**CHEM 3AL Course Outline as of Fall 2020** 

## **CATALOG INFORMATION**

Dept and Nbr: CHEM 3AL Title: GENERAL CHEMISTRY 1: LAB Full Title: General Chemistry Part 1: Lab Last Reviewed: 5/13/2019

Units		Course Hours per Week		Nbr of Weeks	<b>Course Hours Total</b>	
Maximum	2.00	Lecture Scheduled	1.00	17.5	Lecture Scheduled	17.50
Minimum	2.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 35.00

Total Student Learning Hours: 105.00

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:	

### **Catalog Description:**

General principles of chemistry, including atomic theory, bonding, stoichiometry, kinetic molecular theory of gases, properties of mixtures, the periodic table, and thermochemistry. Emphasis will be placed n laboratory experiments that illustrate the fundamental principles and laws of chemical behavior and the properties of matter. Lab portion of the first semester of a one-year program of general chemistry.

Prerequisites/Corequisites:

Course Completion or Current Enrollment in CHEM 3A

## **Recommended Preparation:**

Course Completion of ENGL 1A

## Limits on Enrollment:

## Schedule of Classes Information:

Description: General principles of chemistry, including atomic theory, bonding, stoichiometry, kinetic molecular theory of gases, properties of mixtures, the periodic table, and thermochemistry. Emphasis will be placed n laboratory experiments that illustrate the fundamental principles and laws of chemical behavior and the properties of matter. Lab portion

of the first semester of a one-year program of general chemistry. (Grade Only) Prerequisites/Corequisites: Course Completion or Current Enrollment in CHEM 3A Recommended: Course Completion of ENGL 1A Limits on Enrollment: Transfer Credit: CSU;UC. Repeatability: Two Repeats if Grade was D, F, NC, or NP

# **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

AS Degree: CSU GE:	Area Transfer Area B3	Laboratory Ac	tivity	Effective: Effective: Fall 2020	Inactive: Inactive:
IGETC:	<b>Transfer Area</b> 5C	Fulfills Lab Re	equirement	Effective: Fall 2020	Inactive:
CSU Transfer	: Transferable	Effective:	Fall 2020	Inactive:	
UC Transfer:	Transferable	Effective:	Fall 2020	Inactive:	

### CID:

CID Descriptor:CHEM 110	General Chemistry for Science Majors I, with Lab
SRJC Equivalent Course(s):	CHEM1A OR CHEM4A OR CHEM3A AND CHEM3AL
CID Descriptor: CHEM 120S	General Chemistry for Science Majors Sequence A
SRJC Equivalent Course(s):	CHEM1A AND CHEM1B OR CHEM4A AND CHEM4B OR
•	CHEM3A AND CHEM3AL AND CHEM3B

### **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. Demonstrate proficiency in fundamental chemistry laboratory techniques.
- 2. Carry out experiments safely and carefully in the lab.
- 3. Obtain accurate data and interpret and manipulate the data correctly.
- 4. Relate experimental observation in the lab to theoretical chemical concepts from the lecture.

### **Objectives:**

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

- 1. Prepare for and conduct experiments, safely and correctly, and clean up and dispose of waste.
- 2. Perform synthesis, characterization, and determination of yield.
- 3. Experimentally verify known physical quantities.
- 4. Identify and perform quantitative analysis on mixtures.
- 5. Measure physical and chemical properties,
- 6. Generate calibration curves and use them with an appropriate level of precision.
- 7. Use scientific writing and format to clearly communicate results of experiments.

## **Topics and Scope:**

I. Atomic Spectroscopy

- II. Molecular Shapes
- III. Synthesis of a Compound
- IV. Behavior of Chemical Substances
- V. Solutions
- VI. Thermochemistry
- VII. Gas Laws
- VIII. Skills
  - A. Fundamental lab skills

B. Error analysis, safety, use of significant Figures, Use of proper glassware, use of a lab notebook

C. Computational skills (including graphing and preparation of calibration curve)

D. Instrumentation

All topics are covered in the lecture and lab portions of the course.

### Assignment:

Lecture-Related Assignments:

1. Lab reports (approximately 1 per week)

Lab-Related Assignments:

- 1. Lab experiments with data analysis (approximately 1 per week)
- 2. Lab practicals (0-2 per semester)

3. Midterm lab exams (0-2 per semester), lab quizzes (0-4 per semester), final lab exam (0-1 per semester)

### 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

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

Lab experiments with data analysis

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

Lab practicals

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

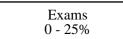
Midterm lab exams, lab quizzes, final lab exam

25 - 75%	

Writing

Problem solving 25 - 75%

Skill Demonstrations	
0 - 25%	



None

Other Category 0 - 0%

# **Representative Textbooks and Materials:**

Instructor prepared materials

Laboratory Experiments for Chemistry: The Central Science. 13th ed. Brown, Theodore and Nelson, John and Kemp, Kenneth.Pearson. 2015 (classic)

Laboratory Manual for Chemistry: A Molecular Approach. 4th ed. Tro, Nivaldo and Vincent, John and Livingston, Erica. Pearson. 2017