

# VITICULTURE & ENOLOGY, BACHELOR OF SCIENCE

College of Agricultural & Environmental Sciences

## The Program

The Viticulture & Enology major provides an interdisciplinary education in the biological and physical principles underlying grape and wine production as well as practical knowledge of grape growing (viticulture) and wine making (enology). This program provides the knowledge base for problem-solving and decision-making in commercial grape and wine production.

The curriculum builds upon a foundation of biology, chemistry, biochemistry and mathematics with specialized courses related to grape and wine production. To complete the program, students may choose to place particular emphasis on viticulture, enology or economics. Credit may also be earned for foreign language study and internships.

### Major Advisors

M. Bartlett

## Related Major Programs

Food Science & Technology; Plant Sciences.

## Career Alternatives

Graduates are qualified for a variety of vineyard and winery positions, including production management, quality control and research. Additionally, they may work in related fields such as pest management, nursery production and analytical services.

## Graduate Study

Several graduate groups offer programs of study leading to advanced degrees in the fields of viticulture and enology. For the M.S. or Ph.D. degree, see Agricultural & Environmental Chemistry (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/agricultural-environmental-chemistry-graduate-group/>), Engineering: Chemical Engineering (<https://catalog.ucdavis.edu/departments-programs-degrees/chemical-engineering/>), Ecology (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/ecology/>), Food Science (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/food-science-graduate-group/>), Integrative Genetics & Genomics (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/integrative-genetics-genomics-graduate-group/>), Horticulture & Agronomy (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/horticulture-agronomy-graduate-group/>), Microbiology (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/microbiology/>), Plant Biology (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/plant-biology-graduate-group/>), Plant Pathology (<https://catalog.ucdavis.edu/departments-programs-degrees/plant-pathology/>), Soils & Biogeochemistry (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/soils-biogeochemistry-graduate-group/>), and Viticulture & Enology (Graduate Group) (<https://catalog.ucdavis.edu/departments-programs-degrees/viticulture-enology-graduate-group/>).

The major requirements below are in addition to meeting University Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/university-degree-requirements/>) & College Degree Requirements (<https://catalog.ucdavis.edu/undergraduate-education/college-degree-requirements/>); unless otherwise noted. The minimum number of units required for the Viticulture & Enology Bachelor of Science is 124.

## Preparatory Requirements

Before *transferring* into the Viticulture & Enology major, students must complete the following courses with a grade of C- or better and with a combined grade point average of at least 2.500 at the University of California (at least 3.000 for similar courses taken at community college) for these and all other preparatory courses. In addition, students' overall UC GPA must be 2.250 or higher. All courses must be taken for a letter grade.

Requirement	Units
BIS 002A	5
CHE 002A, 002B, 002C, 008A	17
MAT 016A (Discontinued for spring 2025 **) or MAT 019A	3-4
PHY 001A, 001B or 007A	4-6

## Recommendations

Completion of UC Davis equivalents of the following preparatory courses for the major are not required for entry but are highly recommended. Failure to complete these will delay entry into required upper division courses and may thus delay graduation. Some courses may be available at UC Davis during Summer Session:

Requirement	Units
CHE 008B	4
MAT 016B (Discontinued for spring 2025 **) or MAT 019B	3-4
PLS 002	4
BIS 102	3

## Requirements

Code	Title	Units
<b>Preparatory Subject Matter</b>		
<i>Biological Science</i>		5
BIS 002A	Introduction to Biology: Essentials of Life on Earth	
<i>Chemistry</i>		21
CHE 002A	General Chemistry	
CHE 002B	General Chemistry	
CHE 002C	General Chemistry	
CHE 008A	Organic Chemistry: Brief Course	
CHE 008B	Organic Chemistry: Brief Course	
<i>Mathematics; choose MAT 016A &amp; MAT 016B or MAT 019A &amp; MAT 019B:</i>		6-8
MAT 016A	and (Discontinued for spring 2025) **	
& MAT 016B DISCONTINUED FOR SPRING 2025 **		
MAT 019A	Calculus for Data-Driven Applications	
& MAT 019B	and Calculus for Data-Driven Applications	

