

**VIT 130 Course Outline as of Fall 2022****CATALOG INFORMATION**

Dept and Nbr: VIT 130 Title: GRAPEVINE PHYSIOLOGY  
 Full Title: Grapevine Physiology  
 Last Reviewed: 9/27/2021

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.00	Lecture Scheduled	4.50	4	Lecture Scheduled	18.00
Minimum	1.00	Lab Scheduled	0	4	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	4.50		Contact Total	18.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 36.00

Total Student Learning Hours: 54.00

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:**

In this advance viticulture theory course, students will learn grapevine physiology and phenology. Topics include vine balance, flowering and fruit set, stages of berry growth, and vine water status.

**Prerequisites/Corequisites:****Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100 and Course Completion of VIT 55

**Limits on Enrollment:****Schedule of Classes Information:**

Description: In this advance viticulture theory course, students will learn grapevine physiology and phenology. Topics include vine balance, flowering and fruit set, stages of berry growth, and vine water status. (Grade or P/NP)

Prerequisites/Corequisites:

Recommended: Eligibility for ENGL 100 or ESL 100 and Course Completion of VIT 55

Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
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<b>CSU Transfer:</b>	Effective:	Inactive:
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<b>UC Transfer:</b>	Effective:	Inactive:
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**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. Explain relationship between grapevine cells, tissues, and functions.
2. Describe the effects among the underlying vine physiological processes and vine growth and fruit ripening.
3. Discuss how varying environmental conditions can affect the vine's physiological processes.

### **Objectives:**

In order to achieve these learning outcomes, during the course students will:

1. Describe the different grapevine cells and tissues.
2. Explain the physiological processes that drive vine growth and fruit ripening.
3. Describe vine balance and its relationship to fruit quality.
4. Explain vine water potential and its impact on vine growth and irrigation management.
5. Discuss the impacts of environment and management on vine flowering and fruit set.
6. Explain how photosynthesis and source-sink relationships affect vine growth and fruit ripening.

### **Topics and Scope:**

- I. Review of Vine Annual Cycle of Growth
  - A. Vocabulary and definitions
  - B. Grapevine cells
  - C. Grapevine tissues
  - D. Vine structure
  - E. Vegetative growth phases vs. reproductive growth phases
- II. Vine Phenology
  - A. Budburst
  - B. Flowering
  - C. Fruit ripening
- III. Vine Physiological Processes

- A. Photosynthesis
  - B. Respiration
  - C. Translocation
  - D. Transpiration
  - E. Source-sink relationships
  - F. Water uptake and vine turgor
- IV. Vine Balance
- A. Definition and how to measure it
  - B. Effects on vine vigor
  - C. Effects on fruit quality
- V. Anlagen and Grapevine Inflorescence Initiation
- A. Effects of plant growth substances on anlagen and inflorescence fertility
  - B. Effects of environment
  - C. Effects of disease and pests
- VI. Grapevine Flowering, Pollination and Fertilization
- A. Vine nutritional impacts
  - B. Vine water status impacts
  - C. Environmental impacts
- VII. Seed, Embryo, and Fruit Development Post-Fertilization
- A. Vine nutritional impacts
  - B. Vine water status impacts
  - C. Environmental impacts
- VIII. Vine Water Potential - Vine Water Status
- A. Definition
  - B. How to measure it, what the numbers mean
  - C. Impacts on vine vegetative growth
  - D. Impacts on vine reproductive growth

**Assignment:**

1. Weekly reading (25 - 40 pages)
2. One written research paper on a specific vine physiological function and its impact on vine growth (5 - 6 pages)
3. Quizzes (4 - 5)
4. Final exam

**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.

Research paper
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Writing 75 - 75%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None
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Problem solving 0 - 0%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

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

Quizzes, Final exam

Exams  
25 - 25%

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

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

Instructor prepared materials

The Science of Grapevines: Anatomy and Physiology. 2nd ed. Keller, Markus. Elsevier Press Academic Press. 2015 (classic)