



Course Outcome Summary

General Education Satisfier Course

CHEM 155 Chemistry and Society

Course Information

Division	Science/Mathematics
Contact Hours	75
Lecture Hours	45
Lab Hours	30
Total Credits	4

Prerequisites

ENG 151 and MATH 092 or qualifying score on accepted placement tests

Course Description

This course focuses on the relationship between chemistry and the world around us, evaluating how chemistry impacts our society, the environment, and the economy. Chemical principles are introduced to the extent necessary for understanding contemporary topics such as: water, air, energy, common household chemicals, material science, polymers, biochemistry, nutrition, pharmaceuticals, genetics, forensics, and measurement science. The course provides education in the scientific method and is appropriate 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 identify differences and similarities of the physical and chemical properties of various gases, liquids, and solids by applying the steps of the scientific method.
Applies to General Education Objective
 - 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.



2. Define matter in terms of elemental and compound arrangements as pure substances compared to mixtures and evaluate various components utilizing scientific measurement and analytical skills.
Applies to General Education Objective
 - 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.

3. Model and explain the chemical structures and chemical reactions of Earth's atmosphere and the effects of the sun's energy as it interacts with chemicals in the atmosphere.
Applies to General Education Objective
 - 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.

4. Recognize the concepts of acids and bases, energy sources, and various other chemical materials, and evaluate the economic, environmental, and societal costs and benefits of Green Chemistry.
Applies to General Education Objective
 - 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.

5. Identify the properties of water, solutes within water, formulate testable hypotheses, and evaluate potential solutions utilizing scientific reasoning
Applies to General Education Objective
 - 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.

6. Classify the chemical structure and function of natural and synthetic polymers.
Applies to General Education Objective
 - 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.

7. Identify, synthesize, and explain chemical issues of contemporary topics.
Applies to General Education Objective
 - 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.