*Physics; choose PHY 001A & PHY 001B or PHY 007A:* 4-6

PHY 007A	General Physics
or PHY 001A & PHY 001B	Principles of Physics and Principles of Physics

*Plant Science* 7

PLS 002	Botany & Physiology of Cultivated Plants
PLS 021 or PLS 021V	Application of Computers in Technology Application of Computers in Technology

*Viticulture & Enology* 5

VEN 002	Introduction to Viticulture
VEN 003	Introduction to Winemaking

Preparatory Subject Matter Subtotal 48-52

**Depth Subject Matter***Biological Science; choose BIS 102 & BIS 103 or BIS 105:* 3-6

BIS 105	Biomolecules & Metabolism
or BIS 102 & BIS 103	Structure & Function of Biomolecules and Bioenergetics & Metabolism

*Microbiology* 5

MMG 102 or MIC 102 DISC	
MMG 103L or MIC 103L DISCONTINUED FOR FALL 2026 **	

Choose one: 4

PLS 120 or STA 106	Applied Statistics in Agricultural Sciences Applied Statistical Methods: Analysis of Variance
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*Viticulture & Enology* 36-38

VEN 101A	Viticultural Practices
VEN 101B	Viticultural Practices
VEN 101C	Viticultural Practices
VEN 110	Grapevine Growth & Physiology
VEN 118	Grapevine Pests, Diseases & Disorders
VEN 123	Analysis of Musts & Wines
VEN 124	Wine Production
VEN 125	Wine Types & Sensory Evaluation
VEN 126	Wine Stability
VEN 128	Wine Microbiology
VEN 135	Wine Technology & Winery Systems

AND

In consultation with the advisor, choose three: (6-8)

VEN 123L	Analysis of Musts & Wines Laboratory
VEN 124L	Wine Production Laboratory
VEN 125L	Sensory Evaluation of Wine Laboratory
VEN 126L	Wine Stability Laboratory
VEN 127L	Post-Fermentation Wine Processing Lab
VEN 128L	Wine Microbiology Laboratory

If more than three are taken, the extra courses will count as restricted electives in Area B.

Depth Subject Matter Subtotal 48-53

**Restricted Electives**

In consultation with advisor, choose 28 units from the following five areas. At least 12 units must be from one of the following areas: (A) Plant Science, (B) Food Science & Microbiology, or (C) Economics & Business 28

(A) Plant Science Area (p. 2)

(B) Food Science &amp; Microbiology Area (p. 2)

(C) Economics &amp; Business Area (p. 3)

(D) Language Area (p. 3)

(E) Internship Area (p. 3)

Restricted Electives Subtotal 28

**Total Units 124-133**

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Course(s) discontinued; see your advisor for course options.

**(A) Plant Science Area**

Code	Title	Units
ABT/IAD 142	Equipment & Technology for Small Farms	2
ABT/LED 150/ LDA 150 DISCONTINU	Introduction to Geographic Information Systems	4
ATM 133	Biometeorology	4
BIS 101 or BIS 101V	Genes & Gene Expression Genes & Gene Expression	4
BIS 101D	Genes & Gene Expression Discussion	1
BIT 160	Principles of Plant Biotechnology	3
ENT 110	Arthropod Pest Management	5
HYD/ESM/ABT 110	Irrigation Systems & Water Management	4
HYD 124	Plant-Water-Soil Relationships	4
MCB/PLB 126	Plant Biochemistry	3
NEM 100	Introduction to Nematode Parasites	4
PLB 111	Plant Physiology	3
PLB 112	Plant Growth & Development	3
PLB/ENT/PLP 123	Plant-Virus-Vector Interaction	3
PLB 143	Evolution of Crop Plants	4
PLP 120	Introduction to Plant Pathology	4
PLS 154	Introduction to Plant Breeding	4
PLS 157	Physiology of Environmental Stresses in Plants	4
PLS 158	Mineral Nutrition of Plants	4
PLS 171	Principles & Practices of Plant Propagation	4
PLS 176	Introduction to Weed Science	4
SSC 100	Principles of Soil Science	5
SSC 102	Environmental Soil Chemistry	3
SSC 109	Sustainable Nutrient Management	4
SSC 118	Soils in Land Use & the Environment	4
VEN 112	Soils in Viticulture	3
VEN 115	Raisin & Table Grape Production	2
VEN 216	Sustainable Vineyard Development	5
VEN 217	Field & GIS Evaluation of Soils	3

