Wallenpaupack Area School District
Planned Course Curriculum Guide

Science Department

Chemistry I

Course Description:

This course is taught with the fundamentals of chemistry infused with hands-on activities geared towards the individualized students' needs and Academy pathways. Introductory chemistry topics include composition, structure, properties of matter and the changes matter undergoes are delved into at a level for all students. Laboratory safety and appropriate laboratory experiments are emphasized.

Initial Creation Date (if applicable) and Revision Dates:

March 2025

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Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 1: Safety in the Chemistry Laboratory	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.4.A
Use evidence to construct an explanation relating the speed of an object to the energy of that object.

3.2.4.C
Ask questions and predict outcomes about the changes in energy that occur when objects collide.

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.9-12.O
Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Know the safety regulations in the performing of a laboratory in the chemistry classroom.
2. Identify the safety symbols utilized in all aspects of chemistry.
3. Understand the subcategory of each safety symbol and the implications of it in the chemistry classroom.
4. Identify the safety equipment in the chemistry laboratory.
5. Practice safety protocol to prevent accidents and reduce negative aspects of accidents in the chemistry laboratory.
6. Utilize safety equipment and check it for use in case of an emergency.
7. Know how to label a chemical bottle.
8. Understand where to find pertinent information on a chemical bottle, especially warnings.
9. Practice chemistry techniques such as lighting a Bunsen burner, weighing solids, measuring liquids, decanting, filtering heterogenous solutions, inserting glass tubing into a stopper, cutting and fire polishing glassware, and using a calorimeter.
10. Perform basic mathematics when given a set formula with variables.
11. Identify and utilize laboratory apparatus.
12. Properly read a laboratory, assemble the equipment, follow the directions, and utilize the data to complete the questions.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Board demonstrations.
3. Group work.
4. Individual work.
5. Guided practice.

6. Teacher created instructional videos on Schoology.
7. Supervised self-paced chemical laboratory work in laboratory groups.
8. Cooperative learning groups.
9. Homework.
10. Teacher made chapter test.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
   a. Teacher observations.
   b. Teacher questioning.
   c. Guided practice.
   d. Nongraded laboratory to gain skills.
   e. Teacher homework corrections penalty free for students.

2. Summative Assessments
   a. Unit test.
   b. Final exam at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
   a. One-on-one work with guided practice during class time.
   b. Teacher made videos on Schoology.
   c. Before school and after school Science Lab.

2. Advanced Students – Extension
   a. More in-depth answers to laboratory questions.
   b. More in-depth answers on homework.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: caustic substance, electrical safety, explosion danger, eye safety, chemical safety, fire safety, heating safety, gas precaution, proper waste disposal, glassware safety, hand safety, radiation precaution, hygienic care, clothing protection, safety control equipment, eye and face wash fountains, safety showers, fire blankets, fire extinguishers, first aid kits, lab aprons, lab gloves, safety goggles, face shields, tongs, waste containers, ventilation hoods, heat-resistant mat, spill control packages, labeling, decanting, transferring liquids, heating substances,

evaporating solutions, decanting, mortar and pestle, beaker, pipestem triangle, crucible and cover, graduated cylinder, Erlenmeyer flask, wire gauze, laboratory burner, test tube, test tube holder, ring stand, tong, ring, buret, double buret clamp, test tube buret clamp, test tube brush, stirring rod, evaporating dish, glass plate, spatula, triangular file, watch glass, funnel, medicine dropper, forceps, test tube rack, plastic wash bottle, sparker, glass tubing, glycerin, glazed weighing paper, electronic scale, tare, filter paper, meniscus, soluble, insoluble, filtrate, calorimeter, thermometer, beaker tongs, heat lose and gain, joules, specific heat constant, goggles, gloves, apron, and reagent bottle.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 2: Matter and Change	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.2.A
Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

3.2.2.D
Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

3.2.4.A
Use evidence to construct an explanation relating the speed of an object to the energy of that object.

3.2.5.A
Develop a model to describe that matter is made of particles too small to be seen.

3.2.5.D
Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.A
Develop models to describe the atomic composition of simple molecules and extended structures.

