

## General Chemistry I (CHEM 1311)

**Credit:** 3 semester credit hours (3 hours lecture)

**Prerequisite:** MATH 1332 or MATH 1314

**Co-Requisite:** CHEM 1111 General Chemistry I Lab

### Course Description:

Fundamental principles of chemistry for majors in the sciences, health sciences, and engineering; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry.

### Required Textbook and Materials:

1. *Chemistry, The Central Science*, 12<sup>th</sup> Edition, by Brown, LeMay, Bursten, Murphy, and Woodward, with MasteringChemistry®, ISBN13:9781292021522
2. A package of # 2 pencils and #882 Scantrons

## Objectives

### Course Objectives

Upon completion of this course, the student will be able to:

1. Define the fundamental properties of matter.
2. Classify matter, compounds, and chemical reactions.
3. Determine the basic nuclear and electronic structure of atoms.
4. Identify trends in chemical and physical properties of the elements using the Periodic Table.
5. Describe the bonding in and the shape of simple molecules and ions.
6. Solve stoichiometric problems.
7. Write chemical formulas.
8. Write and balance equations.
9. Use the rules of nomenclature to name chemical compounds.
10. Define the types and characteristics of chemical reactions.
11. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.
12. Determine the role of energy in physical changes and chemical reactions.
13. Convert units of measure and demonstrate dimensional analysis skills.

### Core Objectives

1. **Critical Thinking Skills:** To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
2. **Communication Skills:** To include effective development, interpretation and expression of ideas through written, oral, and visual communication.

3. Empirical & Quantitative Skills: To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
4. Teamwork: To include the ability to connect choices, actions and consequences to ethical decision-making.

## Course Outline

- |                                                                     |                                            |
|---------------------------------------------------------------------|--------------------------------------------|
| A. Introduction: Matter and Measurement                             | F. Electronic Structure of Atoms           |
| B. Atoms, Molecules, and Ions                                       | G. Periodic Properties of the Elements     |
| C. Stoichiometry: Calculations with Chemical Formulas and Equations | H. Basic Concepts of Chemical Bonding      |
| D. Reactions in Aqueous Solution                                    | I. Molecular Geometry and Bonding Theories |
| E. Thermochemistry                                                  | J. Gases                                   |

## Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

## Course Evaluation

Final grades will be calculated according to the following criteria:

1. 4 Unit Tests	50%
2. Comprehensive Final Exam	20%
3. Homework	20%
4. Notebook	10%

## Course Requirements

1. Written report.
2. Professional Resume.
3. Construct a scale model.
4. Perform the 'Library Treasure Hunt'.

## Course Policies

1. No food, drinks, or use of tobacco products in class.
2. beepers, telephones, headphones, and any other electronic devices must be turned off while in class.
3. Do not bring children to class.
4. No late assignments will be accepted.
5. Students that miss a test must make up the test the day they return to class. It is the student's responsibility to make arrangements to make up test.
6. Attendance Policy. Two absences are allowed. If a student is tardy to class or departs early three (3) times, it will be equal to one (1) absence. Each absence beyond two absences will result in a 5 point deduction from your final grade.
7. The student is responsible for initiating and completing the drop process. A student who stops coming to class and fails to drop the course, will earn an 'F' in the course.
8. Additional class policies as defined by the individual course instructor.

## Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

## Course Schedule

Week	Topic
One	Course introduction and policies Introduction: Matter and Measurement
Two	Atoms, Molecules, and Ions
Three	Stoichiometry: Calculations with Chemical Formulas and Equations
Four	Reactions in Aqueous Solution
Five	Thermochemistry
Six	Continued
Seven	Electronic Structure of Atoms
Eight	Continued

---

Nine	Periodic Properties of the Elements
Ten	Continued
Eleven	Basic Concepts of Chemical Bonding
Twelve	Continued
Thirteen	Molecular Geometry and Bonding Theories
Fourteen	Continued
Fifteen	Gases
Sixteen	Review
Final Exam	<i>Given on the date and time specified by the official exam schedule</i>

---

**Contact Information: Varies by Instructor.**