BUTTE COLLEGE
COURSE OUTLINE

I. **CATALOG DESCRIPTION**

AGS 30 - Ecology of Insect and Disease Management **3 Unit(s)**

Prerequisite(s): NONE
Recommended Prep: Reading Level IV; English Level IV; Math Level III
Transfer Status: CSU
34 hours Lecture
51 hours Lab

This course is a study of the scientific principles and concepts of ecologically based pest management, with emphasis on economically important insects and pathogens in agriculture, environmental horticulture, natural resources, parks and recreation. Included is an introduction to insects and disease organisms, their biology, identification and management, with a focus on plants of the local geographic area.

II. **OBJECTIVES**

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

A. Describe basic entomology and plant pathology and identify insects and plant pathogens.
B. Explain what constitutes a "pest" and reproductive strategies pests may have that make them successful as pests.
C. Plan and evaluate management strategies for insect and disease pests.
D. Explain the core concepts of integrated pest management (IPM) systems and the approaches to developing these systems.
E. Analyze how politics influence pest control and how it influences pest management decision-making.
F. Identify and discuss some of the common pest problems of agricultural and horticultural crops and the management of these problems, with an emphasis on IPM with commercial agricultural practices.
G. Identify the basic California Pest management laws and regulations.
H. Identify commercially-important orders of insects which are pests and pollinators.
I. Identify commercially-important crop diseases and pathogens.

III. **COURSE CONTENT**

A. **Unit Titles/Suggested Time Schedule**

Lecture

Topics	Hours
1. Introduction to pest management and the scientific method	2.00
2. Introduction to insect evolution and ecology	2.00
3. Insect anatomy and physiology	2.00
4. Insect classification	2.00
5. Insect diversity and systematics	1.00
6. Insect growth and development	2.00
7. Insect population dynamics	2.00
8. Non-chemical pest management methods	2.00
9. Pesticides	2.00
10. Biotechnological pest management methods	2.00

11. IPM and Enterprise Business Process Management (EBPM) systems	2.00
12. Introduction to plant diseases	3.00
13. Fungi - biology, ecology, and management	3.00
14. Bacteria - biology, ecology, and management	2.00
15. Viruses - biology, ecology, and management	3.00
16. Review of the management of plant diseases	2.00
Total Hours	34.00

Lab

Topics	Hours
1. Introduction to scientific, collecting methods	5.00
2. Insect anatomy	6.00
3. Introduction to and study of insect orders	6.00
4. Preparation of written laboratory reports	2.00
5. Population dynamics and IPM laboratory	3.00
6. Sampling techniques of plant pathogens	4.00
7. Collecting specimens field trips	6.00
8. Study, discussion, and preparing a written summary of an IPM systems	4.00
9. Insect identification and preparation of collection	15.00
Total Hours	51.00

IV. METHODS OF INSTRUCTION

A. Lecture
B. Instructor Demonstrations
C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
D. Discussion
E. Multimedia Presentations

V. METHODS OF EVALUATION

A. Exams/Tests
B. Quizzes
C. Projects
D. Class participation
E. Mid-term and final examinations
F. Laboratory evaluation will consist of problem solving exercises, an exam, written reports, and the completion of an insect collection.

VI. EXAMPLES OF ASSIGNMENTS

A. Reading Assignments
   1. Read the chapter in your text on disease transmission and complete the corresponding homework assignment listed online. Be prepared for an in class discussion in small groups by pathogen or crop.
   2. Read the chapter in your text on insect mouthparts and complete the corresponding homework assignment provided online. Be prepared for an in class discussion in small groups.
B. Writing Assignments

1. Write 2-3 paragraphs detailing the abundance, characteristics and functions of the different classes of almond diseases during an in class assessment.
2. Select a label of an agricultural pesticide, write a 300-word description of the PPE, REI, and PHI for a specified crop and pest from the label.

C. Out-of-Class Assignments

1. Take home a diagram of an insect's mouthparts, label each structure, and then provide a brief
   description of the labeled structures. At the next class meeting, share your diagram in small groups.
2. Complete an insect collection with a minimum of 30 distinct species. Both mature and immature specimens are allowed, and cite all required collection information. Include an identification sheet for all specimens.

VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

A. Borror, D.J. and White, R.E.. Peterson Field Guide; Insects. Houghton and Mifflin Co. , 2005.
B. Flint, M.L.. IPM in Practice Principles and Methods of Integrated Pest Management. 2nd Edition. University of California Agriculture and National Resources, publication #3418, 2012.

Materials Other Than Textbooks:

A. Materials: Insect box and pins (from the Ag Dept office)

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