WINE 55 Course Outline as of Fall 2020

CATALOG INFORMATION

Dept and Nbr: WINE 55 Title: LAB ANALYSIS OF WINES Full Title: Lab Analysis of Wines Last Reviewed: 2/14/2022

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	8	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	WINE 55A

Catalog Description:

An introduction to winery laboratory practices including basic chemistry principles, laboratory techniques, and commonly used analysis methods for musts and wines.

Prerequisites/Corequisites:

Course Completion of CHEM 3A AND CHEM 3AL; OR CHEM 1A; OR CHEM 8; OR CHEM 42; OR CHEM 60

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:

Description: An introduction to winery laboratory practices including basic chemistry principles, laboratory techniques, and commonly used analysis methods for musts and wines. (Grade Only) Prerequisites/Corequisites: Course Completion of CHEM 3A AND CHEM 3AL; OR CHEM 1A; OR CHEM 8; OR CHEM 42; OR CHEM 60 Recommended: Limits on Enrollment:

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree: CSU GE:	Area Transfer Area			Effective: Effective:	Inactive: Inactive:
IGETC:	Transfer Area			Effective:	Inactive:
CSU Transfer	: Transferable	Effective:	Fall 2004	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:

Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. Understand the theory behind and execute all procedures performed in a medium-sized wine lab.

2. Understand the basic theory behind procedures normally performed in a large wine lab, including genetic, microbiological, Fourier Transform Infrared Spectroscopy (FTIR), High Pressure Liquid Chromatography (HPLC), and Gas Chromatography-Mass Spectrometry (GC-MS) assays.

Objectives:

Upon successful completion of this course, students will be able to:

- 1. Utilize basic laboratory principles and practices common to the wine industry.
- 2. Perform laboratory tests using appropriate instrumentation.
- 3. Integrate chemistry theory into wine lab practices.
- 4. Set up, carry out, and evaluate results of a variety of laboratory trials for analysis of wines.
- 5. Understand the common microbial assays used in the wine industry.
- 6. Evaluate and control quality of lab analyses and wine products.

Topics and Scope:

- I. Apply Basic Chemistry Theory and Practice in a Wine Lab
 - A. Apply basic principles of lab safety to a wine lab

B. Recognize, understand the use of, and be able to assemble all wine lab equipment used in a standard, medium-sized wine lab

C. Perform all wine assays (details below) done in-house in a standard, medium-sized wine lab

- D. Understand chemical theory, formulas and equations used in wine lab analysis
- E. Understand the principles of enzymatic analyses of wine
- F. Know procedures for preparing wine samples
- G. Dispose appropriately of samples and reagents

- H. Understand how to collect, record and effectively present lab data
- I. Effectively communicate the results of a lab assay in a written report
- J. Understand and use scientific notation
- K. Maintain sanitation in lab areas
- II. Use the Following Instrumentation
 - A. Centrifuge
 - B. Conductivity meter
 - C. Aeration-oxidation apparatus
 - D. Cash still
 - E. Spectrophotometer (UV-VIS)
 - F. DI (deionized water unit) system

III. Understand the Basic Theory and Use in Wine of the Following Instrumentation and Assays

- A. Nephalometer
- B. High Performance Liquid Chromatography (HPLC)
- C. Gas chromatograph/mass spectrometer (GC-MS)
- D. Automated lab sampling instrument
- E. Atomic absorbance and Inductively Coupled Plasma mass spectrometer (ICP-MS)
- F. Thermocycler
- G. ScorpionTM assay and similar genetic analyses
- H. Selective plating for microbe identification
- IV. Perform the Following Laboratory Procedures
 - A. Standardize NaOH with potassium hydrogen phthalate
 - B. Ammonia by ammonia probe
 - C. Yeast assimilable nitrogen assay by OPA
 - D. Volatile acidity by cash still
 - E. Total and free SO2 by aeration-oxidation
 - F. Malic acid by enzymatic assay
 - G. Residual sugar/glucose by enzymatic assay
 - H. Color/phenols by UV-Visible Spectroscopy
 - I. Cold stability
 - J. Heat stability
 - K. Other assays appropriate to medium-sized wine lab

Assignment:

- 1. Weekly lab analyses
- 2. Weekly lab reports
- 3. Midterm; final exam
- 4. Reading 20 30 pages per week
- 5. Homework problem sets

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Lab reports

Writing 15 - 30% **Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problem sets; lab reports and analyses with attention to evaluation of lab data

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Ability to accurately perform lab analyses

Exams: All forms of formal testing, other than skill performance exams.

Midterm and final: multiple choice, true/false, matching items, completion, short answer.

Other: Includes any assessment tools that do not logically fit into the above categories.

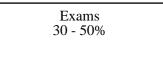
Attendance and participation

Representative Textbooks and Materials:

Wine Analysis and Production. Zoecklein, Bruce W. et. al., Aspen, 2013 Instructor prepared materials

Problem	solving
15 - 3	

Skill Demonstrations	
20 - 40%	



Other Category	
0 - 10%	