3.2.6-8.B
Develop a model that predicts and describes changes in the particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.9-12.A
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.

3.2.9-12.E
Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.

3.2.9-12.N
Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Define chemistry.
2. List examples of the branches of chemistry.
3. Compare and contrast basic research, applied research, and technological development.
4. Distinguish between the physical properties and chemical properties of matter.

5. Classify changes of matter as physical or chemical.
6. Determine if a physical or chemical change has occurred in the laboratory setting.
7. Explain the gas, liquid, and solid states in terms of particles.
8. Explain how the law of conservation of energy applies to changes of matter.
9. Distinguish between a mixture and a pure substance.
10. Determine the melting/freezing point of a pure substance based on laboratory procedures and equipment.
11. Use a periodic table to name elements, given their symbols.
12. Use a periodic table to write the symbols of elements given their names.
13. Describe the arrangement of the periodic table.
14. List the characteristics that distinguish metals, nonmetals, and metalloids.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
   a. Teacher observations.
   b. Teacher questioning.
   c. Guided practice.
   d. Teacher homework corrections penalty free for students.
   e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
   a. Unit test.
   b. Final exam at the end of course.
   c. Graded laboratories.
   d. Graded activities.
   e. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
   a. One-on-one work with guided practice during class time.
   b. Teacher made videos on Schoology.
   c. Before school and after school Science Lab.

2. Advanced Students – Extension
   a. More in-depth answers on laboratory questions and homework.
   b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: benefits, contributions, hazards, natural science, biological sciences, physical sciences, chemistry, composition, structure, properties, melting/freezing point, boiling/vaporization point, organic chemistry, inorganic chemistry, physical chemistry, conservation of matter, analytical chemistry, qualitative, quantitative, luster, texture, flame test, solubility test, biochemistry, theoretical, basic research, applied research, technological development, mass, weight, matter, inertia, energy, atom, element, compound, physical property, extensive property, intensive property, density, malleability, tenacious, ductility, conductivity, crystalline shape, refractive index, physical change, solid, liquid, gas, volume, shape, chemical properties, reactant, product, exothermic reaction, endothermic reaction, precipitate, mixtures, heterogeneous mixture, phase, homogeneous material, solution, solute, solvent, pure substance, group, family, periodic table, period, horizontal, vertical, metals, alkali, alkaline earth, electrons, nonmetals, insulators, electrons, brittle, chalcogen, halogen, noble gas, energy, entropy, natural elements and transuranium.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 3: Measurement and Calculations	**TIMEFRAME: 9 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.B
Make and communicate observations and measurements to identify materials based on their properties.

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.9-12.A
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.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Describe the purpose of the scientific method.
2. Distinguish between qualitative and quantitative observations.
3. Describe the differences between hypotheses, theories, and models.
4. Distinguish between a quantity, a unit, and a measurement standard.
5. Name and use SI units for length, mass, time, volume and density.
6. Distinguish between mass and weight.
7. Perform density calculations.
8. Transform a state of equality into a conversion factor.
9. Create and utilize conversion constants in the laboratory.
10. Distinguish between accuracy and precision.
11. Determine the number of significant figures in measurement.
12. Perform mathematical operations involving significant figures.
13. Convert measurements into scientific notation.
14. Distinguish between inversely and directly proportional relationships.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.

9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test and quizzes.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
   a. Teacher observations.
   b. Teacher questioning.
   c. Guided practice.
   d. Teacher homework corrections penalty free for students.
   e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
   a. Unit quizzes.
   b. Unit test.
   c. Final exam at the end of course.
   d. Graded laboratories.
   e. Graded activities.
   f. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
   a. One-on-one work with guided practice during class time.
   b. Teacher made videos on Schoology.
   c. Before school and after school Science Lab.

