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**Course Outline for VWT 35**  
**VINEYARD PEST & DISEASE MGT**  
**Effective: Fall 2004**

**I. CATALOG DESCRIPTION:**

VWT 35 — VINEYARD PEST & DISEASE MGT — 3.00 units

A study of the identification and the biology of common vineyard pests and diseases. Techniques and strategies for sampling and monitoring and effective control measures. Pest management strategies for insects, weeds and diseases, including bio-control and sustainable agriculture practices in addition to pesticide use, safety and compliance. 3 hours.

3.00 Units Lecture

**Grading Methods:**

Letter or P/NP

**Discipline:**

	<b>MIN</b>
<b>Lecture Hours:</b>	54.00
<b>Total Hours:</b>	54.00

**II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1**

**III. PREREQUISITE AND/OR ADVISORY SKILLS:**

**IV. MEASURABLE OBJECTIVES:**

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

1. describe the importance of pest management
2. describe the vineyard yearly growth cycle and relate it to high and low risk periods of disease and pest pressure
3. describe the vineyard cycle of growth and identify Integrated Pest Management (IPM) practices that must be completed during each stage of the cycle for optimum control
4. describe vine structure and identify which vine parts are susceptible to each particular disease and pest
5. explain the principles and practices of vineyard disease and pest monitoring
6. explain how vine health relates to its susceptibility or tolerance to disease and pest pressure
7. identify and describe the life-cycles of common vineyard pests and diseases
8. identify and describe the life cycles of natural enemies of vineyard pests
9. discuss various strategies and critical time periods for vineyard pest and disease control
10. describe degree day accumulation and its relationship to disease and pest risk management
11. explain the implications of a Glassy-Winged Sharpshooter infestation in any Californian grapegrowing region and to the winegrape industry in general
12. develop and write an Integrated Pest Management master plan for a vineyard that addresses disease and pest control, spanning an entire year cycle

**V. CONTENT:**

- A. Pest and Disease Management Overview
  1. Definitions
  2. Vocabulary
  3. Insects and natural enemies
  4. Disease biology
  5. Weed management
- B. Vine Structure and the Vineyard Yearly Growth Cycle
  1. Vine parts susceptible to infection and pest damage
  2. Vine cycle and periods of disease pressure
  3. Vine cycle and periods of pest pressure
- C. Degree Days
  1. Insect development
  2. Disease modeling for risk management
- D. Virus Diseases and Control Measures
  1. Leaf-roll viruses / vectors
  2. Fanleaf degeneration viruses / vectors
  3. Rugose wood viruses
  4. Viroids
- E. Bacterial Diseases and Control Measures
  1. Monitoring and sampling strategies
  2. Crown gall

3. Pierce's Disease
4. Vectors
- F. Fungal Diseases and Control Measures
  1. Powdery mildew
  2. Downy mildew
  3. Botrytis bunch rot
  4. Eutypa die-back
  5. Phomopsis cane and leaf spot
  6. Oak root fungus
  7. Trunk diseases
  8. Other
- G. Soil Pests and Control Measures
  1. Phylloxera
  2. Nematodes
- H. Insect and Mite Pests and Control Measures
  1. Leafhopper
  2. Sharpshooter
  3. Spider mites
  4. Mealybugs
  5. Orange Tortrix / Omnivorous Leafroller
  6. Leafroller and Thrips
  7. Western Grapeleaf Skeletonizer
  8. Branch Twig and Cane Borer
  9. Cutworms
  10. Grape Bud Beetle
  11. False Chinch Bug
- I. Natural Enemies and Beneficial Insects
  1. Parasites and Parasitoids
  2. Crysoperla
  3. Hippodamia
  4. Trichogramma
  5. Cryptolaemus
  6. Anagrus
  7. Predacious mites
- J. Vertebrate Pests and Control Measures
  1. Deer
  2. Gophers
  3. Meadow Voles
  4. Squirrels
  5. Birds
  6. Pigs
  7. Rabbits
  8. Others
- K. Weeds and Control Measures
  1. Annuals vs. Perennials
  2. Spring/Summer Weeds vs. Winter Weeds
  3. Dicotyledonous Weeds vs. Monocotyledonous Weeds
- L. Sustainable Agricultural Practices / Bio-Control Methods / Organic Practices
- M. Pesticides
  1. Different classes of compounds
  2. Regulation and Regulatory Agencies
  3. Safety and Compliance
  4. Sprayer Calibration Text

## VI. METHODS OF INSTRUCTION:

- A. **Lecture** -
- B. **Discussion** -
- C. **Lab** - Student hands-on laboratory activities and field practice
- D. **Audio-visual Activity** -
- E. **Field Trips** -
- F. **Lab** - Laboratory demonstrations and discussion

## VII. TYPICAL ASSIGNMENTS:

A. Weekly reading assignments in text related to lecture topics 1. Write a 2-page paper identifying a pest and discuss an appropriate method of pest management. 2. Read Chapter 5 in "Marer" on Pesticide Laws and Regulations B. Field Trips at specified locations C. Homework

## VIII. EVALUATION:

### A. **Methods**

1. Exams/Tests
2. Quizzes
3. Home Work
4. Final Performance
5. Other:
  - a. Methods:
    1. Typical examples of evaluation
      - a. Written examinations
      - b. Reading and homework assignments from text
      - c. Quizzes
      - d. Student's written Integrated Pest Management Plan
      - e. Final Examination
    - b. Typical Exam Questions
      1. Explain how a Glassy-Winged Sharpshooter infects a vine with Pierce's disease, and describe what the disease does to the vine.
      2. Briefly describe an effective response to Phyllofera
      3. Damage from birds takes the form of
        - a. Direct loss of fruit from feeding
        - b. Rot that develops where the berries have been pecked

- c. The spilling of juice on berries not pecked
- d. All of above

**B. Frequency**

- 1. Quizzes at the instructor's discretion
- 2. Written midterm exams equally spaced during semester

**IX. TYPICAL TEXTS:**

- 1. - *Grape Pest Management*. 2nd ed., University of California of Agriculture and Natural Resources, 1992.
- 2. - *Wine Pest Profile: Wine Grapes in California*., CAWG report for FQPA compliance, 1992.
- 3. Patrick J. Marer *The Safe and Effective Use of Pesticides*., University of California of Agriculture and Natural Resources, 1988.
- 4. - *Compendium of Grape Diseases*. 4th ed., The American Phytopathological Society, 1998.

**X. OTHER MATERIALS REQUIRED OF STUDENTS:**