



**VIN 268 – Wine and Must Analysis
Syllabus**

Date: February 5 – May 25, 2007
 Course Name: Wine and Must Analysis
 Course No.: VIN 259
 Instructor: Dr. Barry Gump
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 Office Hours: By appt, phone, e-mail

Semester: Spring 2007
 Room: Online
 Course Credit: 2 Hours
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Course Description: 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 workshops and hands-on experiences at participating wineries.

Prerequisites: Introduction to Enology-VIN 146 and CHM 105 or permission

Next Course in Sequence: VIN 257, or VIN 259 or VIN 266

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.

Tentative Schedule

Lect.	<i>Start Date</i>	Lecture Topics/ Assignments
0	2/5	Welcome to VIN 268
1	2/12	Rationale for analysis in production of wines – pre-harvest, pre-fermentation, fermentation, storage, pre-bottling, and post-bottling. Basic analytical tests used at various stages or production.
2	2/19	Grape Maturity: Soluble solids/degree Brix, sugar per berry Refractometry and Hydrometry techniques, Methods for berry aroma
3	2/26	pH, and Titratable Acidity (TA): Acids/Bases, Normality vs. Molarity, Grape/Wine acids, Hydrogen ion concentration, , pH measurements, TA measurements, Standardization of NaOH
4	3/5	Pre-fermentation, Acid additions, Nutritional Status of grape juice: Nitrogen nutrition using the Formol method
5	3/12	Exam review Exam I – Brix, soluble solids, aroma, pH, TA, Nitrogen Nutrition
6	3/19	Sulfur dioxide and methods of determination

7	3/26	Physical methods for determination of alcohol, Gas Chromatographic techniques for alcohol, fusel oils, etc. Gas Chromatography/Mass Spectrometry
	4/2	SPRING BREAK
8	4/9	volatile acidity, and extract
9	4/16	Residual Sugar (Lane Eynon, Rebelein methods,
10	4/23	Malic Acid (paper chromatography and enzyme methods)
11	4/30	Methods to determine cold stability. Methods to determine heat stability
12	5/7	Basic Spectrometry: Color, Spectrometric analysis, methods for Phenolics (KMnO ₄ index, Spectroscopic techniques – Folin-Ciocalteu, Large Polymeric Pigments/Small Polymeric Pigments). Testing for corks, bottling line and winery sanitation
13	5/14	Atomic Absorption techniques for metals, Testing for dissolved oxygen, sulfides, and Brettanomyces Exam II review
	5/21	Final Exam (Exam II) SO ₂ , Alcohol, VA, Rs, Malic acid, heat and cold stability, spectrophotometry
	TBA	Lab session at Mountain Grove for those who have been unable to complete laboratory exercises

Text and supplemental materials: A variety of basic wine analysis texts are available for use as a reference. 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 assignments that are potential portfolio items: Daily journal of internship experience.

Instructional Methods: The instruction style will incorporate a variety of distance learning technologies both synchronous and asynchronous.

Lecture: the 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: Students will make own arrangements to work at a winery or in a facility where the various laboratory activities can be conducted. Activities will include analyses for soluble solids, pH, titratable acidity, volatile acidity, alcohol, malic acid, sulfur dioxide, and residual sugar analyses. Laboratory reports are due within two weeks following the completion of an experiment.

Subject to Change: This syllabus is subject to change in the event of extenuating circumstances. If you are unable to fulfill a commitment, it is your responsibility to make arrangements to accomplish the missed activities.

Examinations: Exams will test knowledge of the material covered. Exams may include essay and short answer questions, and simple calculations. Proposed examination dates are listed on the Lecture Schedule. Any make-up examinations must be scheduled in advance with the instructor.

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 and are submitted by e-mail to the instructor.

Late Material:

Late assignments will be given 0%. The instructor reserves the right under extreme cases to make exceptions to this policy.

Attendance Policy:

Each student is expected to actively participate in all online activities and field experiences.

Grading:

Grades are calculated from the following point values for examinations and laboratory assignments. Letter grade cut points will be reported upon return of hour exams and the final. 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.

1. Lecture examinations on basic principles of wine analysis (600 points - two exams)
2. Laboratory participation and reports (300 points in lab)
3. Written responses to lecture questions (100 points)

Should it become necessary to withdraw, it is the student's responsibility to do so according to the guidelines in the Missouri State – West Plains' student handbook.

Accommodations for Students with Special Needs:

Missouri State University complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Students with disabilities who need special accommodations should make their request in the following way: (1) speak with the instructor after class or during office hours about your disability or special needs related to work in the class and (2) contact Student Services and ask to speak to the ADA officer.

Nondiscrimination Policy Statement

Missouri State University is a community of people with respect for diversity. The University emphasizes the dignity and equality common to all persons and adheres to a strict nondiscrimination policy regarding the treatment of individual faculty, staff, and students. In accord with federal law and applicable Missouri statutes, the University does not discriminate on the basis of race, color, religion, sex, national origin, ancestry, age, disability, or veteran status in employment or in any program or activity offered or sponsored by the University. In addition, the University does not discriminate on any basis not related to the applicable educational requirements for students or the applicable job requirements for employees. The University maintains a grievance procedure incorporating due process available to any person who believes he or she has been discriminated against. Missouri State University is an Equal Opportunity/ Affirmative Action employer. Inquiries concerning the grievance procedure, Affirmative Action Plan, or compliance with federal and state laws and guidelines should be addressed to the Equal Opportunity Officer, Siceluff Hall 296, 901 South National, Springfield, MO 65804, (417) 836-4252.

Approved by Board of Governors
December 13, 2002

Student Disability Accommodation Policy and Procedures

Within the guidelines set forth in this policy, Missouri State University is committed to providing an accessible and supportive environment for students with disabilities. Equal access for qualified students with disabilities is an obligation of the University under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Missouri State University does not discriminate on the basis of disability against otherwise-qualified individuals in any program, service or activity offered by the University. The University is committed to insuring that no otherwise-qualified individual with a disability is excluded, denied services, segregated or otherwise treated differently than other individuals because of the absence of auxiliary aids or other appropriate services; however, accommodations cannot result in an undue burden to the University or fundamentally alter the requirements essential to a program of instruction.