2. Advanced Students – Extension
   a. More in-depth answers on laboratory questions and homework.
   b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: scientific method, problem, information, observation, qualitative, quantitative, hypothesis, experimentation, experimental group, control group, retest, revise, conclusion, data, theory, model, scientific law, measurement, metric system, base units, derived units, length, mass, weight, time, volume, density, conversion factors, accuracy, precision, observed, experimental, true value, accepted value, absolute error, percent error, significant digit, scientific notation, directly proportional, inversely proportional, hyperbola, reaction well, pH paper, bromothymol blue, indicator solution, predict, justify, undyed, capillary tube, chromatography paper, absorption, commercial food dye, deviation, and experimental error.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 4: Atomic Theory	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.D
Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.6-8.Q
Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave.

3.2.9-12.A
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.

3.2.9-12.G
Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

3.2.9-12.T
Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Explain the law of conservation of mass, the law of definite proportions, and the law of multiple proportions.
2. Summarize the five essential points of Dalton's atomic theory.
3. Explain the relationship between Dalton's atomic theory and the law of conservation of mass, the law of definite proportions, and the law of multiple proportions.
4. Demonstrate the law of conservation of mass in the laboratory setting.
5. Summarize the observed properties of cathode rays that led to the discovery of the electron.
6. Summarize the experiment carried out by Rutherford and his co-workers that led to the discovery of the nucleus.
7. List the properties of protons, neutrons, and electrons.
8. Define atom.
9. Explain what isotopes are.
10. Define atomic number and mass number and describe how they apply to isotypes.
11. Given the identify of a nuclide determines its number of protons, neutrons, and electrons.

12. Define mole, Avogadro's number, and molar mass, and state how all three are related.
13. Solve problems involving mass in grams, amount in moles, and number of atoms of an element.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test and quiz.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1 Formative Assessments
   a. Teacher observations.
   b. Teacher questioning.
   c. Guided practice.
   d. Teacher homework corrections penalty free for students.
   e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
   a. Unit quiz.
   b. Unit test.
   c. Final exam at the end of course.
   d. Graded laboratories.
   e. Graded activities.
   f. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
   a. One-on-one work with guided practice during class time.
   b. Teacher made videos on Schoology.
   c. Before school and after school Science Lab.

2. Advanced Students – Extension
   a. More in-depth answers on laboratory questions and homework.
   b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: atomic theory, atom, hyle, law of conservation of mass, matter, law of definite proportions, Dalton's law of multiple proportions, ratios, atomic theory, atomic structure, subatomic particles, protons, neutrons, electrons, subdivision, fission, electrode, cathode rays, anode, electron charge, coulomb, nuclear forces, atomic number, mass number, isotope, nuclide, atomic mass scale, molecular mass, mole, Avogadro's constant, wavelength, laser, weighted averages, and gram formula mass.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 5: Arrangement of Electrons in Atoms	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.A
Develop models to describe the atomic composition of simple molecules and extended structures.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.9-12.A
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.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Explain the mathematical relationship between the speed, wavelength, and frequency of electromagnetic radiation.
2. Discuss the dual wave-particle nature of light.
3. Discuss the significance of the photoelectric effect and the line-emission spectrum of hydrogen to the development of the atomic model.
4. Describe the Bohr model of the hydrogen atom.
5. Discuss Louis de Broglie's role in the development of the quantum model of the atom.
6. Compare and contrast the Bohr model and the quantum model of the atom.
7. Explain how the Heisenberg uncertainty principle and the Schrodinger wave equation led to the idea of atomic orbitals.
8. List the four quantum numbers and describe their significance.
9. Relate the number of sublevels corresponding to each of an atom's main energy levels, the number of orbitals per sublevel, and the number of orbitals per main energy level.
10. List the total number of electrons needed to fully occupy each main energy level.
11. State the Aufbau principle, the Pauli exclusion principle, and Hund's rule.
12. Describe the electron configurations for the atoms of any element using orbital notation, electron-configuration notation, and the noble-gas notation.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.

4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test and quizzes.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
    a. Teacher observations.
    b. Teacher questioning.
    c. Guided practice.
    d. Teacher homework corrections penalty free for students.
    e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
    a. Unit quizzes.
    b. Unit test.
    c. Final exam at the end of course.
    d. Graded laboratories.
    e. Graded activities.
    f. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
    a. One-on-one work with guided practice during class time.
    b. Teacher made videos on Schoology.
    c. Before school and after school Science Lab.

