VIT 70 Course Outline as of Fall 2016

CATALOG INFORMATION

Dept and Nbr: VIT 70 Title: VYD PEST & DISEASE MGMT
Full Title: Vineyard Pest and Disease Management
Last Reviewed: 2/7/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00 Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Examination of vineyard pests, diseases, and vectors; including their identification, life-cycles, specific monitoring and economic thresholds. Topics include: vineyard fungal, bacterial and viral diseases, insects, arthropods, nematodes, vertebrate pests, and weeds. Efficient, current and environmentally sound management strategies will be emphasized.

Prerequisites/Corequisites:

Recommended Preparation:
Course Completion or Concurrent Enrollment in VIT 55 AND Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Schedule of Classes Information:
Description: Examination of vineyard pests, diseases, and vectors; including their identification, life-cycles, specific monitoring and economic thresholds. Topics include: vineyard fungal, bacterial and viral diseases, insects, arthropods, nematodes, vertebrate pests, and weeds. Efficient, current and environmentally sound management strategies will be emphasized. (Grade

or P/NP)
Prerequisites/Corequisites:
Recommended: Course Completion or Concurrent Enrollment in VIT 55 AND Eligibility for ENGL 100 or ESL 100
Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 2016	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Identify major vineyard pests, diseases and vectors during all stages of their life-cycles.
2. Develop a year-round management plan calendar that specifies when the pests, diseases and vectors are present, their critical monitoring periods and the best timing of appropriate control measures.
3. Identify control strategies for each vineyard pest, disease and vector that include biological, cultural, mechanical/physical and chemical methods.

Objectives:
Upon successful completion of this course, the student will be able to:
1. Determine whether a vineyard disease is fungal, bacterial or viral.
2. Determine whether a vineyard pest is an insect, arthropod, nematode or vertebrate pest.
3. Correctly identify specific vineyard pests, vectors and diseases and explain their life-cycles.
4. Correctly identify specific beneficial insects, their role in potential control of which specific pest, and explanation of their life-cycles.
5. Explain the role of beneficial soil microorganisms for potential control of specific soil pests.
6. Correctly identify symptoms and damage to grapevines and fruit due to specific vineyard pests, vectors and diseases.
7. Monitor and record pest infestation levels and disease severity levels in a vineyard.
8. Explain an effective sampling strategy in the vineyard for monitoring pests and diseases in the vineyard.
9. Identify economic threshold levels of various vineyard pests and diseases.
10. Accurately define and discuss integrated pest and disease management strategies for grapevines.

11. Accurately define and discuss sustainable, organic and biodynamic methods of pest and disease management strategies for grapevines.
12. Identify and discuss biological control methods for specific vineyard pests, vectors and diseases.
13. Identify and discuss cultural control methods for specific vineyard pests, vectors and diseases.
14. Identify and discuss physical/mechanical control methods for specific vineyard pests, vectors and diseases.
15. Identify and discuss chemical control methods for specific vineyard pests, vectors and diseases.
16. Develop yearly calendar showing when pests are active and disease symptoms are likely to be present.
17. Develop yearly calendar showing the critical monitoring periods for each of the pests and diseases.
18. Develop yearly calendar showing the best timing of the various control methods for these pests and diseases.
19. Define pesticide, including distinctions among the various subcategories, e.g., fungicide, herbicide, etc.
20. Compare and contrast classifications and modes of action for pesticides according to their target pest(s) or disease(s).
21. Discuss the laws and regulations and the governmental agencies that have jurisdiction over the approval and use of pesticides.

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Topics and Scope:

I. Introduction
  A. Annual Growth Cycle of a Grapevine
  B. Important Structures and Features of Grapevines
  C. Calendar of Events for North Coast Viticulture Practices
II. Abiotic Disorders and Injuries of Grapevines
  A. Growth Problems
  B. Water Deficit Associated Symptoms
  C. Weather Related Disorders
  D. Spray Damage
  E. Herbicide Damage
  F. Physiological Problems
III. Diagnostic Techniques
  A. Diagnosing Vineyard Problems
  B. Biotic vs. Abiotic Problems
  C. Spatial Incidence and Severity
  D. Guidelines for Collecting Samples
  E. Guidelines for Laboratory Analysis
IV. Grapevine Diseases
  A. Viral Diseases
    1. Leaf Roll
    2. Red Blotch
    3. Fan Leaf Degeneration
    4. Other viral diseases

