

CHEMISTRY CIP PACING GUIDE 2017-2018

Content:

1st Nine Weeks

Scientific Method and Measurement: Chem. 1a - i

Investigate and understand that experiments, in which variables are measured, analyzed and evaluated, produce observations and verifiable data. Key concepts include:

- a. Designated laboratory techniques
- b. Safe use of chemicals and equipment
- c. Proper response to emergency situation
- d. Multiple variables are manipulated with repeated trials
- e. Accurate recording, organizing, and analysis of data through repeated trials.
- f. Mathematical and procedural error analysis
- g. Mathematical manipulation (SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, dimensional analysis)
- h. use of appropriate technology including computer, graphing calculators, and probeware, for gathering data, communicating results, and using simulations to model concepts
- i. construction and defense of a scientific viewpoint

Periodic Table and Atomic Structures : Chem 2a-i

Investigate and understand that the placement of elements on the periodic table is a function of their atomic structure. The periodic table is a tool used for the investigations of:

- a. average atomic mass, mass number, and atomic number
- b. isotopes, half lives, and radioactive decay
- c. mass and charge characteristics of subatomic particles
- d. families or groups
- e. Periods
- f. trends including atomic radii, electronegativity, shielding effect, and ionization energy
- g. electron configurations, valence electrons, and oxidation numbers
- h. chemical and physical properties
- i. historical and quantum models

Chemical Formulas and Balanced Equations: Chem. 3a , c, d

Investigate and understand how conservation of energy and matter is expressed in chemical formulas and balanced equations. Key concepts include:

- a. Nomenclature
- c. writing chemical formulas
- d. bonding types

2nd Nine Weeks

Chemical Formulas and Balanced Equations: Chem. 3a –e

Investigate and understand how conservation of energy and matter is expressed in chemical formulas and balanced equations. Key concepts include:

- a. nomenclature
- b. balancing chemical equations
- c. writing chemical equations
- d. bonding tyoes
- e. reaction types

Chemical Quantities and Molar Relationships: Chem. 4a –d

Investigate and understand that quantities in a chemical reaction are based on molar relationships. Key concepts include:

- a. Avogadro's principle and molar volume;
- b. stoichiometric relationships;
- c. solution concentrations; and
- d. acid/base theory; strong electrolytes, weak electrolytes, and nonelectrolytes; dissociation an ionization; pH and pOH; and the titration process.

Kinetic Theory: Chem. 5 a-g

The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. Key concepts include

- a. pressure, temperature, and volume;
- b. partial pressure and gas laws;
- c. vapor pressure;
- d. phase changes;
- e. molar heats of fusion and vaporization;
- f. specific heat capacity; and
- g. colligative properties.

Organic and biochemistry : Chem. 6 a-b

The student will investigate and understand how basic chemical properties relate to organic chemistry and biochemistry. Key concepts include

- a. unique properties of carbon that allow multi-carbon compounds
- b. uses in pharmaceuticals and genetics, petrochemicals, plastics, and food