WINE 55 Course Outline as of Fall 2022

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:
In this course, students learn about and practice winery laboratory procedures 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: In this course, students learn about and practice winery laboratory procedures 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:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	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. Explain the basic chemistry principles associated with major lab procedures performed in a medium-sized wine lab.
2. Execute all major lab procedures performed in a medium-sized wine lab.

Objectives:
At the conclusion of this course, the student should be able to:
1. Apply basic chemistry theory and lab practice in a wine lab.
2. Understand the set-up and accurate use of major lab instruments used in a medium-sized wine lab.
3. Understand the theory and procedures to assay major wine components analyzed in a medium-sized wine lab.
4. Understand the basic theory behind procedures normally performed in a state-of-the art wine lab, including genetic, microbiological, and chemical assays.

Topics and Scope:

I. Basic Chemistry Theory and Practice
- A. Lab safety
- B. Wine lab analysis (chemical theory, formulas and equations)
- C. Principles of enzymatic analyses of wine
- D. Procedures for preparing wine samples
- E. Disposal of samples and reagents
- F. Lab data collection process and recordkeeping
- G. Lab assay results and reports
- H. Sanitation in lab areas
- J. Standardize sodium hydroxide

II. Wine lab instruments
- A. pH meter
- B. Manual titratable acidity glassware
- C. Autotitrator for titratable acidity
- D. Centrifuge
- E. Conductivity meter
- F. Dissolved oxygen meter
- G. Confined space atmosphere monitor
- H. Aeration-oxidation apparatus
- I. Cash still
- J. Spectrophotometer (UV-VIS)
- K. Alcolyzer
- L. Deionized water unit system
- M. OenoFoss
- N. Chemwell (Astoria Pacific) discrete analyzer
- O. Gas chromatograph
- P. Nephelometer
- Q. Phase contrast microscope
- R. Brightfield microscope

III. Assay principles and procedures for wine properties
- A. pH
- B. Titratable acidity
- C. Turbidity
- D. Alcohol
- E. Residual sugar
- F. Volatile acidity
- G. Malic acid
- H. Assimilable nitrogen
- I. Sulfides
- J. Proteins
- K. Potassium bitartrate
- L. Dissolved oxygen
- M. Phenolics (tannins and pigments)
- N. Total and free SO2
- O. Wine spoilage organism presence and by-products
- P. Other assays appropriate to medium-sized wine lab

IV. Theory of state-of-the art wine analyses
- A. Fourier Transform Infrared Spectroscopy (FTIR)
- B. High Pressure Liquid Chromatography (HPLC)
- C. Gas Chromatography-Mass Spectrometry (GC- MS)
- D. Scorpion assay for detection of DNA
- E. Hemocytometer

Assignment:

Lecture Related Assignments:
1. Weekly reading (5-20 pages)
2. Exams (2-3), including a final exam

Lab Related Assignments:
1. 2-3 lab reports (1-6 pages each)
2. Weekly lab protocol preparation (1-2 pages each)

3. Worksheets (8-12)
4. Troubleshoot lab instrument problems (1-4)
5. Perform lab assays for final exam

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, Lab protocol preparation, Worksheets	Writing 10 - 40%

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

Troubleshoot lab instrument problems	Problem solving 5 - 10%

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

Lab assays for final exam	Skill Demonstrations 10 - 40%

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

Exams, including a final exam	Exams 15 - 35%

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

Lab participation	Other Category 10 - 25%

Representative Textbooks and Materials:
Wine Analysis and Production. Zoecklein, Bruce W. et. al. Springer. 2013
Instructor prepared materials