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Grape and Wine Education for the 21st Century

VIN 268 (ENO 268) – Wine and Must Analysis

Date: January 29 – May 11, 2018

VESTA Course No.: VIN 268

Course Name: Wine and Must Analysis

Instructor: Dr. Barry Gump

Office Hours: By appointment via phone or email

Semester: Spring 2018

Course Credit: 3 Hours

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 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. Students who missed a class meeting are required to view the recording of the live class as soon as possible.

Wine and Must Analysis Workshop

Students are required to participate in a workshop for this course. Travel and lodging for the workshop are at the student's expense.

Dates and Locations: To accommodate all students, identical Wine and Must Analysis Workshops will be offered in several different locations during several separate weekends. The VIN 268 instructor will lead the majority of the workshops, and a field expert will lead at least one workshop. **Students will choose which workshop to attend.** Detailed information and a schedule for the workshops is available on the online course site, and on the VESTA Event Calendar at: <http://vesta-usa.org/Students/Course-Practicum-Workshops>. Please check these regularly for more information.

Important Note on Participation: The workshop is designed to provide hands-on training for several of the analyses discussed throughout the course. Activities will include analyses for soluble solids, pH, titratable acidity, volatile acidity, alcohol, sulfur dioxide, and residual sugar analyses.

Students are required to participate in the workshop. If you cannot participate in the workshop, you should sign up for the course at a different semester when you can participate. Alternatively, students must complete the workshop not more than one calendar year prior taking the class in order to get credit for workshop participation during a course.

To get credit for a successfully completed workshop students must submit their workshop certificate and workshop report to the course instructor at the beginning of the semester. A scanned version will suffice. Furthermore, students must notify the VESTA program office at the beginning of the course if they plan to use this strategy of workshop completion *so appropriate adjustments can be made to the student's billing invoice.*

Textbook and Supplemental Materials

Highly Recommended

Basic Wine Analysis by Ray, K. DVD published by Missouri State University – Mountain Grove Fruit Experiment Station. For more information, go to <https://mtngrv.missouristate.edu/statefruit/> and click on the “Publications” link; to purchase, call 417-547-7500. (Purchasing is optional.)

Suggested 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. *Wine Analysis and Production*. B. W. Zoecklein, K. C. Fugelsang, B. H. Gump, F. S. Nury
2. *Chemical Analysis of Grapes and Wine: Techniques and Concepts*. P. Iland, N. Bruer, G. Edwards, S. Weeks, E. Wilkes.
3. *Principles and Practices of Winemaking*. R. B. Boulton, V. L. Singleton, L. F. Bisson, and R. E. Kunkee.
4. *Introduction to Wine Laboratory Practices and Procedures*. J. L. Jacobson.

The instructor will provide procedures to students enrolled in the class. A typical “Quantitative Analysis” text will serve as a useful adjunct to your primary textbook.

Course Schedule and Outline of Topics

Week — Dates	Wednesday Live Class Meeting	Lecture Topics and Assignments
1 01/29 - 02/04	01/31	Welcome to VIN 268, Introduction and Course Overview
2 02/05 - 02/11	02/07	Lab Safety Procedures
3 02/12 - 02/18	02/14	Basic Chemistry Review
4 02/19 - 02/25	02/21	Introduction and Analytical Techniques
5 02/26 - 03/04	02/28	Total Soluble Solids
6 03/05 - 03/11	03/07	pH and TA Determination
7 03/12 - 03/18	03/14	Pre- and Post-Fermentation Acid Additions, De-acidulation
8 03/19 - 03/25	03/21	Nutritional Status of Grape Juice: Nitrogen Nutrition Using the Formol Method Exam I Review Exam I - Brix, Soluble Solids, Aroma, pH, TA, Acid Adjustments, Nitrogen Nutrition (available 3/19 – 3/25)
9 03/26 - 04/01	03/28	Sulfur Dioxide
10 04/02 - 04/08	04/04	Ethanol

11 04/09 - 04/15	04/11	Volatile Acidity
12 04/16 - 04/22	04/18	Residual Sugars
13 04/23 - 04/29	04/25	Malolactic Fermentation
14 04/30 - 05/06	05/02	Methods to Determine Cold Stability Methods to Determine Heat Stability Methods to Monitor Sanitation Activities Exam II - Sulfur Dioxide, Ethanol, Volatile Acidity, Residual Sugars, MLF, Heat and Cold Stability, Sanitation Monitoring, and Bottling (available 4/30 – 5/6)
15 05/07 - 05/11	05/09	Preparing Wine for 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.

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 **four weeks before the end of the semester**. Details and dates 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 “Outline of Subject Content” section above 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

90 – 100%	= A
80 – 89.9%	= B
70 – 79.9%	= C
60 – 69.9%	= D
Below 60%	= F

Percentage Weight of Student Performance		
Activity	Percentage	Points
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.

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

Withdrawal from the Course

Should it become necessary to withdraw, it is the student’s responsibility to do so according to the guidelines in the HCC *Student Handbook* which can be viewed or downloaded at <https://highlandcc.edu/pages/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 and HCC believe that students must attend class in order to achieve the best learning results. In the case of VESTA online courses, attendance is defined as active participation in the form of attending synchronous class meetings (if applicable), 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 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 and Special Instructions

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*.

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.