

**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	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:**

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. 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 on 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:**

<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 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	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 practicals	Skill Demonstrations 0 - 25%
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**Exams:** All forms of formal testing, other than skill performance exams.

Midterm lab exams, lab quizzes, final lab exam	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. 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