

West Linn–Wilsonville School District

Science Department – Course Statement

Course Title: Chemistry and Technology in the Community

Length of Course: Year
Number of Credits: 2
Grade Level: 10, 11, 12
Prerequisites: Biology; completed or currently enrolled in Geometry
CIM Work Samples
Offered in Course: At least one technical writing, information speech, or math problem solving work sample

Date of Description/Revision: 2002

Course Overview

This course will provide students with the opportunity to learn about chemistry in a less mathematically oriented environment. The first semester will focus on practical problems where the students must learn chemistry in order to solve the problem. In the first unit, there is a large fish kill which threatens not only the quality of the water but a town's livelihood dependent on tourism. The second semester will look at different technological fields such as forensic science, science of the air and industry, and the carbonated beverage industry.

This course fulfills the need of students who want a challenging course but are not ready for college prep Chemistry.

Essential Questions

Concepts providing focus for student learning

- How is matter constructed?
- What are the similarities and differences in matter?
- Why does matter interact?
- How is the chemical concept of "mole" important to mathematical relationships?
- How is it possible to predict the outcomes of chemical reactions?
- How does experimentation improve the understanding of matter?

Proficiency Statements

Upon completion of course, students will be able to:

- Use the metric system appropriately.
- Demonstrate and apply knowledge of elements, compounds, mixture, physical and chemical changes, formulas, equations, and the periodic table.
- Describe basic concepts of chemistry including atomic theory, periodic properties, electron energy levels, bonding, mole concept, solutions, and reactions.
- Read, record, and analyze data in mathematical calculations and construct and use numerous types of graphs.

West Linn–Wilsonville School District

Science Department – Course Statement

- Describe the relationship of chemistry to various career choices and differentiate between careers in chemistry and technology.
- Demonstrate the proper use of common laboratory equipment.
- Draw conclusions and formulate hypothesis from data and observations made in the laboratory.
- Demonstrate through exposure to current scientific literature an awareness of current scientific research and application to our everyday world.

General Course Topics/Units & Timeframes

A. Water: Exploring Solutions	6 weeks
B. Materials: Structure and Uses	6 weeks
C. Petroleum: Making and Breaking Bonds	6 weeks
D. Criminal Forensics	7-8 weeks
E. Air: Chemistry and the Atmosphere	6 weeks
F. The Carbonated Beverage Industry	3-4 weeks

Resources

- Text: *Chemistry in the Community*, 4th Ed., American Chemical Society, Freeman, 2001
- Additional Texts:
Crime Scene Investigations, Walker, P. and Wood, E.
Science in a Technical World, *The Carbonated Beverage Industry*, Freeman
- Other: Computers