Chemistry Unit 01: The Language of Chemistry

Unit #:	APSDO-00019424	Duration:	3.0 Week(s)	Date(s):	

Team:
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Grades:
12
Subjects:
Science

Unit Focus

In this unit, students will recognize that the field of chemistry has an alphabet all its own in the form of chemical formulas and that the atoms and molecules of pure substances (elements and compounds) can be represented by symbols and formulas. They will learn that these atoms bond in different ways (ionic or covalent) depending on the types of elements involved in the bonding. Students will learn to write the formulas and names of covalent and ionic compounds. Summative assessments may include: written quizzes and tests that include application problems to demonstrate students' capacity to communicate in the language of chemistry; and models and lab reports that include experimental design, data analysis, and laboratory practice. Instructional materials include a traditional textbook (Modern Chemistry), teacher-generated readings and handouts, guided inquiry learning activities, and online tutorials/simulations/problem sets.

Stage 1: Desired Results - Key Understandings

Established Goals

Next Generation Science Standards (DCI)
Science: 8

- Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms. *PS1.6.A1*

Transfer

T1

Integrate knowledge from a variety of disciplines and apply it to new situations to make sense of information, formulate insightful questions, and/or solve problems

T2

Design an investigation or model using appropriate scientific tools, resources, and methods

T3

Collect, analyze and evaluate the quality of evidence in relation to a question

T4

Develop a valid scientific conclusion, assess its validity and limitations, and determine future course of actions to inspire further questions

T5

Communicate scientific information clearly, thoroughly, and accurately.

Meaning

Understandings	Essential Questions
U1 (U402) Physical Sciences: Structures & Properties of Matter: Atoms combine in predictable ways to form molecules which have characteristic physical and chemical properties.	**Q1** (Q403) What is it about how atoms and molecules are arranged, connected, and/or moving that explains the properties and/or states of the matter that we see and feel?

Acquisition of Knowledge and Skill

Knowledge	Skills
K1 Compounds are named using a system of rules depending on the type of bonding in the molecule **K2** The formula of a compound represents a ratio of the atoms in that compound **K3** Lab safety guidelines must be followed at all times **K4** All lab apparatus/glassware have specific and appropriate applications	**S1** Write the formula of an ionic or covalent compound given its name **S2** Name an ionic or covalent compound given its formula **S3** Write formulas, name and draw structures of organic compounds **S4** Create and interpret models to represent molecules **S5** Students will demonstrate lab safety at all

		times **S6** Students will demonstrate proper use of lab equipment and glassware