**(B) Food Science & Microbiology Area**

Code	Title	Units
BIS 101 or BIS 101V	Genes & Gene Expression Genes & Gene Expression	4
BIS 101D	Genes & Gene Expression Discussion	1
FST 102A	Malting & Brewing Science	4
FST 102B	Practical Malting & Brewing	4

FST 104	Food Microbiology	3
FST 104L	Food Microbiology Laboratory	4
FST 109	Principles of Quality Assurance in Food Processing	3
FST 110	Food Processing	4
FST 110L	Food Processing Laboratory	2
FST 127	Sensory Evaluation of Foods	4
VEN 111	World Viticulture	3
VEN/FST 114	Fermented Foods	4
VEN 140	Distilled Beverage Technology	3
VEN 219	Natural Products of Wine	3
VEN 235	Winery Design	4
MIC 140	(Discontinued for spring 2023) **	
MIC 150	(Discontinued for spring 2024) **	
MIC 155L	(Discontinued for spring 2023) **	

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Course(s) discontinued; see your advisor for course options.

## (C) Economics & Business Area

Code	Title	Units
ARE 100A	Intermediate Microeconomics: Theory of Production & Consumption	4
ARE 112	Fundamentals of Organization Management	4
ARE 113	Fundamentals of Marketing Management	4
ARE 118	Tax Accounting	4
ARE 130	Agricultural Markets	4
ARE 140	Farm Management	4
ARE 150	Agricultural Labor	4
ECN 001A	Principles of Microeconomics	4
or ECN 001AV	Principles of Microeconomics	
or ECN 001AY	Principles of Microeconomics	
ECN 001B	Principles of Macroeconomics	4
or ECN 001BV	Principles of Macroeconomics	
MGT 011A	Elementary Accounting	4
or MGT 011AV	Elementary Accounting	
or MGT 011AY	Elementary Accounting	
MGT 011B	Elementary Accounting	4

## (D) Language Area

Maximum 12 units, not counting course 001, of one of the following languages: French, German, Italian, Portuguese or Spanish.

Courses taught in English will not count as restricted electives in this major. *At least one course must be Intermediate or Conversational; qualifying Intermediate or Conversational courses are listed below:*

Code	Title	Units
FRE 021	Intermediate French	5
or FRE 021Y	Intermediate French	
FRE 022	Intermediate French	5
or FRE 022Y	Intermediate French	
FRE 023	Intermediate French	5
or FRE 023Y	Intermediate French	

GER/COM 011	Travel & the Modern World	4
GER 020	Intermediate German	4
GER 021	Intermediate German	4
GER 022	Intermediate German	4
SPA 021	Intermediate Spanish	5
or SPA 021V	Intermediate Spanish	
or SPA 021Y	Intermediate Spanish	
SPA 022	Intermediate Spanish	5
or SPA 022V	Intermediate Spanish	
or SPA 022Y	Intermediate Spanish	
SPA 031	Spanish for Heritage Speakers I	5
SPA 032	Spanish for Heritage Speakers II	5
SPA 033	Spanish for Heritage Speakers III	5
or SPA 033V	Spanish for Heritage Speakers III	

## (E) Internship Area

Code	Title	Units
Choose a maximum of 8 units:		8
May be increased to 12 units in exceptional circumstances.		
VEN 190X	Winemaking Seminar	
VEN 192	Internship	
VEN 198	Directed Group Study	
VEN 199	Special Study for Advanced Undergraduates	
VEN 290	Seminar	
VEN 298	Group Study (may be counted as restricted electives by prior arrangement with advisor)	