VITICULTURE AND ENOLOGY (VIEN)

VIEN 1104 - Introduction to Wines and Vines (3 Credits)
Broad introduction to grape cultivation and wine fermentations. Topics include history of winemaking, viticultural regions, vineyard and winery practices, wine flavor chemistry and microbiology, and wine flavor perception. Tasting wines in class illustrates the components that determine wine quality.
Course Fee: Course Fee, $50. Tasting fee: will be applied to student bursar bill.
Distribution Requirements: (AFS-AG)
Last Four Terms Offered: Spring 2025, Fall 2024, Spring 2024, Fall 2023
Learning Outcomes:

- Describe the importance of fermentations to human history, health and cultures.
- Apply basic chemistry and biology to viticulture and enology.
- Explain general grape cultivation and wine production procedures.
- Demonstrate wine flavor evaluation and appreciation techniques.

Schedule of Classes

VIEN 1105 - Introduction to Wines and Vines Practicum (3 Credits)
Students learn in the classroom and teaching winery. Activities include practice of techniques relevant to making and analyzing wines, writing focused on wine topics, and sensory evaluation of wine. Writing assignments include a scientific paper and wine-related pieces geared towards different audiences. Significant work is expected between class sessions. Preference given to V&E majors.
Prerequisites: VIEN 1104 and one FWS or equivalent course.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors and minors.
Distribution Requirements: (AFS-AG, WRT-AG)
Last Four Terms Offered: Spring 2025, Spring 2024, Fall 2023, Fall 2022
Learning Outcomes:

- Describe the process for preparing yeast & supplying proper nutrients for them during fermentations, and explain why each step is important.
- Demonstrate some winemaking and analytical methods.
- Complete a scientific research paper, demonstrating improved literature review, critical evaluation, and scientific writing skills.
- Write useful wine descriptions for personal wine evaluation logs and in a format for sharing with others (as articles and blog posts).
- Improve Wikipedia pages relevant to wine by critically evaluating a current page, finding resources for attributing statements, removing incorrect and adding additional information to the page and following wiki format for a bibliography and in-page citations.

Schedule of Classes

VIEN 2000 - Viticulture and Enology Industry Seminar (1 Credit)
This course focuses the exploration of the wine and grape growing industry through the lens of outside speakers who are pivotal stakeholders in the wine business. Outside speakers will present on a chosen topic of their work, career and industry. Students will gain essential perspective on the broad scope of careers in the wine and grape industry as well as gain necessary skills of networking with a variety of professions.
Prerequisites: VIEN 1104.
Learning Outcomes:

- Gain understanding of the diversity and complexity in the wine and grape industry through guest speakers.
- Learn the current wine culture through the lens of wine, food, agriculture, sales, and labor issues by meeting with various wine stakeholders and researching current topics.
- Begin to build strength in professionalism and networking by meeting with guest speakers in an informal setting after each session.
- Identify key issues the country's wine industry faces today and present potential solutions through a digital portfolio.

Schedule of Classes

VIEN 2204 - Principles and Practices of Growing Grapes and Making Wines (3 Credits)
Viticulture and enology principles and practices, emphasizing cool climate production. Course examines environmental factors affecting grape production and quality, soils, and anatomical and physiological bases for vineyard management decision-making. All aspects of winemaking are covered, from harvest decisions to bottling, with concentration on practices through fermentation completion. Students research viticultural & enological options, and make all decisions for a particular wine region and style. Course requires significant work outside of class sessions, with most topics presented as flipped sessions (lectures outside of class and learning activities during class sessions). This course is suitable for non-life sciences majors.
Prerequisites: VIEN 1104, college-level general chemistry and general biology (at least one of each).
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors and minors.
Distribution Requirements: (AFS-AG, BIO-AG, OPHLS-AG)
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Illustrate the phenology and growth of grapevines.
- Demonstrate wine flavor evaluation and appreciation techniques.
- Describe different grapevine rootstocks, their attributes, and backgrounds.
- Discuss the climatic requirements of grapevines.
- Explain and assess fruit growth, development, and ripening.
- Define and evaluate the impact of viticultural practices and environmental influences on vine growth and fruit composition.
- List and recognize grape pests and diseases.
- Apply basic chemistry and biology principles to enology techniques & analyses.
- Explain each step in winemaking procedure, including typical procedures used and the scientific rationale for choosing a particular technique from alternatives at each step.
- Discuss information in books and articles, using good critical evaluation skills.

Schedule of Classes

VIEN 2205 - Growing Grapes and Making Wines Laboratory (2 Credits)
Crosslisted with FDSC 2205
Field trips, vineyard and winery work provide opportunities for application of knowledge gained in Grapes to Wines lecture course. Students will produce a wine, from grape harvest determination to cold stabilization. Some winery activities between laboratory sessions plus a two-day field trip expected.
Prerequisites: VIEN 1105. Prerequisite or Corequisite: VIEN 2204.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors and minors.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Demonstrate wine analytical techniques.
- Identify different grapevine species and cultivars in the vineyard.
- Assess fruit ripening and make good decisions about harvest time.
- Explain each step in winemaking process, including typical procedures used and the scientific rationale for choosing a particular technique from alternatives at each step.
- Produce wines from grape harvest to cold stabilized products.
- Demonstrate wine flavor evaluation and appreciation techniques.

Schedule of Classes

VIEN 2310 - The Science and Technology of Beer (1 Credit)
Crosslisted with FDSC 2310
This course uses beer and brewing science as a starting point to explore topics in fermentation biology, food chemistry, food processing, and sensory perception. Students will learn to recognize the major sensory and chemical features that distinguish different beer styles or defects, and understand how raw materials and choices during production lead to these outcomes. Several guest lectures, including brewers and producers of raw materials, will also be included.
Prerequisites: introductory biology and chemistry, or permission of instructor.
Course Fee: Course Fee, $25. Tasting fee: will be applied to student bursar bill.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Spring 2022
Learning Outcomes:

- Differentiate between the basic physiological senses of human perception of foods and beverages. Describe how these senses are utilized to perceive the qualities of foods and beverages.
- Describe some of the fundamental principles of odor and taste perception.
- Summarize the key steps in the brewing process, and contrast these steps to other fermentations
- Explain the role of the major components of beer (water, malt, hops, yeast), and the choices that brewers have in their use and source.
- Describe the sensory properties of major beer styles and explain how they differ in production practices and chemical composition.
- Explain how different microorganisms can positively or negatively affect the quality of beer.
- Summarize the positive health impacts of moderate beer consumption and contrast these benefits with the negative health impacts of alcohol misuse/abuse. Also differentiate between the current treatment options for alcohol use disorders.
- Summarize ongoing and emerging technological challenges to the brewing industry.

Schedule of Classes

VIEN 2340 - Cider Production: Apples and Fermented Juice (1 Credit)
Hard cider consumption has expanded rapidly over the last decade. Want to learn why? This course focuses on the scientific basis of cider production from orchard to bottle and provides a brief overview of the history and culture of cider. We will also review the current market trends and the economics of growing hard cider apples and producing cider. The suitability of producing cider will be contrasted with wine production in NYS. Each class will include tastings so that students receive a robust overview of typical cider flavors, an introduction to different cider styles, and gain an ability to identify both good and off-flavors in ciders. Course drops are only allowed until the start of the third lecture. We do not maintain a waitlist or manually manage enrollment for this class, students should self-monitor to see when a seat opens up.
Prerequisites: one college level biology, one college level chemistry, or permission of instructor.
Course Fee: Course Fee, $25. To cover the costs of tastings and supplies.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Articulate the importance of cider to different regions of the world.
- Explain the differences between different apple varieties, their horticultural performance & chemical differences, and how different cultivars contribute to ciders.
- Explain fundamental chemical and biological changes that occur during cider fermentation.
- Demonstrate mechanics of cider tasting & recognition of key cider flavor attributes.
- Describe the cider supply chain from orchard to consumer.

Schedule of Classes

VIEN 2360 - Distillation Principles and Practices (1 Credit)
Crosslisted with FDSC 2360
As an introduction to the science of distillation this course uses the study of pre-fermentation and fermentation biology, phase separation and vapor-liquid equilibrium, and sensory perception as a vehicle to explore the role of science and technology in the production and enjoyment of distilled beverages. Sensory samples and commercial samples of spirits will be used to illustrate the sensory properties and chemical components which define different types of distilled spirits, with the goal of understanding how different raw materials, processing, and aging impact these sensory properties.
Prerequisites: introductory biology and chemistry, or permission of instructor.
Course Fee: Course Fee, $50. Tasting fee: will be applied to student bursar bill.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Summarize the key physical laws involving gasses and liquids which are pertinent to distilling.
- Summarize the key steps in the distillation process and contrast these steps to other fermented beverages.
- Explain the role of the raw materials (grains, fruits, and other agricultural products, barrels, etc.) in alcoholic beverage distillation and the choices that distillers have in their use and source.
- Summarize how the type of still and distillation process options impact the sensory properties of the spirit produced.
- Describe the sensory properties of major distilled spirit styles and explain how they differ in production practices and chemical composition.
- Explain how different distillation techniques and aging requirements might impact the method of consumption of distilled spirits and cocktails (mixed, over ice, neat, etc.).
- Describe ongoing and emerging technological, economic, and social challenges to the distilled spirits industry.

Schedule of Classes

VIEN 2400 - Wines and Grapes: Composition and Analysis (2 Credits)
Crosslisted with FDSC 2400
Investigates the composition of grapes and wine and the most common analytical tools used in their evaluation. Both the theoretical and practical aspects of grape and wine analyses are considered.
Prerequisites: one semester of chemistry.
Enrollment Information: Enrollment preference given to: Viticulture and Enology and Food Science majors.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Interpret commonly measured quantitative and qualitative metrics relevant to grapegrowing and winemaking and their utility in wine (grape) production (the WHY?).
- Evaluate advantages and disadvantages of different methodologies for measuring wine and grape components, including methods that you have no prior experience with (the WHAT?).
- Demonstrate proficiency with routine protocols in wine and grape analysis, in preparation for later VIEN courses, internships, research, etc... (the HOW?).

Schedule of Classes

VIEN 2810 - Wine Culture (3 Credits)
Crosslisted with CLASS 2810
This course explores the complex interactions between wine and culture. From a source of nutrition to an enduring cultural symbol of the good life, a religious ritual to a forbidden substance, an artistic muse to a political pawn, the role of wine has varied through time and among cultures. Through lectures, readings, discussions, and activities, students will analyze how wine has impacted civilizations throughout history and how, in turn, cultures impact the production and consumption of wine.
Distribution Requirements: (CA-AG)
Last Four Terms Offered: Fall 2023, Spring 2020, Spring 2018, Spring 2016
Learning Outcomes:

- Describe the importance of wine in ancient and modern cultures, including its impact on art and literature.
- Explain differences in the customs of wine production and consumption among cultural groups and religions worldwide.
- Illustrate the relationship between wine production technology and wine consumption in modern wine regions.
- Describe how the portrayal of wine in American culture has changed over time.
- Demonstrate how the business of wine production and sales differs among cultures and genders.

Schedule of Classes

VIEN 3300 - The Science of Grapevines (2 Credits)
This discussion-based course will delve in-depth into the biological and physiological underpinnings of grapevine growth and management.
Prerequisites: PLSCI 1420 or PLSCI 1115.
Last Four Terms Offered: Spring 2024, Spring 2022, Fall 2019
Learning Outcomes:

- Describe grapevine organs, their origins, and functions.
- Describe the vegetative and reproductive cycles of the grapevine.
- Demonstrate the relationship between water relations and nutrient uptake.
- Theorize the causes of carbon limitations and their impact on vine growth and fruit composition.
- Identify specific impacts of biotic stresses on the vine.
- Integrate vine physiology with environmental variables to guide potential vineyard practices.

Schedule of Classes

VIEN 3610 - Vineyard Management I (2 Credits)
This course is designed to develop the relevant skills required for pre-harvest, harvest, and post-harvest management in a winegrape vineyard. Focused on hands-on, active learning, students will spend significant time in the Cornell University vineyards.
Prerequisites: VIEN 1104, VIEN 2204 (or concurrent enrollment), one semester of introductory biology, and one semester of introductory chemistry.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2021, Fall 2020
Learning Outcomes:

- Examine the implementation and outcomes of different harvest strategies.
- Describe the complex process of determining harvest timing.
- Apply basic chemistry and biology principles to viticultural & enological techniques used around harvest.
- Record and use harvest statistics.
- Examine the effects and control strategies of key pests and diseases.
- Assess the status of a vineyard going into dormancy.
- Understand basic tractor operation and maintenance.

Schedule of Classes

VIEN 3620 - Vineyard Management II (2 Credits)
This course is designed to develop the relevant skills required for Winter and Spring vineyard management, as well as budget and business plan formation. Focused on hands-on, active learning, students will spend significant time in the Cornell University vineyards.
Prerequisites: VIEN 1104, VIEN 2204, one semester introductory biology, and one semester introductory chemistry.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Students will be able to use harvest and pruning statistics to make pruning decisions.
- Students will be able to analyze seasonal outcomes and create farming plans for the coming season.
- Students will be able to prune grapevines of various training methods.
- Students will be able to evaluate, design, and repair trellising.
- Students will be able to use and analyze timesheet data.
- Students will be able to examine financial and quality outcomes of pruning methods.
- Students will be able to create development and operational budgets for vineyards of various design specifications and uses.

Schedule of Classes

VIEN 4310 - The Science and Technology of Beer Laboratory (2 Credits)
Crosslisted with FDSC 4310
An introduction to the practical application of brewing. Students will make several different styles of beer in a laboratory setting to understand how raw materials and processing technologies influence the production of recognizable beer styles. Emphasis will be placed on sanitation, raw material selection, yeast selection, and the manipulation of process variables to control product outcomes. Students will also learn the alternatives in current practice for finishing, carbonation, and packaging.
Prerequisites: VIEN 2204 and VIEN 2205/FDSC 2205.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Spring 2022
Learning Outcomes:

- Summarize the key steps in the brewing process, and contrast these steps to other fermentations.
- Describe and differentiate beer processing, fermentation, and aging parameters used in different styles of traditional beer production.
- Explain the role of the raw materials (grains, fruits, and other agricultural products, barrels, etc.) and the choices that distillers have in their use and source.
- Explain the role of the major components of beer (water, malt, hops, yeast), and the choices that brewers have in their use and source.
- Explain how different microorganisms can positively or negatively affect the quality of beer.
- Describe ongoing and emerging technological challenges to the brewing industry.

Schedule of Classes

VIEN 4340 - Cider Production Laboratory (1.5 Credits)
Crosslisted with FDSC 4340
Cider is a fermented beverage made from apples. Students in this course are immersed in cider production and analysis practices through activities in the teaching winery and by visiting commercial cideries. Readings and discussions support the hands-on learning focus in this laboratory course. Significant winery time between weekly class sessions is required.
Prerequisites: VIEN 2205 or VIEN 5205 or permission of instructor.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Demonstrate effective analytical techniques, sanitation practices and safe use of cider making equipment.
- Explain the expected results from different cider production methods and relate to their cider making project.
- Produce ciders from whole apples to finished products.
- Design and complete a sensory difference test.
- Demonstrate written and verbal communication and critical evaluation of literature skills as they complete reports during production and final presentations of cider projects.

Schedule of Classes

VIEN 4360 - Distillation Principles and Practices Laboratory (2 Credits)
Crosslisted with FDSC 4360
As an introduction to the science of distillation this course uses the study of pre-fermentation and fermentation biology, phase separation and vapor-liquid equilibrium, and sensory perception as a vehicle to explore the role of science and technology in the production and enjoyment of distilled beverages. Sensory samples and commercial samples of spirits will be used to illustrate the sensory properties and chemical components which define different types of distilled spirits, with the goal of understanding how different raw materials, processing, and aging impact these sensory properties.
Prerequisites: VIEN 2204 and VIEN 2205.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Summarize the hazards involved in distilled beverage production and how these hazards may be minimized or eliminated.
- Describe and differentiate still processing and aging parameters used in different types of traditional distilled spirit production.
- Explain the role of the raw materials (grains, fruits, and other agricultural products, barrels, etc.) and the choices that distillers have in their use and source.
- Describe how the choice of raw materials, still type, production practices, and aging impact the chemical composition of final products.
- Explain how different distillation techniques and aging requirements might impact the method of consumption of distilled beverages (mixed, over ice, neat, etc.).
- Describe the products of batch distillation over the course of a distillation run, and use sensory analysis to differentiate between distilled spirits produced at the beginning, middle, and end of a batch run.

Schedule of Classes

VIEN 4400 - Wine and Grape Flavor Chemistry (3 Credits)
Crosslisted with FDSC 4400
Uses a (bio)-chemical perspective to investigate viticulture and enological factors that impact flavor and other quality attributes (mouthfeel, color, stability) of wine and wine grapes.
Prerequisites: at least one semester of general chemistry and one semester of organic chemistry. Recommended prerequisite: prior course work in or knowledge of viticulture and enology.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Identify and describe (orally and in writing) the key compounds that influence wine organoleptic properties.
- Identify and describe how viticultural and enological practices affect those key compounds.

Schedule of Classes

VIEN 4460 - Advanced Viticulture Topics (2 Credits)
This course is designed to delve in-depth into the scientific literature that should drive decision making in vineyard production systems. We will critically evaluate studies from around the world and discuss their applicability to winegrape production systems in a range of climates.
Prerequisites: VIEN 2204.
Last Four Terms Offered: Fall 2024, Fall 2022, Spring 2021, Spring 2019
Learning Outcomes:

- Students will be able to describe the major environmental, agricultural, and economic challenges facing wine-grape production today.
- Students will be able to describe to what level science has informed common wine-grape production practices.
- Students will be able to examine how the academic literature can be applied to wine-grape production.
- Students will be able to assess the potential contribution of specific scientific studies to the wine-grape industry.
- Students will be able to identify specific challenges in wine-grape production that need to be addressed by scientific experimentation.

Schedule of Classes

VIEN 4500 - Advanced Winemaking Theory and Practice I (2 Credits)
Crosslisted with FDSC 4500
Provides an in-depth study of the chemical, physical, technological, microbiological and regulatory fundamentals of winemaking. Concentration is on grape and must handling, juice adjustments and treatments, diverse production methods and wine styles, and regulatory compliance. Equipment used in grape processing and wine production is studied. Course builds on previous winemaking course material regarding grape processing and alcoholic and malolactic fermentation.
Prerequisites: VIEN 2204, VIEN 2205, VIEN 2400, and BIOMI 2900, or permission of instructor.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Describe and differentiate traditional red, white, sparkling, and dessert winemaking methods and styles and understand the regulations which control them.
- Describe and distinguish the technological and equipment options for wine and grape processing.
- Describe the impact of winemaking methods on water and energy usage and on waste generation.
- Explain and describe the administrative and regulatory challenges related to winemaking.
- Describe, recognize, and list common causes and control measures for microbiological, chemical, and physical wine spoilages.
- Evaluate sanitation in the winemaking environment and relate it to impacts on wine quality.
- Identify and select appropriate chemical and microbial controls and limits to monitor and control the winemaking process.

Schedule of Classes

VIEN 4510 - Advanced Winemaking Theory and Practice I Laboratory (2 Credits)
Crosslisted with FDSC 4510
Students will produce, monitor, and evaluate diverse wine styles from several grape varieties using different vinification techniques. The laboratory includes introductory lectures, grape handling and vinification using various equipment and production methods, and emphasizes good production practices including sanitation. Students must develop their own winemaking plan for several different grape varieties, and participate in self-guided wine production activities, thus previous experience in wine production is highly recommended.
Prerequisites: Prerequisite or corequisite: FDSC 4500/VIEN 4500.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Describe and differentiate traditional red, white, sparkling, and dessert winemaking methods and styles and understand the regulations which control them.
- Describe and distinguish the technological and equipment options for wine and grape processing.
- Describe the impact of winemaking methods on water and energy usage and on waste generation.
- Explain and describe the administrative and regulatory challenges related to winemaking.
- Describe, recognize, and list common causes and control measures for microbiological, chemical, and physical wine spoilages.
- Evaluate sanitation in the winemaking environment and relate it to impacts on wine quality.
- Identify and select appropriate chemical and microbial controls and limits to monitor and control the winemaking process.

Schedule of Classes

VIEN 4650 - Wine Microbiology (3 Credits)
Microbes are all around us affecting almost every aspect of our lives. This course focuses on the roles that microbes play in the production and spoilage of wine. Wine microbiology is a 3 credit course (2 lecture credits, 1 laboratory credit).
Prerequisites: general microbiology lecture and laboratory, organic chemistry, biochemistry.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Identify the different microbes present during wine production, and describe the positive or negative biological roles that they play during wine production, including stuck/sluggish/spoiled fermentations.
- Summarize practically relevant aspects of wine microbiology and evaluate microbial issues in wine production.
- Explain routine microbiological techniques useful in a winery.
- Develop independent research projects related to the roles of microbes in the winery, including designing and executing experiments to rigorously test hypotheses and/or explore wine microbiology-related topics.

Schedule of Classes

VIEN 4700 - Advanced Winemaking Theory and Practice II (2 Credits)
Crosslisted with FDSC 4700
Winemaking Theory and Practice II specifically addresses the non-fermentation aspects of wine production. This area includes fining, stabilization, adjustments, clarification, filtration, bottling, general sanitation, government regulations, oxidation, aging, contributions of oak, and production equipment and materials. Course builds on previous winemaking course material regarding wine production options for different wine styles, including chemical and sensory analysis and chemical and microbial stability.
Prerequisites: VIEN 2204, VIEN 2205, VIEN 2400, and BIOMI 2900, or permission of instructor.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Develop knowledge of the chemical, microbiological, and physical nature of post fermentation wines.
- Identify and describe wine processing techniques used from post-fermentation through bottling.
- Develop and test personal sensory skills in describing the aromas and flavors of wine.
- Choose, make, and apply sensory descriptive standards to different wine styles or varietals.
- Identify and differentiate wine equipment and materials, including storage and packaging options.
- Appreciate the administrative and regulatory challenges related to winemaking.
- Access and navigate winemaking regulations, both domestic and international.
- Submit a wine label which satisfies TTB Certificate of Label Approval ("COLA") and local labeling regulations.
- Investigate new wine production technologies relevant to student's interests and transfer knowledge to peers.

Schedule of Classes

VIEN 4710 - Advanced Winemaking Theory and Practice II Laboratory (2 Credits)
Crosslisted with FDSC 4710
In the laboratory of part II of the Winemaking Theory and Practice, students continue working with wines produced in the preceding fall term, focusing on aging options, stabilization, fining, and packaging. The laboratory also provides advanced training in wine chemical and sensory analysis. Students must develop their own winemaking finishing plan for several different young wines, and participate in self-guided wine production activities, thus previous experience in wine production is highly recommended.
Prerequisites: Prerequisite or corequisite: VIEN 4700/FDSC 4700.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Develop knowledge of the chemical, microbiological, and physical nature of post fermentation wines.
- Identify and describe wine processing techniques used from post-fermentation through bottling.
- Develop and test personal sensory skills in describing the aromas and flavors of wine.
- Choose, make, and apply sensory descriptive standards to different wine styles or varietals.
- Identify and differentiate wine equipment and materials, including storage and packaging options.
- Appreciate the administrative and regulatory challenges related to winemaking.
- Access and navigate winemaking regulations, both domestic and international.
- Submit a wine label which satisfies TTB Certificate of Label Approval (COLA) and local regulations.
- Determine suitable packaging materials and package finished wine products.

Schedule of Classes

VIEN 4940 - Special Topics in Viticulture and Enology (1-3 Credits)
The VIEN teaching program teaches trial courses under this number. Offerings vary by semester and are advertised by the department before the semester starts. Courses offered under the number will be approved by the department curriculum committee, and the same course is not offered more than twice under this number.
Last Four Terms Offered: Fall 2022, Spring 2020, Winter 2020, Fall 2019
Schedule of Classes

VIEN 4960 - Viticulture and Enology Internship (1-3 Credits)
Internships provide experiential learning opportunities in real-life winery and vineyard circumstances where classroom knowledge is applied and evaluated. Students are able to master new skills, compare pilot-scale with commercial-scale winemaking practices, solve problems, interact in workplace situations, and build networks for future career opportunities. While working with industry mentors, students apply classroom knowledge, critical thinking, and self-directed learning skills to work effectively. Learning contract and documentation required for credit. May be taken twice.
Last Four Terms Offered: Spring 2025, Fall 2024, Spring 2024, Fall 2023
Schedule of Classes

VIEN 4970 - Individual Study in Viticulture and Enology (0.5-3 Credits)
Undergraduate individual study in viticulture and enology under the direction of one or more faculty members. Since topics vary, the course may be repeated for credit.
Exploratory Studies: (CU-UG)

Last Four Terms Offered: Spring 2025, Fall 2024, Spring 2024, Fall 2023
Schedule of Classes

VIEN 4980 - Undergraduate Teaching Experience (1-3 Credits)
Students assist in teaching a course appropriate to their previous training and experience. TA duties are determined by student and instructor(s) of course. Since topics vary, the course may be repeated for credit.
Last Four Terms Offered: Spring 2025, Fall 2024, Spring 2024, Fall 2023
Schedule of Classes

VIEN 4990 - Undergraduate Research in Viticulture and Enology (1-3 Credits)
Undergraduate individual study or research in viticulture and enology under the direction of one or more faculty members. Since topics vary, the course may be repeated for credit.
Exploratory Studies: (CU-UG)

Last Four Terms Offered: Spring 2025, Fall 2024, Spring 2024, Fall 2023
Schedule of Classes

VIEN 5000 - Viticulture and Enology Industry Seminar (1 Credit)
This course focuses the exploration of the wine and grape growing industry through the lens of outside speakers who are pivotal stakeholders in the wine business. Outside speakers will present on a chosen topic of their work, career and industry. Students will gain essential perspective on the broad scope of careers in the wine and grape industry as well as gain necessary skills of networking with a variety of professions.
Prerequisites: VIEN 1104.
Learning Outcomes:

- Gain understanding of the diversity and complexity in the wine and grape industry through guest speakers.
- Learn the current wine culture through the lens of wine, food, agriculture, sales, and labor issues by meeting with various wine stakeholders and researching current topics.
- Begin to build strength in professionalism and networking by meeting with guest speakers in an informal setting after each session.
- Identify key issues the country's wine industry faces today and present potential solutions through a digital portfolio.

Schedule of Classes

VIEN 5204 - Principles and Practices of Growing Grapes and Making Wines (3 Credits)
Viticulture and enology principles and practices, emphasizing cool climate production. Course examines environmental factors affecting grape production and quality, soils, and anatomical and physiological bases for vineyard management decision-making. All aspects of winemaking are covered, from harvest decisions to bottling, with concentration on practices through fermentation completion. Students research viticultural & enological options, and make all decisions for a particular wine region and style. Course requires significant work outside of class sessions, with most topics presented as flipped sessions (lectures outside of class and learning activities during class sessions).
Prerequisites: college level biology course, college level chemistry course and VIEN 1104.
Enrollment Information: Enrollment limited to: graduate students.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Illustrate the phenology and growth of grapevines.
- Demonstrate wine flavor evaluation and appreciation techniques.
- Describe different grapevine rootstocks, their attributes, and backgrounds.
- Discuss the climatic requirements of grapevines.
- Explain chemical changes during fruit development & ripening and how they relate to harvest decisions based on wine style.
- Define and evaluate the impact of viticultural practices and environmental influences on vine growth and fruit composition.
- List and recognize grape pests and diseases.
- Apply basic chemistry and biology principles to winemaking techniques & analyses.
- Explain winemaking practices, including typical procedures used and the scientific rationale for choosing a particular technique from alternatives at each step.
- Access & discuss information in books and articles, using good critical evaluation skills.

Schedule of Classes

VIEN 5205 - Growing Grapes and Making Wines Graduate Laboratory (2 Credits)
Crosslisted with FDSC 5205
Field trips, vineyard and winery work provide opportunities for application of knowledge gained in Grapes to Wines lecture course. Students will produce a wine, from grape harvest determination to cold stabilization. Some winery activities between laboratory sessions plus a two-day field trip expected.
Corequisites: VIEN 5204.
Enrollment Information: Primarily for: graduate students.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Demonstrate wine analytical techniques.
- Identify different grapevine species and cultivers in the vineyard.
- Assess fruit ripening and make good decisions about harvest time.
- Explain each step in winemaking process, including typical procedures used and the scientific rationale for choosing a particular technique from alternatives at each step.
- Produce wines from grape harvest to cold stabilized products 6- demonstrate wine flavor evaluation and appreciation techniques.

Schedule of Classes

VIEN 5300 - The Science of Grapevines (2 Credits)
This discussion-based course will delve in-depth into the biological and physiological underpinnings of grapevine growth and management.
Last Four Terms Offered: Spring 2024, Spring 2022
Learning Outcomes:

- Describe grapevine organs, their origins, and functions.
- Describe the vegetative and reproductive cycles of the grapevine.
- Demonstrate the relationship between water relations and nutrient uptake.
- Theorize the causes of carbon limitations and their impact on vine growth and fruit composition.
- Identify specific impacts of biotic stresses on the vine.
- Integrate vine physiology with environmental variables to guide potential vineyard practices.

Schedule of Classes

VIEN 5310 - The Science and Technology of Beer (1 Credit)
Crosslisted with FDSC 5310
This course uses beer and brewing science as a starting point to explore topics in fermentation biology, food chemistry, food processing, and sensory perception. Students will learn to recognize the major sensory and chemical features that distinguish different beer styles or defects, and understand how raw materials and choices during production lead to these outcomes. Several guest lectures, including brewers and producers of raw materials, will also be included.
Prerequisites: introductory biology and chemistry, or permission of instructor.
Course Fee: Course Fee, $25. Tasting fee: will be applied to student bursar bill.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Spring 2022
Learning Outcomes:

- Differentiate between the basic physiological senses of human perception of foods and beverages. Describe how these senses are utilized to perceive the qualities of foods and beverages.
- Describe some of the fundamental principles of odor and taste perception.
- Summarize the key steps in the brewing process, and contrast these steps to other fermentations.
- Explain the role of the major components of beer (water, malt, hops, yeast), and the choices that brewers have in their use and source.
- Describe the sensory properties of major beer styles and explain how they differ in production practices and chemical composition.
- Explain how different microorganisms can positively or negatively affect the quality of beer.
- Summarize the positive health impacts of moderate beer consumption and contrast these benefits with the negative health impacts of alcohol misuse/abuse. Also differentiate between the current treatment options for alcohol use disorders.
- Summarize ongoing and emerging technological challenges to the brewing industry.

Schedule of Classes

VIEN 5340 - Cider Production: Apples and Fermented Juice (1 Credit)
Hard cider consumption has expanded rapidly over the last decade. Want to learn why? This course focuses on the scientific basis of cider production from orchard to bottle and provides a brief overview of the history and culture of cider. We will also review the current market trends and the economics of growing hard cider apples and producing cider. The suitability of producing cider will be contrasted with wine production in NYS. Each class will include tastings so that students receive a robust overview of typical cider flavors, an introduction to different cider styles, and gain an ability to identify both good and off-flavors in ciders. Course drops are only allowed until the start of the third lecture. We do not maintain a waitlist or manually manage enrollment for this class, students should self-monitor to see when a seat opens up.
Prerequisites: one college level biology, one college level chemistry, or permission of instructor.
Course Fee: Course Fee, $25. To cover the costs of tastings and supplies.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Articulate the importance of cider to different regions of the world.
- Explain the differences between different apple varieties, their horticultural performance & chemical differences, and how different cultivars contribute to ciders.
- Explain fundamental chemical and biological changes that occur during cider fermentation.
- Demonstrate mechanics of cider tasting & recognition of key cider flavor attributes.
- Describe the cider supply chain from orchard to consumer.

Schedule of Classes

VIEN 5360 - Distillation Principles and Practices (1 Credit)
Crosslisted with FDSC 5360
As an introduction to the science of distillation this course uses the study of pre-fermentation and fermentation biology, phase separation and vapor-liquid equilibrium, and sensory perception as a vehicle to explore the role of science and technology in the production and enjoyment of distilled beverages. Sensory samples and commercial samples of spirits will be used to illustrate the sensory properties and chemical components which define different types of distilled spirits, with the goal of understanding how different raw materials, processing, and aging impact these sensory properties.
Prerequisites: introductory biology and chemistry, or permission of instructor.
Course Fee: Course Fee, $50. Tasting fee: will be applied to student bursar bill.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Summarize the key physical laws involving gasses and liquids which are pertinent to distilling.
- Summarize the key steps in the distillation process and contrast these steps to other fermented beverages.
- Explain the role of the raw materials (grains, fruits, and other agricultural products, barrels, etc.) in alcoholic beverage distillation and the choices that distillers have in their use and source.
- Summarize how the type of still and distillation process options impact the sensory properties of the spirit produced.
- Describe the sensory properties of major distilled spirit styles and explain how they differ in production practices and chemical composition.
- Explain how different distillation techniques and aging requirements might impact the method of consumption of distilled spirits and cocktails (mixed, over ice, neat, etc.).
- Describe ongoing and emerging technological, economic, and social challenges to the distilled spirits industry.

Schedule of Classes

VIEN 5400 - Wine and Grapes: Composition and Analysis (2 Credits)
Crosslisted with FDSC 5400
VIEN 5400 is a 2-credit course (1 credit lecture, 1 credit lab) with an emphasis on understanding the practice and theory behind analytical techniques routinely used in the wine and grape industries, and the statistical tools used to evaluate the effectiveness of both analyst and assay. The course is designed to provide practical skills complementary to other courses. VIEN 5400 is restricted to graduate students; undergraduates should enroll in VIEN 2400.
Prerequisites: two semesters of chemistry, and one semester of statistics, or permission of instructor.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Interpret commonly measured quantitative and qualitative metrics relevant to grapegrowing and winemaking and their utility in wine (grape) production (the WHY?).
- Evaluate advantages and disadvantages of different methodologies for measuring wine and grape components, including methods that you have no prior experience with (the WHAT?).
- Demonstrate proficiency with routine protocols in wine and grape analysis, in preparation for later VIEN courses, internships, research, etc. (the HOW?).
- Critique the analytical proficiency of themselves or their classmates using concepts from statistics and general chemistry.

Schedule of Classes

VIEN 5500 - Advanced Winemaking Theory and Practice I (2 Credits)
Crosslisted with FDSC 5500
Provides an in-depth study of the chemical, physical, technological, microbiological and regulatory fundamentals of winemaking. Concentration is on grape and must handling, juice adjustments and treatments, diverse production methods and wine styles, and regulatory compliance. Equipment used in grape processing and wine production is studied. Course builds on previous winemaking course material regarding grape processing and alcoholic and malolactic fermentation.
Prerequisites: VIEN 2204, VIEN 2205, VIEN 2400, and BIOMI 2900, or permission of instructor.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Describe and differentiate traditional red, white, sparkling, and dessert winemaking methods and styles and understand the regulations which control them.
- Describe and distinguish the technological and equipment options for wine and grape processing.
- Describe the impact of winemaking methods on water and energy usage and on waste generation.
- Explain and describe the administrative and regulatory challenges related to winemaking.
- Describe, recognize, and list common causes and control measures for microbiological, chemical, and physical wine spoilages.
- Evaluate sanitation in the winemaking environment and relate it to impacts on wine quality.
- Identify and select appropriate chemical and microbial controls and limits to monitor and control the winemaking process.

Schedule of Classes

VIEN 5510 - Advanced Winemaking Theory and Practice I Laboratory (2 Credits)
Crosslisted with FDSC 5510
Students will produce, monitor, and evaluate diverse wine styles from several grape varieties using different vinification techniques. The laboratory includes introductory lectures, grape handling and vinification using various equipment and production methods, and emphasizes good production practices including sanitation.
Prerequisites: Prerequisite or corequisite: FDSC 5500/VIEN 5500.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Describe and differentiate traditional red, white, sparkling, and dessert winemaking methods and styles and understand the regulations which control them.
- Describe and distinguish the technological and equipment options for wine and grape processing.
- Describe the impact of winemaking methods on water and energy usage and on waste generation.
- Explain and describe the administrative and regulatory challenges related to winemaking.
- Describe, recognize, and list common causes and control measures for microbiological, chemical, and physical wine spoilages.
- Evaluate sanitation in the winemaking environment and relate it to impacts on wine quality.
- Identify and select appropriate chemical and microbial controls and limits to monitor and control the winemaking process.

Schedule of Classes

VIEN 5610 - Vineyard Management I (2 Credits)
This course is designed to develop the relevant skills required for pre-harvest, harvest, and post-harvest management in a winegrape vineyard. Focused on hands-on, active learning, students will spend significant time in the Cornell University vineyards.
Prerequisites: VIEN 1104 , VIEN 2204 (or concurrent enrollment), one semester of introductory biology, and one semester of introductory chemistry.
Last Four Terms Offered: Fall 2024, Fall 2023
Learning Outcomes:

- Examine the implementation and outcomes of different harvest strategies.
- Describe the complex process of determining harvest timing.
- Apply basic chemistry and biology principles to viticultural & enological techniques used around harvest.
- Record and use harvest statistics.
- Examine the effects and control strategies of key pests and diseases.
- Assess the status of a vineyard going into dormancy.
- Understand basic tractor operation and maintenance.

Schedule of Classes

VIEN 5620 - Vineyard Management II (2 Credits)
This course is designed to develop the relevant skills required for Winter and Spring vineyard management, as well as budget and business plan formation. Focused on hands-on, active learning, students will spend significant time in the Cornell University vineyards.
Prerequisites: VIEN 1104, VIEN 2204, one semester introductory biology, and one semester introductory chemistry.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Students will be able to use harvest and pruning statistics to make pruning decisions.
- Students will be able to analyze seasonal outcomes and create farming plans for the coming season.
- Students will be able to prune grapevines of various training methods.
- Students will be able to evaluate, design, and repair trellising.
- Students will be able to use and analyze timesheet data.
- Students will be able to examine financial and quality outcomes of pruning methods.
- Students will be able to create development and operational budgets for vineyards of various design specifications and uses.

Schedule of Classes

VIEN 5650 - Wine Microbiology (3 Credits)
Microbes are all around us affecting almost every aspect of our lives. This course focuses on the roles that microbes play in the production and spoilage of wine. Wine microbiology is a 3 credit course (2 lecture credits, 1 laboratory credit).
Prerequisites: general microbiology lecture and laboratory, organic chemistry, biochemistry.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Identify the different microbes present during wine production, and describe the positive or negative biological roles that they play during wine production, including stuck/sluggish/spoiled fermentations.
- Summarize practically relevant aspects of wine microbiology and evaluate microbial issues in wine production.
- Explain routine microbiological techniques useful in a winery.
- Develop independent research projects related to the roles of microbes in the winery, including designing and executing experiments to rigorously test hypotheses and/or explore wine microbiology-related topics.

Schedule of Classes

VIEN 5660 - Current Topics in the Biology of Wine Microbes (2 Credits)
This course uses primary literature publications related to wine-relevant microbes to explore how cells interact with their environment and how scientific progress is made. Selected papers will include both investigations into basic cell biology of wine-relevant microbes and direct investigations into wine microbiology.
Prerequisites: BIOMI 2900, CHEM 1570, BIOMG 3300/BIOMG 3310.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Students will be able to interpret and evaluate primary scientific literature related to wine microbiology, including summarizing the results, placing the results within the context of the field, critical analysis of results, and designing alternative/follow-up experiments.
- Students will be able to describe modern molecular biology approaches used to understand the biology of wine microbes.
- Students will be able to explain the ways that yeast cells respond to the changing environment presented throughout fermentation of grape juice into wine.

Schedule of Classes

VIEN 6310 - The Science and Technology of Beer Laboratory (2 Credits)
Crosslisted with FDSC 6310
An introduction to the practical application of brewing. Students will make several different styles of beer in a laboratory setting to understand how raw materials and processing technologies influence the production of recognizable beer styles. Emphasis will be placed on sanitation, raw material selection, yeast selection, and the manipulation of process variables to control product outcomes. Students will also learn the alternatives in current practice for finishing, carbonation, and packaging.
Prerequisites: VIEN 2204 and VIEN 2205/FDSC 2205.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Spring 2022
Learning Outcomes:

- Summarize the key steps in the brewing process, and contrast these steps to other fermentations.
- Describe and differentiate beer processing, fermentation, and aging parameters used in different styles of traditional beer production.
- Explain the role of the raw materials (grains, fruits, and other agricultural products, barrels, etc.) and the choices that distillers have in their use and source.
- Explain the role of the major components of beer (water, malt, hops, yeast), and the choices that brewers have in their use and source.
- Explain how different microorganisms can positively or negatively affect the quality of beer.
- Describe ongoing and emerging technological challenges to the brewing industry.

Schedule of Classes

VIEN 6340 - Cider Production Laboratory (1.5 Credits)
Crosslisted with FDSC 6340
Cider is a fermented beverage made from apples. Students in this course are immersed in cider production and analysis practices through activities in the teaching winery and by visiting commercial cideries. Readings and discussions support the hands-on learning focus in this laboratory course. Significant winery time between weekly class sessions is required.
Prerequisites: VIEN 2205 or VIEN 5205.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Demonstrate effective analytical techniques, sanitation practices and safe use of cider making equipment.
- Explain the expected results from different cider production methods and relate to their cider making project.
- Produce ciders from whole apples to finished products.
- Design and complete a sensory difference test.
- Demonstrate written and verbal communication and critical evaluation of literature skills as they complete reports during production and final presentations of cider projects.

Schedule of Classes

VIEN 6360 - Distillation Principles and Practices Laboratory (2 Credits)
Crosslisted with FDSC 6360
As an introduction to the science of distillation this course uses the study of pre-fermentation and fermentation biology, phase separation and vapor-liquid equilibrium, and sensory perception as a vehicle to explore the role of science and technology in the production and enjoyment of distilled beverages. Sensory samples and commercial samples of spirits will be used to illustrate the sensory properties and chemical components which define different types of distilled spirits, with the goal of understanding how different raw materials, processing, and aging impact these sensory properties.
Prerequisites: VIEN 2204 and VIEN 2205.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Summarize the hazards involved in distilled beverage production and how these hazards may be minimized or eliminated.
- Describe and differentiate still processing and aging parameters used in different types of traditional distilled spirit production.
- Explain the role of the raw materials (grains, fruits, and other agricultural products, barrels, etc.) and the choices that distillers have in their use and source.
- Describe how the choice of raw materials, still type, production practices, and aging impact the chemical composition of final products.
- Explain how different distillation techniques and aging requirements might impact the method of consumption of distilled beverages (mixed, over ice, neat, etc.).
- Describe the products of batch distillation over the course of a distillation run, and use sensory analysis to differentiate between distilled spirits produced at the beginning, middle, and end of a batch run.

Schedule of Classes

VIEN 6400 - Wine and Grape Flavor Chemistry (3 Credits)
Crosslisted with FDSC 6400
Uses a (bio)-chemical perspective to investigate viticulture and enological factors that impact flavor and other quality attributes (mouthfeel, color, stability) of wine and wine grapes.
Prerequisites: at least one semester of general chemistry and one semester of organic chemistry required. Recommended prerequisite: prior coursework in or knowledge of viticulture and enology.
Enrollment Information: Enrollment preference given to: Viticulture and Enology students.
Last Four Terms Offered: Fall 2024, Fall 2023, Fall 2022, Fall 2021
Learning Outcomes:

- Identify and describe (orally and in writing) the key compounds that influence wine organoleptic properties.
- Identify and describe how viticultural and enological practices affect those key compounds.

Schedule of Classes

VIEN 6460 - Advanced Viticulture Topics (2 Credits)
This course is designed to delve in-depth into the scientific literature that should drive decision making in vineyard production systems. We will critically evaluate studies from around the world and discuss their applicability to winegrape production systems in a range of climates.
Prerequisites: VIEN 2204. Graduate students from the School of Integrative Plant Science can enroll without the prerequisite.
Last Four Terms Offered: Fall 2024, Fall 2022, Spring 2012, Spring 2010
Learning Outcomes:

- Students will be able to describe the major environmental, agricultural, and economic challenges facing wine-grape production today.
- Students will be able to describe to what level science has informed common wine-grape production practices.
- Students will be able to examine how the academic literature can be applied to wine-grape production.
- Students will be able to assess the potential contribution of specific scientific studies to the wine-grape industry.
- Students will be able to identify specific challenges in wine-grape production that need to be addressed by scientific experimentation.

Schedule of Classes

VIEN 6700 - Advanced Winemaking Theory and Practice II (2 Credits)
Crosslisted with FDSC 6700
Winemaking Theory and Practice II specifically addresses the non-fermentation aspects of wine production. This area includes fining, stabilization, adjustments, clarification, filtration, bottling, general sanitation, government regulations, oxidation, aging, contributions of oak, and production equipment and materials. Course builds on previous winemaking course material regarding wine production options for different wine styles, including chemical and sensory analysis and chemical and microbial stability.
Prerequisites: VIEN 2204, VIEN 2205, VIEN 2400, and BIOMI 2900, or permission of instructor.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Develop knowledge of the chemical, microbiological, and physical nature of post fermentation wines.
- Identify and describe wine processing techniques used from post-fermentation through bottling.
- Develop and test personal sensory skills in describing the aromas and flavors of wine.
- Choose, make, and apply sensory descriptive standards to different wine styles or varietals.
- Identify and differentiate wine equipment and materials, including storage and packaging options.
- Appreciate the administrative and regulatory challenges related to winemaking.
- Access and navigate winemaking regulations, both domestic and international.
- Submit a wine label which satisfies TTB Certificate of Label Approval ("COLA") and local labeling regulations.
- Investigate new wine production technologies relevant to student's interests and transfer knowledge to peers.

Schedule of Classes

VIEN 6710 - Advanced Winemaking Theory and Practice II Laboratory (2 Credits)
Crosslisted with FDSC 6710
In the laboratory of part II of the Winemaking Theory and Practice, students continue working with wines produced in the preceding fall term, focusing on aging options, stabilization, fining, and packaging. The laboratory also provides advanced training in wine chemical and sensory analysis. Students must develop their own winemaking finishing plan for several different young wines, and participate in self-guided wine production activities, thus previous experience in wine production is highly recommended.
Prerequisites: Prerequisite or corequisite: VIEN 4700/FDSC 4700.
Enrollment Information: Enrollment preference given to: Viticulture and Enology majors.
Last Four Terms Offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
Learning Outcomes:

- Develop knowledge of the chemical, microbiological, and physical nature of post fermentation wines.
- Identify and describe wine processing techniques used from post-fermentation through bottling.
- Develop and test personal sensory skills in describing the aromas and flavors of wine.
- Choose, make, and apply sensory descriptive standards to different wine styles or varietals.
- Identify and differentiate wine equipment and materials, including storage and packaging options.
- Appreciate the administrative and regulatory challenges related to winemaking.
- Access and navigate winemaking regulations, both domestic and international.
- Submit a wine label which satisfies TTB Certificate of Label Approval (COLA) and local regulations.
- Determine suitable packaging materials and package finished wine products.

Schedule of Classes