Unit 2 Title: Electrons and The Periodic Table

Content Area: **Template**
Course(s):
Time Period:
Length:
Status: **Published**

State Mandated Topics Addressed in this Unit

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N/A	N/A

Unit 2 Title: Electrons and The Periodic Table

Standards

SCI.HS-PS1-6	Refine the design of a chemical system by specifying a change in conditions that would produce increased amounts of products at equilibrium.
SCI.HS-PS1-2	Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties.
SCI.HS-PS4-4	Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.
SCI.HS-PS4-3	Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.
SCI.HS-PS1-4	Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy.
SCI.HS-PS4-1	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.
SCI.HS-PS4-5	Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.

Essential Questions

- How can the Periodic Table be used to predict whether atoms will transfer electrons and form ionic compounds or share electrons and form molecular compounds?
- How does the location of an element on the Periodic Table indicate the location of its core and valence electrons?
- How is the layout of the Periodic Table a reflection of electron details such as energy levels and

orbitals?

- What is electronegativity and what is ionization energy and how are these properties related to atomic radius?
- What relationships exist among energy, wavelength, and frequency of electromagnetic waves produced when electrons become excited?
- What rules and system is used to accurately name and write formulas for ionic and molecular compounds?

Instructional Tasks/Activities

- Applications of the Electromagnetic Spectrum
- Comparison of Ionic Salts
- Effective Nuclear Charge and Atomic Radius
- Electron Configuration Analysis
- Electron Configuration and the Periodic Table
- Formula Writing and Naming Compounds
- How does Medical Imaging Work
- Ionic vs. Covalent Bonding
- Ionization Energy and Electron Affinity
- LAB: “Alkali Metals and Water”
- LAB: “Empirical Formula of a Hydrate”
- LAB: “Flame Test Analysis”
- Metals, Nonmetals, and Metalloids
- Naming and Formula Writing: Ionic and Molecular Compounds
- Periodic Table Puzzle Activity
- Periodic Trends and Chemical Reactions
- phet microwaves
- phet Models of the Hydrogen Atom
- phet neon lights
- phet radiation
- phet radiowaves and em waves
- phet Wave on a String
- Wave Nature and Quantum Mechanics

Assessment Procedure

- Classroom Total Participation Technique
- Classwork
- DBQ
- Essay

- Exit Ticket/Entrance Ticket/Do Now
- Flashcards and/or drill and practice
- Inquiry based activities with reflective discussion
- Journal / Student Reflection
- Kahoot
- Laboratory groups
- Lecture with note taking or guided notes
- Online models and simulators
- Other named in lesson
- Peer Review
- Performance
- Power Point Presentations
- Problem Correction
- Project
- Quiz
- Rubric
- Teacher Collected Data
- Test
- Whole and small group discussions
- Worksheet

Recommended Technology Activities

- Appropriate Content Specific Online Resource
- Chromebook
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Copy/Paste Content Specific Link Here
- Gimkit
- GoGuardian
- Google Classroom
- Google Docs
- Google Forms
- Google Slides
- Kahoot
- MagicSchool AI
- Other- Specified in Lesson
- Quiziz
- Screencastify

Accommodations & Modifications & Differentiation

Accommodations and Modifications should be used to meet individual needs. Their IEP and 504 plans should be used in addition to the following suggestions.

Gifted and Talented

- Compare & Contrast
- Conferencing
- Debates
- Jigsaw
- Peer Partner Learning
- Problem Solving
- Structured Controversy
- Think, Pair, Share
- Tutorial Groups

Instruction/Materials

- alter format of materials (type/highlight, etc.)
- color code materials
- eliminate answers
- extended time
- extended time
- large print
- modified quiz
- modified test
- Modify Assignments as Needed
- Modify/Repeat/Model directions
- necessary assignments only
- Other (specify in plans)
- other- named in lesson
- provide assistance and cues for transitions
- provide daily assignment list
- read class materials orally
- reduce work load
- shorten assignments
- study guide/outline

- utilize multi-sensory modes to reinforce instruction

Environment

- alter physical room environment
- assign peer tutors/work buddies/note takers
- assign preferential seating
- individualized instruction/small group
- modify student schedule (Describe)
- other- please specify in plans
- provide desktop list/formula

Honors Modifications

Resources

- Resource 1
- Resource 2
- Resource 3
- Resource 4
- Resource 5