B. Bacterial Diseases
1. Crown Gall
2. Pierce's Disease
3. Other bacterial diseases

C. Fungal Diseases
1. Armillaria Root Rot
2. Verticillium Wilt
3. Phytophthera Crown and Root Rot
4. Blackfoot Disease
5. Bunch Rots
6. Botryosphaeria Dieback
7. Eutypa Dieback
8. Downy Mildew
9. Esca, Black Measles and Petri Disease
10. Phomopsis Cane and Leaf Spot
11. Powdery Mildew
12. Other Fungal Diseases

V. Insect and Mite Pests

A. Orthoptera
1. Grasshoppers
1. Katydids

B. Hemiptera
1. Aphids
2. Brown Marmolated Stink Bug
3. Phylloxera
4. Western Grape Leafhopper
5. Variegated Grape Leafhopper
6. Virginia Creeper Leafhopper
7. Pseudoccus Mealybugs (Grape, Obscure, Longtailed)
8. Planococcus Mealybug (Vine)
9. Ferrisia (Gill's)
10. Scale Insects
11. Sharpshooter Leafhoppers
12. Whiteflies

C. Thysanoptera
1. Thrips

D. Coleoptera
1. Grape Bud Beetle
2. Hoplia Beetle
3. Branch and Twig Borer
4. Click Beetle

E. Hymenoptera
1. Ants
2. Social Wasps

F. Lepioptera
1. Larvae found in grape clusters
2. Cutworms
3. European Grapevine Moth
4. Grape Leaffolder
5. Light Brown Apple Moth
6. Omniverous Leafroller
7. Orange Tortrix

8. Western Grapeleaf Skeletonizer
G. Diptera
1. Drosophilia
2. Acari
3. Grape Erineum Mite
4. Spider Mites
5. Grape Rust Mite
H. Aranea
1. Black Widow Spiders
VI. Nematodes
A. Root Knot Nematodes
B. Dagger Nematodes
C. Ring Nematode
D. Pin Nematode
E. Citrus Nematode
VII. Vertebrate Pests
A. Mammals
B. Birds
VIII. Vegetation Management
A. Vineyard Floor Management
B. Weed Management
C. Special Weed Problems
IX. Vectors
A. Sharpshooter / Pierce's Disease Complex
B. Xiphinema / Fanleaf Degeneration Complex
C. Mealybug / Leafroll Complex
D. Other potential vectors
X. Beneficial Organisms
A. Insects
1. Predators
2. Parasitoids
B. Mites
C. Epiphytic Microorganisms
D. Soil Microorganisms
E. Vertebrates
XI. Monitoring and Sampling
XII. Control Strategies
A. Integrated Pest and Disease Management
B. Organic Methods
C. Sustainable Methods
D. Biodynamic Methods
E. Biological Control Methods
F. Mechanical / Physical Control Methods
G. Cultural Control Methods
H. Chemical Control Methods
1. Principles and Techniques of Vine Spraying
2. Pesticide Application and Safety
3. Chemigation
4. Handling and Use of Pesticides
5. Pesticide Mode of Action
6. Pesticide Resistance
a. Fungicide Resistance Action Committee (FRAC)

b. FRAC Number Relevance and Use
7. Jurisdictional Government Agencies for Pesticide Approval, Labeling, Purchase and Use
a. U.S. Environmental Protection Agency
b. California Environmental Protection Agency
c. California Department of Pesticide Regulation
d. Sonoma County Agricultural Commissioner
e. Licensing

Assignment:

1. Specific reading assignments from text, peer-reviewed journals, trade journals (10-15 pages/week)
2. Weekly lab and/or field summary reports
3. Oral presentation on one disease and one pest, including life-cycle, symptoms and various control strategies
4. Exams: 8-9 quizzes, midterm and final exams including short essays
5. Preparation of yearly calendar showing timeline of pest/disease presence, critical monitoring and control implementation timing
6. Field work: identification of pests and disease symptoms on grapevines

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Written homework, summary reports, yearly calendar term project.	Writing 30 - 40%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Field work, lab/field reports	Problem solving 10 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Identification of specific disease symptoms and pest presence in the vineyard.	Skill Demonstrations 10 - 20%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes, Midterm, Final Exam, Short Essay Exams, Multiple Choice, True/False, Completion.	Exams 30 - 40%

Other: Includes any assessment tools that do not logically fit into the above categories.

Oral presentation	Other Category 10 - 20%

Representative Textbooks and Materials:
Grape Pest Management - Third Edition, Larry J. Bettiga, Technical Editor, University of California Agricultural and Natural Resources Publication 3343, 2013 Vineyard Pest Identification and Monitoring Cards, Lucia Varela, et al. University of California Agricultural and Natural Resources Publication 3532, 2010
Field Guide to Diseases, Pests and Disorders of Grapes, P.A. Magarey et al. Winetitles Pty Ltd. , 2009 (classic)