

# Syllabus

## PLAR Prep - Science - Chemical Naming (Task 2)



**2 Units:** 13 lessons

**Estimated time:** 13-20 hours

**OALCF Levels:** A1.2, A2.2, A3

**Suggested Milestones:** 3 or 4, 10 or 11, 14

### Course Overview

In this course, you will learn chemical formulas, names, and chemical reactions in an equation format and identify features of the periodic table. You will gain an understanding of chemical safety, properties of acids and bases reactants and products.

### Unit 1: Atoms and Elements (7 lessons)

#### Introduction to Physical Science

(40 slide tutorial and mastery test)

Physical Science is the study of matter and energy. In this lesson, you will apply the steps of the scientific method, and identify the forms of matter and energy and how they are measured.

#### Matter Around Us

(38 slide tutorial and mastery test)

In this lesson, you will learn how atoms are the building blocks of matter, and how each substance and mixture can be classified on its atomic composition and properties. You will learn about pure substances and homogeneous and heterogeneous mixtures. You will study key properties of matter, such as state, melting and boiling points, conductivity, and pH scale for acidity and alkalinity.

#### Classifying Matter

(23 slide tutorial and mastery test)

In this lesson, you will distinguish between different forms and states of matter. Matter can exist in different forms, or states, depending on its temperature. The three common states of matter are solid, liquid, and gas.

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### Atoms and Elements

(35 slide tutorial and mastery test)

In this lesson, you will study the Bohr model of the atom and explain how the model of the atom has changed over time. You will gain an understanding of atomic notation and how the atomic number and the mass number of atoms relate to their numbers of protons and neutrons.

### Building Models of Atomic Arrangement

**Your teacher will score this activity using the scale of points provided.** (100 Points)

Course Activity: You'll learn about some of the properties of salt, water and copper by building and analyzing an atomic model using marshmallows and toothpicks.

### The Structure of the Atom

(47 slide tutorial and mastery test)

In this lesson, you will compare atoms the subatomic particles that they contain. You will look at some of the scientists who contributed to the development of atomic theory.

### The Periodic Table

(47 slide tutorial and mastery test)

In this lesson, you will describe the structure of an atom of a given element based on the element's position in the periodic table.

## Unit 2: Chemical Bonding (6 lessons)

### Ionic Compounds and Metals

(44 slide tutorial and mastery test)

In this lesson, you will predict the structures of ionic compounds and metals and describe their typical properties.

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### Covalent Compounds

(40 slide tutorial and mastery test)

In this lesson, you will predict the structures and properties of covalent compounds.

### Complex Structures

(36 slide tutorial and mastery test)

In this lesson, you will predict the structures of compounds that contain polyatomic ions, transition metals, and common oxoacids.

### Observing a Chemical Reaction

**Your teacher will score this activity using the scale of points provided.** (100 Points)

Course Activity: You'll combine baking soda, water and vinegar and compare properties and chemical reactions.

### Properties and Chemical Reactions

(39 slide tutorial and mastery test)

In this lesson, you will determine whether a chemical reaction has occurred by comparing the properties of reactants and products. A chemical equation is a powerful tool that we can use to write a chemical reaction in words. You will learn how chemical equation can be written using words and chemical formulas. Chemical formulas are a symbolic way to write substances.

### Atoms in Chemical Reactions

(38 slide tutorial and mastery test)

In this lesson, you will develop a model that shows that atoms are conserved in chemical reactions. You will learn about chemical formulas and how they show substances at the atomic level, which atoms are present and at what ratio. You will learn how to check whether a chemical equation is balanced.