

Chemistry Quarterly Objectives 2019-20

Quarter 1:

Unit 1 - Foundations, Measurement and Safety

Major Objectives: At the end of this unit, you should be able to:

1. Name and give the uses of ordinary laboratory equipment.
 2. State the location of and proper use of our laboratory safety equipment.
- IT IS REQUIRED THAT ALL STUDENTS WILL PASS A LAB TEST WITH A GRADE OF "B" OR BETTER BEFORE PERFORMING ANY CHEMICAL LAB IN THIS COURSE.**
3. Recognize the general steps scientists use in solving problems
 4. Illustrate the scientific method
 5. Show how numbers can be expressed in scientific notation.
 6. Learn the metric system to measure length, volume, and mass
 7. Learn to determine percent error
 8. Learn to determine the number of significant figures in a calculated result
 9. Learn how dimensional analysis can be used to solve various types of problems

Unit 2 - Matter

Major Objectives: At the end of this unit, you should be able to:

1. Learn to determine density
2. Identify the types of radioactive decay.
3. Average atomic mass, mass number, and atomic number.
4. Determine the half-life of an element.
5. Differentiate between fusion and fission processes.
6. Isotopes

Unit 3 - The Atom

Major Objectives: At the end of this unit, you should be able to:

1. Explain electron configurations, valence electrons, and oxidation numbers.
2. Identify mass and charge characteristics of subatomic particles.
3. The idea of atoms, their combination in compounds, and their recombination.
4. Understand that atomic, molecular and ionic particles are in constant motion.
5. Realize that physical and chemical properties of matter result from subatomic particles that behave according to physical rules.
6. Understand the principal laws of thermodynamics and how these dictate the behavior of chemical substances.

Quarter 2:

Unit 4 - Bonding

Major Objectives: At the end of this unit, you should be able to:

1. Define ionic bond, covalent bond and metallic bond
2. Draw the Lewis symbols for elements.
3. Define lattice energy and its relationship to ionic bonds
4. Describe a covalent compound using Lewis symbols
5. Describe a single, double, and a triple covalent bond in terms of number of shared electrons, length and strength
6. Define electronegativity and be able to list its periodic trends
7. Predict the relative polarities of bonds using either the periodic table or electronegativity values.
8. Write the Lewis structures for molecules and ions containing covalent bonds using the periodic table
9. Describe the 3 common exceptions to the octet rule and provide examples of each

Unit 5 – Periodic Table

Major Objectives: At the end of this unit, you should be able to:

1. Identify families or groups and periods
2. Identify trends including atomic radii, electronegativity, shielding effect and ionization energy.
3. Name the different types of elements and their location.
4. Understand the historical and quantum models

Unit 6 – Naming

Major Objectives: At the end of this unit, you should be able to:

1. Writing chemical formulas
2. Name any binary molecule, using the standard prefixes for 1-10.
3. Name all of the commonly-encountered ions.
4. Name Salts and other ion-derived compounds, including the acids listed here.
5. In naming Acids student will need to know the *-ous/-ic* names.