

# CHEMISTRY SCOPE AND SEQUENCE

**Textbook: Chemistry in the Community 4E American Chemical Society**

## Semester 1:

### **Unit 1: Sources & Uses of Water**

(hydrologic cycle, states of matter, dimensional analysis, phase changes, data collection tools, density, heating and cooling curves)

### **Unit 2: Water & Its Contaminants**

(Classification of matter, atomic structure, naming formulas, writing formulas for compounds, isotopes, isotopic symbols)

### **Unit 3: Solubility**

(Acid-Base Properties, solubility, solubility curve, molar mass, Molarity, mole conversions, polarity, acid-base testing)

### **Unit 4: Materials: Structures & Uses**

(Metals, nonmetals, atomic structure, isotopes, metalloid properties, trends on periodic table, group properties of elements, chemical and physical properties and changes)

### **Unit 5: Earth's Mineral Resources**

(metal activity series, metallurgical processes, electron configurations, Bohr models, oxidation numbers, predicting single replacement reactions, redox reactions, oxidized and reduced elements)

## Semester 2:

### **Unit 6: Conserving Matter**

(Conservation of energy, balancing equations, stoichiometry, percent composition, mole conversions, molar mass)

### **Unit 7: Petroleum: What it is**

(Composition of petroleum, uses of petroleum, name and draw straight and branched chain alkanes, covalent bonding, Lewis structures, structural isomers)

### **Unit 8: Petroleum: An Energy Source**

(Exothermic & endothermic reactions, predict and balance combustion reactions, enthalpy, specific heat, calorimetry, heating and cooling curves)

### **Unit 9: Gases**

(Components of the atmosphere, units of pressure, Boyle's Law, Charles' Law, Combined Gas Law, gas stoichiometry at STP, ideal gas law, gas collection by water displacement, properties of gases.)

### **Unit 10: Acids & Bases**

(Acid-Base formulas, products of acid-base neutralization, tests to determine acidic vs. basic, pH calculations, acid rain, buffers)

### **Unit 11: Nuclear Chemistry**

(Half-life, radioactive decay, balance nuclear reactions, types of nuclear radiation, nuclear fission, nuclear fusion, nuclear power plants, nuclear waste disposal, average atomic mass, isotopes)