

Course Outline for VWT 10
INTRODUCTION TO VITICULTURE

Effective: Fall 2016

I. CATALOG DESCRIPTION:

VWT 10 — INTRODUCTION TO VITICULTURE — 3.00 units

This is an introduction to general viticulture covering the fundamental principles of the biology and culture of the grapevine. This includes taxonomy, morphology, physiology, distribution, domestication, utilization, propagation, production systems, harvesting, and storage and processing of grapes, with a brief overview of wine making. The class explores climate and soil preferences of *Vitis vinifera*, vineyard establishment, and training young vines. Cultural practice lectures will focus on canopy management disciplines, irrigation strategies, fertilization, pest and disease control, cover cropping and pruning. There will be practical experience workshops in the Campus Hill Vineyard. Successful completion of course should prepare students for upper division courses in viticulture. Students under the age of 21 must have a declared major of either viticulture and/or enology to participate in any tasting activities as stated in the California State Assembly Bill 1989.

3.00 Units Lecture

Grading Methods:

Letter Grade

Discipline:

- Ornamental Horticulture

	<u>MIN</u>
Lecture Hours:	54.00
Total Hours:	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. discuss the importance of grapes in world history
2. explain the impact that California has had on global wine grape production
3. describe grapevine biology and physiology
4. identify the above and below ground components of the grape vine throughout the seasonal intervals of grape vine development
5. distinguish between specific grape varieties and how they can be utilized in various production programs
6. illustrate the importance of the relationship of soil and climate relative to quality grape and wine production
7. evaluate and manage the seasonal specific requirements of the vineyard and apply the appropriate cultural practices
8. interpret the harvest process from planning through processing
9. analyze the basic tenets of winemaking

V. CONTENT:

- A. History of grape cultivation and world distribution of important species and cultivars
 1. Identify the origin of *Vitis vinifera*
 2. Map the historical expansion of grapevine plantings in relation to the development of modern civilization
- B. Grape production in California
 1. California wine history
 2. California geography and topography
 3. Quality wine grape regions
 4. Pioneers and historical figures in California wine history
 5. Evolution of California wine styles
- C. Grapevine anatomy
 1. The structure and function of the grapevine
- D. Grapevine physiology
 1. photosynthesis, transpiration, respiration, translocation
 2. control of growth and development
- E. Morphology
 1. Important cell and tissue types
- F. Taxonomy
 1. Botanical nomenclature ie; *V. vinifera*
- G. Grapevine growth and development
 1. dormancy through budbreak

2. phenology
3. vegetative and reproductive growth
4. berry growth and composition
- H. Identifying specific grape varieties and cultivars and how they are utilized in various production methods
 1. color distinctions: red, black, purple, white, yellow, green
 2. red, white rose'
 3. dry, off dry, sweet, still, sparkling, fortified
 4. the impact of oak on red and white varieties
- I. Understanding the importance of climate and plant-soil relations required for quality winegrape production
 1. Vineyard soils cultivation and management
 2. vineyard water/plant/soil relations
 3. grapevine water and nutrient requirements
 4. soil fertility factors
 5. irrigation and fertilization management
 6. essential plant nutrients
 7. nutrient application methods
 8. water and nutrient deficiencies
- J. Vegetative training
 1. from budbreak to dormancy
 2. seasonal cultural management disciplines and techniques
- K. Harvest and post-harvest operations
 1. maturity factors
 2. wine grape harvesting specifics
 3. wine processing including destemming and pressing
- L. Winemaking; a brief overview
 1. must adjustments; acidity and SO₂
 2. must management; pre and post fermentation maceration
 3. yeasts and yeast nutrients
 4. monitoring the fermentation; brix levels and temperatures
 5. Malolactic fermentation
 6. aging protocols specific to variety and winemaking stylistic direction
- M. Overview of a vineyard layout including the Campus Hill Vineyard
 1. row orientation
 2. trellising
 3. irrigation system
 4. fertigation
 5. ancillary support
- N. Pruning
 1. Explain multiple pruning disciplines including, pre-pruning, spur pruning, head pruning, minimal pruning and non-pruned vines
 2. Define when pruning methodologies can be implemented
 3. Identify non-count and count nodes
 4. Explain node retention

VI. METHODS OF INSTRUCTION:

- A. **Discussion** -
- B. **Lecture** -
- C. **Demonstration** - in campus vineyard
- D. **Field Trips** -
- E. **Observation** - hands-on learning activities relative to viticultural practices
- F. **Audio-visual Activity** -

VII. TYPICAL ASSIGNMENTS:

- A. Weekly reading assignments in text related to lecture topics

For Example: Read the article titled "Irrigation practices in high clay soils" and respond in writing to questions such as:

What is the recommended water amount (per plant) per week during the hottest days of the ripening period?

How would overwatering post-veraison effect fruit quality?

- B. Participation in field trip activities at specified locations
- C. Written assignments on vineyard cultural practices

For example: Label the vine diagram with the following parts: graft callous, trunk, head, arm, spur, bud, internode, shoot, cane

VIII. EVALUATION:

Methods/Frequency

- A. Exams/Tests
- B. Quizzes
- C. Oral Presentation
- D. Field Trips
- E. Class Participation
- F. Class Work
- G. Home Work
- H. Class Performance

IX. TYPICAL TEXTS:

1. Robinson, J. *Wine Grapes; A complete guide to 1,368 Vine Varieties Including their Origins and Flavors*. 1st ed., Ecco, 2012.
2. Skelton, S. *Viticulture; An Introduction to Commercial Grape growing for Wine Production*. 1st ed., Perfect Paperback, 2011.
3. Goldhammer, Ted. *Grape Grower's Handbook*. 2nd ed., Apex, 2015.
4. Keller, Marcus. *The Science of Grapevines*. 2nd ed., Academic Press, 2015.
5. Neel, D. Pub "Practical Winery and Vineyard Journal." 2015.
6. Neel, D. Pub "Wines and Vines." 2015.
7. Wine Communications Group Inc. Pub "Wine Business Monthly." 2015.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

- A. Professional grade vineyard pruning shears

B. Students are required to wear appropriate clothing and footwear in the vineyard