

Course Outcome Summary

General Education Satisfier Course

CHEM 150 Fundamental Principles of Chemistry

Course Information

Division	Science/Mathematics
Contact Hours	90
Lecture Hours	45
Lab Hours	45
Total Credits	4

Prerequisites

Reading 090 and English 090 and MATH 092 or MATH 124 or MATH 150 or qualifying score on accepted placement tests

Course Description

An introduction to the fundamental concepts and applications of general chemistry and description of chemical compounds. Detailed discussions include: measurement, atomic structure, nuclear change, the periodic law, bonding, nomenclature, chemical reactions, mass relationships, solutions, acids and bases and other selected topics. The course is designed for majors in health, elementary education and technical programs and as an elective for non-science majors. Course requires laboratory work.

This course is approved as a General Education competency satisfier.

General Education Goal: Critical Thinking

Competency: Understand the elements of scientific inquiry and scientific principles in a natural science college laboratory course setting.

Learning Outcome: Students will use the scientific method to define a problem, utilize appropriate methods to solve the problem, and propose and evaluate a solution to the problem.

General Education Learning Objectives

- Observe and describe natural phenomena and formulate hypotheses.
- Plan and implement scientific experiments to test hypotheses.
- Utilize scientific laboratory skills for data collection within a college laboratory setting.
- Evaluate experimental data and propose solutions based on this data.
- Evaluate the proposed implications of a solution.

Course Outcomes

In order to evidence success in this course, the students will be able to:

- Define and apply the steps of the scientific method.

Applies to General Education Objectives

- Observe and describe natural phenomena and formulate hypotheses.
- Plan and implement scientific experiments to test hypotheses.
- Utilize scientific laboratory skills for data collection within a college laboratory setting.
- Evaluate experimental data and propose solutions based on this data.
- Evaluate the proposed implications of a solution.

- Observe and describe natural phenomena and distinguish between supernatural phenomena.

Applies to General Education Objectives

- Observe and describe natural phenomena and formulate hypotheses.

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3. Utilize the rules of scientific measurement in performing chemical calculations.
4. Solve problems relating to the physical properties and chemical properties of substances.
Applies to General Education Objectives
 - B. Plan and implement scientific experiments to test hypotheses.
 - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
 - D. Evaluate experimental data and propose solutions based on this data.
 - E. Evaluate the proposed implications of a solution.
5. Define matter in terms of physical state as well as subatomic, elemental, and compound arrangements.
6. Identify differences of physical change and chemical change.
Applies to General Education Objectives
 - A. Observe and describe natural phenomena and formulate hypotheses.
7. Explain and employ the Atomic Theory.
Applies to General Education Objectives
 - A. Observe and describe natural phenomena and formulate hypotheses.
 - D. Evaluate experimental data and propose solutions based on this data.
8. Construct and employ the Laws of Chemistry including Periodic Law, the Law of Definite Composition, the Law of the Conservation of Mass, the Law of Conservation of Energy, the Law of Chemical Equilibrium, the Ideal Gas Law.
Applies to General Education Objectives
 - B. Plan and implement scientific experiments to test hypotheses.
 - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
 - D. Evaluate experimental data and propose solutions based on this data.
 - E. Evaluate the proposed implications of a solution.
9. Construct and name chemical compounds.
10. Construct chemical reactions, identify classifications, and perform stoichiometric calculations.
Applies to General Education Objectives
 - A. Observe and describe natural phenomena and formulate hypotheses.
 - B. Plan and implement scientific experiments to test hypotheses.
 - C. Utilize scientific laboratory skills for data collection within a college laboratory setting.
 - D. Evaluate experimental data and propose solutions based on this data.
 - E. Evaluate the proposed implications of a solution.
11. Explain intramolecular and intermolecular bonding.
12. Define differences and similarities of the properties of gases, liquids, and solids.



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Applies to General Education Objectives

A. Observe and describe natural phenomena and formulate hypotheses.

13. Calculate changes in conditions for gases, liquids, and solids.

Applies to General Education Objectives

D. Evaluate experimental data and propose solutions based on this data.

E. Evaluate the proposed implications of a solution.

14. Explain and employ VSEPR Theory.

Applies to General Education Objectives

A. Observe and describe natural phenomena and formulate hypotheses.

D. Evaluate experimental data and propose solutions based on this data.

E. Evaluate the proposed implications of a solution.

15. Apply the concepts of acids, bases, and the pH scale.



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By:

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