West Linn–Wilsonville School District

Science Department – Course Statement

Course Title: Chemistry

Length of Course: Year
Number of Credits: 2
Grade Level: 10, 11, 12
Prerequisites: 1 year Algebra; Advanced Algebra highly recommended
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

Basic chemistry concepts are studied with emphasis on theory, the use of mathematics, and practical chemistry. Among the concepts studied are: atomic theory, principles of chemical reactions, periodicity, radioactivity, atomic structure, chemical bonding, solutions, and mole concepts. This course is designed for the college-bound student. Students should expect a demanding daily homework load as well as projects, tests, and laboratory write-ups. A high level of understanding in Algebra and in scientific methods is necessary for success in this course.

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.
- 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

Semester 1

A.	Science Methods and Chemistry Introduction	2 weeks
B.	Atomic Theory and History	3 weeks
C.	Periodic Table	3 weeks
D.	Ionic Bonding/Naming Compounds	3 weeks
E.	Covalent Bonding	3 weeks
F.	Balancing Equations/Reaction Types	2 weeks
G.	Stoichiometry	3 weeks

Semester 2

H.	Thermodynamics	2 weeks
I.	Kinetic Theory	2 weeks
J.	Gas Laws	3 weeks
K.	Equilibrium	2 weeks
L.	Acid-Base Theory	4 weeks
M.	Reduction-Oxidation	2 weeks
N.	Solution Chemistry	3 weeks

Resources

- Text: *Addison Wesley Chemistry* (w/CD ROM), Prentice Hall/Addison Wesley, 2002
- Other: CD-ROMs; computer/calculator based labs