

Discipline: Agriculture	Sub-discipline: Viticulture
General Course Title: Vineyard, Soils, Fertilizers and Irrigation	Min. Units: 3 Semester
Proposed Suffix: L	
Course Description: Introduction to the basic principles of soil science, mineral nutrition, and plant/water relationships for grape production.	
Required Prerequisites or Co-Requisites ¹	
Advisories/Recommended Preparation ²	
Course Objectives: <i>At the conclusion of this course, the student should be able to:</i> <ul style="list-style-type: none"> • Identify the principal components of soil and soil profiles. • Understand the genesis and morphology of soils. • Understand water movement in soils • Understand nutrient availability and uptake by plants. • Understand the basics of soil and plant tissue analysis. • Prepare a plan to study the mineral nutrition needs of a vineyard. • Understand the basic principles of irrigation. • Identify irrigation methods used in a vineyard. • Schedule irrigation for a vineyard. • Diagnose problems related to soils, fertilizers and irrigation 	
Course Content: <ol style="list-style-type: none"> 1. General Introduction <ol style="list-style-type: none"> A. Concept of soil B. Soil profile C. Soil as a medium of plant growth 2. Physical Soil Properties <ol style="list-style-type: none"> A. Soil texture B. Soil minerals C. Soil structure D. Effects of structure on plant growth and soil water 3. Soil Air and Water <ol style="list-style-type: none"> A. Soil porosity and saturation B. Soil water – physical and chemical characteristics C. Soil plant water relationships D. Moisture states of soil and their measurement 4. Water in Soil Plant Systems <ol style="list-style-type: none"> A. Water storage in soil B. Water content and water potential C. Water movement in soil D. Water stress in plants E. Evapotranspiration <p>Vineyard, Soils, Fertilizers and Irrigation (Content Continued)</p> <ol style="list-style-type: none"> 5. Managing Soil Water and Irrigation 	

¹ Prerequisite or co-requisite course need to be validated at the CCC level in accordance with Title 5 regulations; co-requisites for CCCs are the linked courses that must be taken at the same time as the primary or target course.

² Advisories or recommended preparation will not require validation but are recommendations to be considered by the student prior to enrolling.

<ul style="list-style-type: none"> A. Water infiltration B. Water drainage in soil <ul style="list-style-type: none"> 1. Natural 2. Man-made 	
6. Soil Erosion	
<ul style="list-style-type: none"> A. Causes and effects of water erosion B. Managing erosion C. Watershed monitoring and stream protection 	
7. Fertilizers	
<ul style="list-style-type: none"> A. Essential plant nutrients B. Fertilizer formulations C. Vineyard fertilization materials D. Methods of applying vineyard fertilizers E. Fertigation and foliar feeding F. Diagnosing nutrient problems 	
8. Irrigation Methods	
<ul style="list-style-type: none"> A. Drip B. Sprinkler C. Furrow 	
9. Irrigation Monitoring	
<ul style="list-style-type: none"> A. Mechanical B. Interpretive 	
10. Irrigation Scheduling	
11. Diagnosing Problems Related to Soils, Fertilizers and Irrigation	
Laboratory Activities: Individual Laboratory Activities are designed to support course objectives.	
Methods of Evaluation: Lecture Comprehensive Quizzes and Exams Written Critical Thinking Scenarios Problem Analysis and Solution Research and Term Papers	Methods of Evaluation: Laboratory Laboratory Skill Validation by Observation Laboratory Projects and Reports Laboratory Research Projects and Reports Laboratory Skill Practicum Exams
Typical Textbooks, Manuals, or Other Support Materials <u>Western Fertilizer Handbook</u> , Eighth Edition, Interstate Publishers, Inc. 1995. University of California Pamphlets	
Statewide Articulation: Transfers as lower division elective	
FDRG Lead Signature:	Date:
Mark E. Bender, PhD CSU Stanislaus	
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