

**CHEM 1A Course Outline as of Fall 2008****CATALOG INFORMATION**

Dept and Nbr: CHEM 1A      Title: GENERAL CHEMISTRY  
 Full Title: General Chemistry  
 Last Reviewed: 5/13/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	5.00	Lecture Scheduled	4.00	17.5	Lecture Scheduled	70.00
Minimum	5.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	7.00		Contact Total	122.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 140.00

Total Student Learning Hours: 262.50

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:

**Catalog Description:**

General principles of chemistry including atomic theory, bonding, stoichiometry, kinetic-molecular theory, properties of mixtures, the periodic table, and thermodynamics. First semester of a one year program of general chemistry.

**Prerequisites/Corequisites:**

Course Completion of CHEM 51 or higher (V6) or placement on the Chemistry Diagnostic Test;; AND MATH 155 or higher (V2) or two years of high school algebra or equivalent

**Recommended Preparation:**

Eligibility for ENGL 100 or ESL 100

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

Description: General principles of chemistry including atomic theory, bonding, stoichiometry, kinetic-molecular theory, properties of mixtures, the periodic table, and thermodynamics. First semester of a one year program of general chemistry. (Grade Only)

Prerequisites/Corequisites: Course Completion of CHEM 51 or higher (V6) or placement on the Chemistry Diagnostic Test;; AND MATH 155 or higher (V2) or two years of high school

algebra or equivalent

Recommended: Eligibility for ENGL 100 or ESL 100

Limits on Enrollment:

Transfer Credit: CSU;UC. (CAN CHEM2)(CHEM 1A+CHEM 1B=CHEM SEQ A)

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:	
	C	Natural Sciences	Fall 1981		
<b>CSU GE:</b>	<b>Transfer Area</b>		Effective:	Inactive:	
	B1	Physical Science	Fall 1981		
	B3	Laboratory Activity			
<b>IGETC:</b>	<b>Transfer Area</b>		Effective:	Inactive:	
	5A	Physical Sciences	Fall 1981		
	5C	Fulfills Lab Requirement			
<b>CSU Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:	Fall 2020
<b>UC Transfer:</b>	Transferable	Effective:	Fall 1981	Inactive:	Fall 2020

<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:**

Major Applicable Course

## **COURSE CONTENT**

### **Outcomes and Objectives:**

After successful completion of this course, a student will be able to:

1. Use dimensional analysis and solve equations to perform calculations and solve word problems related to chemistry-specific topics.
2. Safely obtain accurate measurements in a laboratory setting and identify the uncertainty associated with those measurements.
3. Sort, graphically represent, interpret, and communicate in writing the results of laboratory experiments and analyze experimental error associated with those results.
4. Relate observed macroscopic behavior to microscopic phenomena in terms of the kinetic molecular theory.
5. Describe matter and its transformations according to the atomic theory, the theories of chemical bonding, and the writing and classification of balanced chemical equations.
6. Relate chemical reactions to associated changes in energy.
7. Correctly identify, name, and write the formula for inorganic compounds.
8. Recognize trends in chemical properties as related to the periodic

table of the elements, and use data on the periodic table of elements to perform calculations.

9. Apply chemical principles to real world situations.

### Topics and Scope:

#### LECTURE MATERIAL

1. Matter
2. Scientific Measurement/Uncertainty
3. Atomic Theory
4. Bonding and Molecular Shape
5. Inorganic Nomenclature
6. The Mole
7. Calculations and chemical reactions
8. Types of Chemical Reactions
9. Microscopic Picture of the States of Matter
10. Gas Laws
11. Thermodynamics
12. Periodic Trends
13. Intermolecular Forces
14. Properties of mixtures

#### LABORATORY MATERIAL

1. Laboratory Safety
2. Laboratory techniques
  - a. the measure and transfer of liquids
  - b. determining mass using a balance
  - c. creating solutions of known concentration
3. Maintaining a Laboratory Data Notebook
4. Graphing data obtained in the laboratory
5. Analysis of yields and experimental errors obtained in the laboratory
6. Writing laboratory reports

### Assignment:

1. Specific reading and study assignments from the lecture textbook (approximately 1 chapter per week)
2. Completion of recommended end-of-chapter problems (20+ problems per week)
3. Laboratory experiments and accompanying reports (1 per week)
4. Midterm exams (3-5 per semester), quizzes (1 per week), 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.

Written homework, Lab reports
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Writing 10 - 20%
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**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Lab reports	Problem solving 15 - 35%
<b>Skill Demonstrations:</b> All skill-based and physical demonstrations used for assessment purposes including skill performance exams.	
Class performances, Lab skill techniques, accurate lab results	Skill Demonstrations 5 - 20%
<b>Exams:</b> All forms of formal testing, other than skill performance exams.	
Multiple choice, completion, problem solving and short essay	Exams 50 - 70%
<b>Other:</b> Includes any assessment tools that do not logically fit into the above categories.	
Attendance and participation, assignments submitted on time, improvement demonstrated on final exam.	Other Category 0 - 5%

### **Representative Textbooks and Materials:**

#### LECTURE TEXTBOOKS

Chemistry: A Molecular Approach, by Tro; Pearson, Prentice Hall, 2008

Chemistry: The Central Science by Brown, LeMay, Bursten; Prentice Hall 2006

Chemistry: The Molecular Nature of Matter and Change by Silberberg, McGraw Hill, 2006

Principles of Modern Chemistry by Oxtoby, Gillis, Nachtrieb, Brooks/Cole, 2002

Chemistry by Zumdahl, Houghton Mifflin, 2005

Chemistry and Chemical Reactivity by Kotz, Treichel, Weaver, Brooks/Cole 2006

#### LAB MANUALS

Chemistry 1A General Chemistry, by Fassler; Cengage, C, 1st edition

Laboratory Experiments for Chemistry: The Central Science by Nelson and Kemp, Prentice Hall

Experiments in General Chemistry by Greco, Rickard, Weiss, Prentice Hall

#### LAB NOTEBOOK

Chemistry Lab Notebook, by Cer; Cengage L