

UNIT 2 OBJECTIVES

- Given a Periodic Table of Elements, the students will be able to identify (label) the Alkali metals, Alkaline Earth metals, Transition Metals, Inner Transition Metals, Halogens, and Noble Gases.
- Students will be able to define electromagnetic radiation.
- Students will be able to list at least three different types of electromagnetic radiation.
- Students will be able to define wavelength and frequency
- Students will be able to explain the relationship between wavelength and frequency.
- Given the speed of light (3.0×10^8 m/s) and the formula $c = \lambda \nu$, students will be able to solve for either the wavelength or frequency.
- Given the equation $E = h\nu$ and Planck's constant ($h = 6.626 \times 10^{-34}$ J·s), the students will be able to solve for the energy (E) gained or lost to move to another energy level.
- Students will be able to compare and contrast a line-emission spectrum and a continuous spectrum. Students will be able to describe the Bohr model of the atom.
- Students will be able to describe the movement of an electron as either an absorption or release of energy.
- Students will be able to develop an analogy about the movement of electrons from one energy level to the other. Students will be able to define the three rules governing electron configurations (Aufbau, Pauli Exclusion Principle, and Hund's Rule).
- Given a Periodic Table of Elements, the students will be able to write the electron configuration notation for elements.
- Given a Periodic Table of Elements, the students will be able to write the orbital notation for elements
- Students will be able to design an analogy to the meaning of the electron configuration.
- Given a Periodic Table of Elements, the students will be able to label the s, p, d and f blocks on the Periodic Table of Elements.
- Given a Periodic Table of Elements and a random list of elements, students will be able to list elements in the same group or period.
- Students will be able to define Atomic Radii
- Students will be able to explain the trend in Atomic Radii within periods and groups.
- Students will be able to explain the trend in Ionization Energy within periods and groups.

- Students will be able to define Ionization Energy. Students will be able to define a cation and anion.
- Students will be able to define valence electrons.
- Given a Periodic Table of Elements, the students will be able to determine the number of valence electrons for the main-group elements (Group A Elements)
- Students will be able to define electronegativity
- Students will be able to explain the trend in Electronegativity within periods and groups.
- Students will know the trends of Electron Affinity, as well as the significance related to the release of energy when electrons are gained
- Students can read and interpret information from a PES diagram. This information includes relative ionization energy of the given electrons; relationship to the electron configuration and effects of nuclear charge relating to coulomb's law.