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Course Outline for VWT 14
APPLIED VITICULTURAL PRACTICES
Effective: Fall 2004

I. CATALOG DESCRIPTION:

VWT 14 — APPLIED VITICULTURAL PRACTICES — 3.00 units

Introduction and evaluation of vitis vinifera cultivars and clones, and the rootstocks suitable to this area. Introduction to the theory and practices of grapevine propagation, including field budding, T-budding, side-whip grafting, root cutting, and cuttings to change varieties. Introduction to trellising options for vinegrape production including principles and practices of canopy management which focus on the improvement of winegrape quality. Introduction to the theory and practice of pruning grapevines. 2.5 hours lecture, 1 hour laboratory.

2.50 Units Lecture 0.50 Units Lab

Grading Methods:

Letter or P/NP

Discipline:

	<u>MIN</u>
Lecture Hours:	45.00
Lab Hours:	27.00
No Unit Value Lab	18.00
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:

- A. explain the reasons for budding and the types of grape propagation
- B. describe basic grapevine anatomy and its relationship to propagation
- C. describe the principles of grapevine propagation
- D. list the various propagation techniques and the types of equipment needed
- E. sharpen a knife correctly
- F. demonstrate the essential requirements and procedures of budding
- G. consistently cut good buds and place them on the rootstock properly
- H. identify the proper wood for the selection of buds
 - I. demonstrate knowledge of the importance of correct variety selection
- J. explain how to care for the vine after budding
- K. describe the yearly vineyard cycle in the context of both vegetative and reproductive growth
- L. define and give examples of grapevine canopy management techniques
- M. list the various trellises and the types of accompanying hardware available; discussing their similarities and differences
- N. identify a particular vineyard site, assess its vigor potential, then suggest a specific trellis system and spacing that would best accommodate vine growth
- O. explain how canopy manipulation
 1. influences winegrape quality for the current year, and
 2. influences bud fruitfulness for the following
- P. describe how an appropriate trellis can improve winegrape quality and conversely how an inappropriate trellis can be deleterious to winegrape quality
- Q. explain in the vineyard how a particular trellis accommodates and supports vine growth; including identifying the fruit zone, canopy and permanent wood
- R. use the vineyard score card to assess canopy practices
- S. identify parts of the vine important to pruning
- T. demonstrate judgment in knowing the level of pruning required to produce quality grapes
- U. demonstrate knowledge of pruning terminology
- V. demonstrate knowledge of proper tool selection

V. CONTENT:

- A. Principles of Grapevine Propagation
 1. Basics
 2. Micro-propagation

3. Shoot tip propagation
- B. Basic Vine Anatomy
 1. Terminology
 2. Cambium
 3. Callus development
 4. Internal and external structures
- C. Tool Selection and Care
 1. Selection of proper propagation tools
 2. Sharpening and tool care
- D. Variety Identification
 1. Rootstock used
 2. Proper Rootstock Placement
- E. Propagation Techniques
 1. Field budding
 2. T-budding
 3. Side-whip grafting
 4. Root cuttings
 5. Grafting
- F. Nature of Wood
 1. Types of wood
 2. Budwood selection
- G. Propagation
 1. Bud selection
 2. Bud placement
 3. Vine care after budding
- H. Certification Program
 1. Identifying viruses
 2. Certified versus non-certified
- I. Introduction to the Grapevine Canopy and Fruit Zone
 1. Definitions and vocabulary
 2. Review of grapevine phenology
 3. Goals of canopy management
- J. Concept of vine balance
 1. Site vigor potential and its components
 2. Fruit to pruning weight ratios
 3. Dense vs. Open Canopies
 4. Goals of canopy management
- K. Importance of Sunlight
 1. Leaf exposure
 2. Fruit exposure
 3. Bud exposure
 4. Influence of microclimate on vine productivity
- L. Canopy Configuration
 1. Single curtain
 2. Double curtain
 3. Influence of training / trellis system on vine growth
- M. Trellis Types
 1. Vertical split
 2. Horizontal split
 3. Shoot positioning versus non-shoot positioning
 4. Retro-fitting
- N. Canopy Assessment Practices
 1. Vineyard Score Card
 2. Shoots / meter
- O. Canopy Management
 1. Objectives and Practices
 2. Fruit Quality
- P. Pruning and Training Young Vines
 1. Dormant season training of young vines
 2. Theoretical aspects of pruning
 3. Pruning mature grapevines
 4. Training young vines after bud break
- Q. Grapevine Anatomy and Physiology in Relation to Pruning
 1. Winegrape, table grape and raisin cultivars
 2. Internal and external structures
 3. Photosynthesis and its relationship to pruning
- R. Tool Selection and Care
 1. Selection of proper pruning tools
 2. Sharpening and tool care
- S. Pruning Methods
 1. Minimal pruning
 2. Pre-pruning
 3. Mechanical pruning
- T. Pruning Types
 1. Head trained
 2. Cane systems
 3. Cordon systems
- U. Pruning Disease Problems
 1. Eutypa Lata
 2. Techniques to avoid disease problems

VI. METHODS OF INSTRUCTION:

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

VII. TYPICAL ASSIGNMENTS:

A. Weekly reading assignments 1. Read Chapter 8 in Hollah on Types of Trellising 2. Read Chapter 1 in Coombe and Dry on Grapevine Propagation B. Short writing assignments 1. Based on your observations during our field trip to the vineyard, write a two-page paper on the pros and cons to their use of close spaced trellising.

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Quizzes
3. Home Work
4. Final Performance
5. Other:
 - a. Methods
 1. Written examination
 2. Quizzes
 3. Reading and homework assignments
 4. Final exam
 - b. Typical exam questions
 1. Canopy management includes a range of techniques, which alter the position and number of shoots and fruit in space. Which of the following is an appropriate techniques:
 - a. Pruning
 - b. Leaf removal
 - c. Shoot thinning
 - d. All of the above
 2. A vertical shoot positioned trellising system can reduce the risks of fungal diseases because
 - a. This system is easier to spray
 - b. The fruiting zone is separated from the foliage
 - c. Shading is common especially with high vigor vines
 - d. This system will not reduce the risk of fungal diseases

B. **Frequency**

1. Quizzes at the instructor's discretion
2. Two or more mid-term examinations

IX. TYPICAL TEXTS:

1. R. Smart & M. Robinson *Sunlight Into Wine: A Handbook for Winegrape Canopy Management.*, Winetitles, Adelaide, 1991.
2. M. Hollah *Practical Aspects of Grapevine Trellising.*, South Australia, 1997.
3. - *Wine Grape Varieties in California.* 1st ed., Division of Agriculture and National Resources, 2003.
4. D. P. Pongracz *Rootstocks for Grapevines.* 1st ed., -, 0.
5. B. G. Coombe & Dry *Vitculture: Volume 2: Practices.*, Winetitles, Adelaide, 1992.

X. OTHER MATERIALS REQUIRED OF STUDENTS: