VWT-132: VINEYARD SOILS, FERTILIZERS & IRRIGATION

Effective Term
Fall 2025

CC Approval
02/07/2025

AS Approval
02/13/2025

BOT Approval
02/20/2025

COCI Approval
04/03/2025

SECTION A - Course Data Elements

CB04 Credit Status
Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Agricultural Production (Any Degree and Professional Experience)	

Subject Code
VWT - Viticulture and Winery Technology
Course Number
132

Department
Viticulture and Winery Technology (VWT)

Division
Career Education and Workforce Development (CEWD)

Full Course Title
Vineyard Soils, Fertilizers & Irrigation

Short Title
Vine Soils, Ferts & Irrigation

CB03 TOP Code
0104.00 - *Viticulture, Enology, and Wine Business

CB08 Basic Skills Status
NBS - Not Basic Skills

CB09 SAM Code
B - Advanced Occupational

Rationale
This course is an established piece of Viticulture curriculum that had not been updated in several years.

SECTION B - Course Description

Catalog Course Description
Introduction to basic principles of soil science, mineral nutrition and plant/water relationships for North Coast grape production.

SECTION C - Conditions on Enrollment

Open Entry/Open Exit
No

Repeatability
Not Repeatable

Grading Options
Letter Grade or Pass/No Pass

Allow Audit
Yes

Requisites

SECTION D - Course Standards

Is this course variable unit?
No

Units
3.00

Lecture Hours
54.00

Outside of Class Hours
108

Total Contact Hours
54

Total Student Hours
162

Distance Education Approval

Is this course offered through Distance Education?
Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Hybrid	Permanent
Entirely Online	Permanent

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Explain basic principles of soil science and use of fertilizers and irrigation water.
2.	Develop skills required in the workplace.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Explain the concept of soil texture and be able to distinguish common soil textures found in California.
2.	Discuss the behavior of soil textures related to total water holding capacity and plant available water.
3.	Assess grapevine and soil mineral nutrition status and bioavailability.
4.	Interpret information from soil and plant tissue laboratory analysis to develop proper vineyard management practices.

5.	Create a fertility program to address mineral nutrition deficiencies and toxicities in the soil.
6.	Explain the process of soil formation, how soils are mapped by county surveys. and how they are to be interpreted.
7.	Appraise the water status of the soil and the grapevine.
8.	Identify and explain the components of vineyard irrigation systems.
9.	Select appropriate irrigation practices.
10.	Interpret information from water laboratory analysis to develop proper vineyard management practices.
11.	Create a plan to manage soil organic matter.
12.	Identify soil and vine nutritional problems and be able to select vineyard practices to overcome problems in soils.
13.	Discuss methods of erosion control.

Course Content

1. English and Metric units of measure
2. Diffusion and Osmosis
3. Soil formation processes
4. Geological process that shaped Napa and Sonoma County and its impact on the soil formation processes
5. Soil texture
6. Soil structure and management including tillage
7. Soil chemistry including pH and Cation Exchange Capacity
8. Soil water behavior and its relation to irrigation strategies
9. Soil organic matter and its management
10. Plant nutrients and common deficiency and toxicity symptoms
11. Vineyard design and decisions based on field soil analysis
12. Fertilizer types and uses
13. Strategies for Managing soil vine nutrition
14. Soil and Plant water stress management through instrumentation
15. Irrigation planning design and installation
16. Irrigation water quality laboratory analysis and interpretation
17. Process that cause soil erosion and methods for erosion control

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Lecture	Lecture on soil driven vineyard design.
Activity	Examination of soil physical and chemical properties.

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
Chat Rooms
Discussion Boards
E-mail Communication
Telephone Conversations
Video or Teleconferencing

Student-Initiated Online Contact Types

Chat Rooms
Discussions
Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	A final examination consisting of multiple-choice and essay style questions.
Homework	Assignment on calculating fertilizer quantities.

Assignments

Reading Assignments
Assigned readings from class handouts (example: "Importance of Soil Texture to Vineyard Management" by T.J. Rice)

Writing Assignments
Writing: All quizzes and the final exam requires short and long essay answers

Other Assignments
Problem Solving:
Problem involving the calculation of pounds of nitrogen in 25 pounds of CaNO3 fertilizer.

SECTION F - Textbooks and Instructional Materials

Material Type
Textbook

Author
Nyle C. Brady and Ray R. Weil

Title
The Nature and Properties of Soils

Edition/Version
15th

Publisher
Pearson

Year
2016

Rationale
Classic text

Course Codes (Admin Only)

ASSIST Update
No

CB00 State ID
CCC000651496

CB10 Cooperative Work Experience Status
N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status
Y - Credit Course

CB13 Special Class Status
N - The Course is Not an Approved Special Class

CB23 Funding Agency Category
Y - Not Applicable (Funding Not Used)

CB24 Program Course Status
Program Applicable

Allow Pass/No Pass
Yes

Only Pass/No Pass
No