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Course Outline for VWT 32

VINEYARD OPERATIONS II

Effective: Fall 2004

I. CATALOG DESCRIPTION:
VWT 32 — VINEYARD OPERATIONS II — 3.00 units

Viticulture practices for the spring and summer seasons including cultivation, planting and training a new vineyard, pest and disease control, soils, frost control, irrigation practices, quality control measures and vineyard equipment use. Emphasis on practical applications of viticulture. 2 hours lecture, 3 hours laboratory.

2.00 Units Lecture 1.00 Units Lab

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	36.00
Lab Hours:	54.00
Total Hours:	90.00

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 steps in selecting rootstocks and planting the vineyard
2. demonstrate proper training techniques for young vines
3. explain grapevine physiology and anatomy
4. describe the theory and practices associated with vineyard management
5. explain how climate, soils and vineyard practices affect weed, insects, and diseases
6. identify appropriate soil types and fertilizer techniques for vineyards
7. perform tissue analysis, to determine nutrient levels in vines
8. identify common vineyard insects, weeds and diseases
9. explain the different theories of vine pruning
10. identify common methods of vineyard frost control
11. describe the vineyard cycle of growth and identify viticultural practices that must be completed during the spring and summer
12. describe the basic elements of irrigation theory and practices
13. demonstrate how to use vineyard equipment

V. CONTENT:
- A. Rootstocks and Planting
  1. Rootstocks used
  2. Planting techniques and spacing
     a. Trellis systems of new grape planting
- B. Pruning and Training Young Vines
  1. Dormant season training of young vines
  2. Theoretical aspects of pruning
  3. Pruning mature head trained bilateral cordon trained, spur-pruned vines
  4. Training young vines after budbreak
- C. Grapevine Anatomy and Physiology
  1. Winegrape, table grape and raisin cultivars
  2. Internal and external structures
  3. Photosynthesis and its relationship to cultural techniques
  4. Tissue analysis
     a. Sample collection
     b. Interpretation
- D. Soils and Fertilizers
  1. Soil texture, structure and characteristics
  2. Fertilizer needs
  3. Fertilizer application techniques and equipment
- E. Pest Control

1. Insect identification and control measures
2. Weed identification and control techniques
3. Diseases of grapevines identification and control
4. Glassy winged sharpshooter
5. Powdery mildew control
6. Integrated Pest management

F. Irrigation theory and practice
1. Water needs of grapevines
2. Irrigation system selection and installation
3. Drip irrigation versus other systems

G. Techniques of frost control
1. Mechanical Methods
2. Cultural Methods

H. Vineyard Development
1. Identify the steps necessary for starting a new vineyard
2. Site selection
3. Natural resources, habitat and environmental concerns
4. Vineyard design – trellises and irrigation systems
5. Installation and planting

I. Farming Vineyard
1. Vineyard practices during the cycle of vine growth
2. Canopy management
3. Vine mineral nutrition
4. Sustainable agricultural practices
5. Methods to improve grape quality
6. Vineyard Floor Management
7. Vineyard Equipment
   a. Identify the different equipment used in tissue sampling, analysis and interpretation of results
   b. Explain the difference between a refractometer and hydrometer, and how they each measure berry juice sugar content
   c. Use a variety of viticulture equipment in the vineyard

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. **Demonstration** - Field demonstrations and discussion

VII. TYPICAL ASSIGNMENTS:
A. Weekly reading assignments in text related to lecture topics B. Field Trips at specified locations C. Vineyard cultural practices, e.g. Training and pruning D. Laboratory/field projects related to viticulture practices

VIII. EVALUATION:
A. **Methods**

1. Exams/Tests
2. Quizzes
3. Home Work
4. Other:
   a. Methods typical examples of evaluation
      1. Two written examinations
      2. Reading and homework assignments from text
      3. Two practical examinations
      4. Quizzes
      5. Student field work reports
   b. Typical Exam Questions
      1. Illustrate and label the correct method to prune a mature fruit producing lateral/cane of a grape plant to attain good production.
      2. Which of the following is not a good method of frost control?
         a. Air mixing
         b. Overhead sprinklers
         c. Trellis height
         d. Smudge pots
      3. In the physiology of berry development, the second growth cycle is the ripening phase. Describe the features of this cycle.
      4. Demonstrate the use of a refractometer and a hydrometer to show how they each measure sugar content.

B. **Frequency**

1. 1 1/2 hour written exams equally spaced during semester
2. Quizzes at the instructor's discretion
3. Practical, field midterm and final exam

IX. TYPICAL TEXTS:
1. B.G. Coombe & Dry *Viticulture, Vol. 2 Practices.* 1st ed., Winettitles, 1992.
2. - *Grapevine Physiology.*, UCDANR, 1981.
3. Richard. Smart and Mike Robinson *Sunlight into Wine.* 1st ed., Winetitles, 1991.
4. A.J. Winkler, James A. Cook, W.M. Kliewer, and Lloyd Lider *General Viticulture.* 2nd ed., University of California Press, 1974.

X. OTHER MATERIALS REQUIRED OF STUDENTS: