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## National Center of Excellence

Grape and Wine Education for the 21<sup>st</sup> Century

### VIN 268 – Wine and Must Analysis

Date: **January 25 – May 07, 2021**

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Office Hours: Virtual, by appointment, phone, email

Semester: **Spring 2021**

Host: Highland Community College

Host Course No.: ENO268/OL0

Course Credit: 3 Hours

Course Delivery: Online

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#### Course Description

This course covers principles of grape juice and wine analysis and the reasons for use of each analysis. Analyses of a practical and useful nature are chosen for the laboratory exercises demonstrating various chemical, physical and biochemical methods. Students will participate in hands-on laboratory experiences at a scheduled workshop.

**Prerequisites:** VIN 146 Introduction to Enology, and VIN 105 Molecular Principles in Grape and Wine, or permission

**Next Course in Sequence:** VIN 257 and/or VIN 259

#### Course Objectives

The student will be expected to learn the fundamental principles and practices of various methods of grape, juice, and wine analysis during pre-harvest, crush, fermentation, storage, and bottling. Students will also be expected to demonstrate proficiency in performing various common laboratory operations and calculating analytical results based on in-laboratory measured values, and will demonstrate an understanding of:

- Safety procedures in the laboratory
- Importance of analysis in wine production
- Procedures involved in pre-harvest juice analysis
- Grape load assessment
- Pre-fermentation juice/must analysis
- Processes involved in fermentation
- Processes and procedures involved in post-fermentation
- Tests required for proper wine storage
- Tests required for monitoring sanitation activities
- Tests required for pre-bottling
- Tests required in the post-bottling process
- Equipment and laboratory tests conducted in an analytical laboratory.

## **Instructional Format**

This is an online course with a weekly synchronous component. An online course site (Learning Management System) is provided by the host institution to provide announcements, lectures, notes, supplemental printed and web-based materials, and assignments to the students. It also serves as a central point for interaction/communication between the instructor and the students.

## **Live Class Meetings**

The live class meetings will take place every **Wednesday from 6:00 to 7:00 p.m. Central Time** via the **Zoom** web conferencing system. Participation to the live class meetings is required and a participation grade is assigned. This is an opportunity for the instructor to go over weekly topic highlights and for students to interact with the instructor and fellow students through questions and discussions. Students are expected to be prepared to ask questions and actively participate in the discussions.

The link to the Zoom virtual classroom will be posted at the top of each weekly module. Students will use the *same* virtual classroom for their live class meetings the entire semester. The sessions will take place on the dates listed in the schedule below.

It is the student's responsibility to notify the instructor in advance if he/she must miss a class. The recording of each live class will be available within 24-48 hours after each session for those who miss a live class.

## **Wine and Must Analysis Workshop**

This course has always required students to participate in an on-site Wine and Must Analysis Workshop.

However, due to the COVID-19 pandemic, this semester the required Wine and Must Analysis Workshop will take place virtually. (Also, please see the COVID-19 Contingency Plan document.)

For the Spring 2021 semester, students are required to find a winery with a laboratory that would allow them to do their analyses there. In addition, your instructor will run a virtual laboratory session via Zoom from his classroom that all students must watch. The link to the Zoom session will be posted on the course site.

The workshop activities are designed to provide hands-on training of several of the analyses discussed throughout the course, including analyses for soluble solids, pH, titratable acidity, volatile acidity, alcohol, sulfur dioxide, and residual sugar.

Failing to attend a virtual workshop will result in the student receiving a grade of Incomplete.

## **Textbook Information**

**Basic Wine Analysis** by Ray, K. [DVD]. Published by Missouri State University – Mountain Grove Fruit Experiment Station.

The purchase of this resource is optional. To obtain the DVD go to <https://ag.missouristate.edu/winery/wines.htm> and click on the "Missouri State University Wines" link under **Online stores** in the center of the page. Then click on the "Books & DVDs" link on the lower right.

### **Suggested Supplemental Reading Material**

A variety of basic wine analysis texts are available for use as references for this course. These include but are not limited to:

1. Zoecklein, B. W., Fugelsang, K C., Gump, B. H., & Nury, F. S. (1995). *Wine Analysis and Production*. Gaithersburg, MD: Aspen Publishers, Inc. ISBN-13: 978-14-7576-980-7
2. Iland, P., Bruer, N., Edwards, G., Weeks, S., & Wilkes, E. (2013). *Chemical Analysis of Grapes and Wine: Techniques and Concepts*. Australia: Patrick Iland Wine Promotions.
3. Boulton, R. B., Singleton, V. L., Bisson, L. F., & Kunkee, R. E. (1998). *Principles and Practices of Winemaking*. Gaithersburg, MD: Aspen Publishers, Inc. The Chapman and Hall Enology Library.
4. Jacobson, J. L. (2005). *Introduction to Wine Laboratory Practices and Procedures*. Springer Publications. ISBN-13: 978-0387243771
5. The instructor will provide procedures for students enrolled in the class. A typical “Quantitative Analysis” text also will serve as a useful supplement to your primary textbook.

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COURSE SCHEDULE ON THE FOLLOWING PAGE

## Course Schedule and Outline of Topics

Week — Dates	Wednesday Live Class Meeting	Lecture Topics and Assignments
<b>1</b> 01/25 - 01/31	01/27	Welcome to VIN 268, Introduction and Course Overview
<b>2</b> 02/01 - 02/07	02/03	Lab Safety Procedures Quiz 1
<b>3</b> 02/08 - 02/14	02/10	Basic Chemistry Review
<b>4</b> 02/16 - 02/21	02/17	Introduction and Analytical Techniques Quiz 2
<b>5</b> 02/22 - 02/28	02/24	Total Soluble Solids Quiz 3
<b>6</b> 03/01 - 03/07	03/03	pH and TA Determination Quiz 4
<b>7</b> 03/08 - 03/14	03/10	Pre- and Post-Fermentation Acid Additions, De-acidulation Quiz 5
<b>8</b> 03/15 - 03/21	03/17	Nutritional Status of Grape Juice: Nitrogen Nutrition Using the Formol Method Exam I Review <b>Exam I</b> - Brix, Soluble Solids, Aroma, pH, TA, Acid Adjustments, Nitrogen Nutrition Quiz 6
<b>9</b> 03/22 - 03/28	03/24	Sulfur Dioxide Quiz 7
<b>10</b> 03/29 - 04/04	03/31	Ethanol Quiz 8
<b>11</b> 04/05 - 04/11	04/07	Volatile Acidity Quiz 9
<b>12</b> 04/12 - 04/18	04/14	Residual Sugars
<b>13</b> 04/19 - 04/25	04/21	Malolactic Fermentation Quiz 10
<b>14</b> 04/26 - 05/02	04/28	Methods to Determine Cold Stability Methods to Determine Heat Stability Methods to Monitor Sanitation Activities Quiz 11
<b>15</b> 05/03 - 05/07	05/05	Preparing Wine for Bottling <b>Lab Report due</b> <b>Exam II</b> - Sulfur Dioxide, Ethanol, Volatile Acidity, Residual Sugars, MLF, Heat and Cold Stability, Sanitation Monitoring, and Bottling

*The instructor reserves the right to adjust the schedule as necessary.*

### Course Assignments

Course assignments include weekly readings (online lectures/presentations and print-based materials), written response to quiz questions, lab participation and reports, and two exams as delineated below.

**Lectures:** The lectures and supplemental reading material in VIN 268 consists of a survey of common methods of analysis used in the context of everyday winery production and monitoring operations. As we will be dealing with experimental methods the laboratory component is designed to complement and supplement the lecture.

**Laboratory:** Laboratory Reports for all the analyses conducted at the workshop will be due the **last week of class**. Details will be provided during the semester.

**Written Laboratory Reports:** Independent reports including all individually determined analytical results will be required for all labs. Students may generate laboratory results collaboratively but work independently on all laboratory write-ups. Reports will include the use of spreadsheets.

**Quizzes and Examinations:** There will be eleven weekly quizzes, and two exams. All quizzes and exams will be in a “take home” format and will be available on the online course site. You will have 10 days to complete the weekly quizzes; and one week to complete the exams. The exams will test knowledge of the material covered. Exams include essay and short answer questions, and simple calculations. Proposed examination dates are listed in the above course schedule and will be posted on the online course site as well. Any make-up examinations must be scheduled *in advance* with the instructor.

### Expectations and Instructor Feedback

Each student is expected to actively participate in all online activities and field experiences. Students should participate in the weekly live class meetings and the practicum workshop. It is also the students’ responsibility to check the online course site on a regular basis, be aware of the required activities and assignments, and adhere to the deadlines. This will ensure a successful learning experience.

The instructor will make every effort to respond to student questions and complete assignment/exam grading on a timely manner.

### Grading

Student grades will be determined based on their total points earned in the class. The table below outlines the total points possible and their percentage weight.

Percentage Weight of Student Performance		
Activity	Percentage	Points Possible
Examinations (2)	40%	200
Quizzes (11)	22%	110
Laboratory Reports	13%	65*
Workshop Attendance and Participation	20%	100
Class Participation	5%	25
Total Grade	100%	500

\*Laboratory Reports are graded  $\geq 85\%$  = A,  $70 - 84\%$  = B,  $50 - 69\%$  = C. Any reports with less than a “C” grade will be returned for rewriting.

Grade calculation: total points earned  $\div$  total points possible; then using the following scale to determine final letter grades:

90 – 100% = A	80 – 89.9% = B	70 – 79.9% = C	60 – 69.9% = D	Below 60% = F
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Incomplete grades are not given in this class. It is the students’ responsibility to see that all graded assignments and exams reach the instructor in a timely fashion so grades can be issued.

## Highland Community College Institutional Policies

### Withdrawing from the Course

Should it become necessary to withdraw, it is the student's responsibility to do so according to the guidelines [at this link](#) in the Highland Community College *Student Handbook*.

*\*Students planning to withdraw from this course must also complete the VESTA Withdrawal/Change of Schedule form and submitting to the VESTA office.*

### Attendance Policy

VESTA believes that students must attend class in order to achieve the best learning results. In the case of online courses, attendance is defined as active participation in the form of attending synchronous class meetings, completing reading/writing/testing assignments by assigned deadlines, and maintaining regular communication with course instructor via the online course site and communication tools designated by the instructor. For courses with a field practicum/workshop component, students must participate and complete the number of hours of practical experience required. Instructors may assign attendance grade as part of course grade if they choose to do so.

### Make-up Policy

The exams can be made up only in the event of an **excused absence** where the **instructor has prior knowledge** of the absence. Allowance of make-up tests will be at the discretion of the instructor and will be taken on the date of the student's return to class.

### Academic Integrity

This class is subject to Highland Community College's academic integrity policy. All submitted work must be your own. Cheating or plagiarism will not be tolerated. Any student found in violation of this policy will be subject to disciplinary action as outlined by Highland Community College's Academic Integrity Policy in the *Student Handbook* which can be accessed [at this link](#)

### Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law. Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students must complete the "Disabilities Self-Identification Form" at this link: <https://highlandcc.edu/pages/disability-services>. This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.