignments
- E. Certificate of Achievement in Plant Protection

Methods of Evaluation

- A. Exams/Tests
- B. Quizzes
- C. Homework
- D. Written Assignments

Examples of Assignments

Reading Assignments

1. Read University of California IPM Online on imported red fire ants to determine the role these organisms play in landscape maintenance and management and how invasive pests gain entry into California. Be prepared to present your findings in class discussion.
2. Review the California Department of Pesticide Regulation generated handout for Pest Control Adviser Knowledge Expectations in Integrated Pest Management (IPM). Be prepared to discuss the significance of these topics for cultural, biological, physical, and chemical pest control in commercial agriculture.

Writing Assignments

1. Explain the ecological principles as they apply to pest management. Write a 3-4 page explanation to show the relationship between these principles.
2. Write a 3-4 page pesticide recommendation for an instructor-assigned pest in a tree fruit or nut crop currently grown in northern California.

Out-of-Class Assignments

1. Describe how to use a biofix along with meteorological data to forecast insect or plant development. Contrast GIS from GPS, how do using these in the field with biofix work to help with pest forecasting?
2. Create a virtual insect or weed collection that includes 50 agriculturally-invasive species. Follow the outline of required specimens as designated by the instructor.

Recommended Materials of Instruction

Pedigo, L.P., et al. (2021). Entomology and Pest Management. *Waveland*, 7th. 9781478639923.

Flint, M.L. & Gouveia, P. (2012). IPM in Practice: Principles and Methods of Integrated Pest Management. *University of California ANR Communication Services*, 2nd. 9781601077851.

Minimum Qualifications

Agricultural Production

Agriculture (Masters Required)

Ornamental Horticulture

