# Unit 3: The Periodic Table & Chemical Bonding

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 3: The Periodic Table & Chemical Bonding

## Essential Questions

- How are compound names and formulas systematically determined?
- How can periodic trends be explained?
- How do periodic trends arise from atomic structure?
- How does molecular geometry influence physical and chemical properties?
- In what ways do trends predict reactivity?
- What are some ways that elements are different from one another?
- What distinguishes ionic from covalent bonding?
- What information does the periodic table provide?
- What principles underlie Lewis structures?

## Objectives

- Explain how chemist began to organize known and unknown elements
- ·Explain how the modern periodic table is organized
- Apply VSEPR theory to predict molecular geometry.
- Classify elements according to their electron configuration
- Describe and explain different trends on the periodic table
- Describe how Mendeleev organized his periodic table
- Determine molecular polarity from shape and bond dipoles.
- Draw Lewis structures for ionic and covalent compounds.
- Identify the three broad classes of elements

- Interpret periodic trends: atomic radius, ionization energy, and electronegativity.
- Name and write formulas for binary and polyatomic ionic compounds.
- Predict element properties based on position in the periodic table.

## Standards

| | |
|---|---|
| SCI.HS-PS1-3 | Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. |
| 9-12.HS-PS2-6 | Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. |
| 9-12.HS-PS1-1 | Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. |
| 9-12.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. |

## Instructional Tasks/Activities

- Article on periodic trends
- Common assessment chapter test
- Common assessment quiz
- Constructed response
- Crash course periodic table
- Do now’s and/or exit slips
- Graphic organizers or models
- Groups research assignment
- Guided practice
- Homework
- Individual, small, and large group work
- Laboratory investigations within small groups
- Periodic Table Bingo
- Periodic table guess who game
- Review Activity

## 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 Presentation
- 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