

**CHEM 3AL Course Outline as of Fall 2025****CATALOG INFORMATION**

Dept and Nbr: CHEM 3AL Title: GENERAL CHEMISTRY 1: LAB  
 Full Title: General Chemistry Part 1: Lab  
 Last Reviewed: 8/26/2024

Units	Course Hours per Week		Nbr of Weeks		Course Hours Total	
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:**

In this course, students will learn 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 on laboratory experiments that illustrate the fundamental principles and laws of chemical behavior and the properties of matter. This is the 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 C1000 ( or ENGL 1A)

**Limits on Enrollment:****Schedule of Classes Information:**

Description: In this course, students will learn 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 on laboratory experiments that illustrate the fundamental principles and laws of chemical behavior and the properties of matter.

This is the 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 C1000 ( or 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:**

<b>AS Degree:</b>	<b>Area</b>	Effective:	Inactive:
<b>CSU GE:</b>	<b>Transfer Area</b>	Effective:	Inactive:
	B3	Fall 2020	
	Laboratory Activity		

<b>IGETC:</b>	<b>Transfer Area</b>	Effective:	Inactive:
	5C	Fall 2020	
	Fulfills Lab Requirement		

<b>CSU Transfer:</b>	Transferable	Effective:	Fall 2020	Inactive:
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<b>UC Transfer:</b>	Transferable	Effective:	Fall 2020	Inactive:
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<b>CID:</b>	
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, safety, and accuracy in using fundamental chemistry laboratory techniques.
2. Analyze and interpret laboratory data using prevailing chemical theories.

#### **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, and use of a lab notebook
  - C. Computational skills (including graphing and preparation of a 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 practical(s) (0-2)
3. Lab exam(s) (0-2), lab quiz(zes) (0-4), final lab exam(s) (0-1)

### 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 25 - 75%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Lab experiments with data analysis	Problem solving 25 - 75%
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**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Lab practical(s)	Skill Demonstrations 0 - 25%
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**Exams:** All forms of formal testing, other than skill performance exams.

Lab exam(s), lab quiz(zes), final lab exam(s)	Exams 0 - 25%
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**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

Instructor prepared materials.

Laboratory Experiments for Chemistry: The Central Science. 14th ed. Brown, Theodore and LeMay, H. and Bursten, Bruce and Murphy, Catherine and Woodward, Patrick and Stoltzfus, Matthew. Pearson. 2018. (classic).

Laboratory Manual for Chemistry: A Molecular Approach. 5th ed. Tro, Nivaldo and Vincent, John and Livingston, Erica. Pearson. 2019. (classic).