2. Advanced Students – Extension
    a. More in-depth answers on laboratory questions and homework.
    b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: electromagnetic radiation, speed of light, wavelength, frequency, electromagnetic spectrum, photoelectric effect, quantum, energy, Plank's constant, wave-particle duality, ground state, excited state, line spectrum, spectroscopy, spectrum, quantum theory, orbital, quantum number, principle quantum number, orbital shape, magnetic quantum number, spin quantum number, diamagnetism, paramagnetism, electron configuration, Aufbau principle, Pauli exclusion principle, Hund's rule, orbital notation, electron configuration notation, shorthand electron configuration notation, electron dot, highest occupied level, inner shell electrons, noble gases, flame test, and cobalt glass.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 6: The Periodic Table	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.9-12.A
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.

3.2.9-12.C
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.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Explain the roles of Mendeleev and Moseley in the development of the periodic table.
2. Describe the modern periodic table.
3. Explain how periodic law can be used to predict the physical and chemical properties of elements.
4. Describe how the elements belonging to a group on the periodic table are interrelated in terms of atomic number.
5. Describe the relationship between electrons in sublevels and the length of each period of the periodic table.
6. Locate and name the four blocks of the periodic table and explain the reasons for these names
7. Discuss the relationship between group configurations and group numbers.
8. Describe the locations in the periodic table and the general properties of the alkali metals, the alkaline earth metals, the chalcogens, the halogens, and the noble gases.
9. Define atomic and ionic radii, ionization energy, electron affinity, and electronegativity.
10. Compare the periodic trends of atomic radii, ionization energy, and electronegativity, and state the reasons for these variations.
11. Define valence electrons, and state how many are present in atoms of each main-group elements.
12. Compare the atomic radii, ionization energies, and electronegativities of the d-block elements with those of the main-group elements.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.

7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
    a. Teacher observations.
    b. Teacher questioning.
    c. Guided practice.
    d. Teacher homework corrections penalty free for students.
    e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
    a. Unit test.
    b. Final exam at the end of course.
    c. Graded laboratories.
    d. Graded activities.
    e. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
    a. One-on-one work with guided practice during class time.
    b. Teacher made videos on Schoology.
    c. Before school and after school Science Lab.

2. Advanced Students – Extension
    a. More in-depth answers on laboratory questions and homework.
    b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: Dobereiner's triads, Newlands' law of octaves, Mendeleev's periodic table, periodic law, modern periodic law, periodic table, period, group, family, lanthanide series, actinide series, alkali metals, super-oxides, peroxides, binary compounds, reactivity, photoelectric cells, solubility, radioactivity, transition elements, oxidation states, catenation, amphoteric oxides, acid, base, ionic charge, outer shell, octet rule, chalcogen family, halogen family, metalloids, covalent atomic radius, ions, ionization, ionization energy, second ionization energy, electron affinity, valence electrons, and electronegativity.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 7: Chemical Bonding	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.4.G
Generate and compare multiple solutions that use patterns to transfer information.

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.A
Develop models to describe the atomic composition of simple molecules and extended structures.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.9-12.A
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.

3.2.9-12.C
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.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Define chemical bond.
2. Explain why most atoms form chemical bonds.
3. Describe ionic and covalent bonding.
4. Explain why most chemical bonding is neither purely ionic nor purely covalent.
5. Classify bonding type according to electronegativity differences.
6. Define molecule and molecular formulas.
7. Explain the relationships among potential energy, distance between approaching atoms, bond length, and bond energy.
8. State the octet rule.
9. List the six basic steps used in writing Lewis structures.
10. Explain how to determine Lewis structures for molecules containing single bonds, multiple bonds, or both.
11. Explain why scientists use resonance structures to represent some molecules.
12. Compare and contrast a chemical formula for a molecular compound with one for an ionic compound.
13. Discuss the arrangements of ions in crystals.
14. List and compare the distinctive properties of ionic and molecular compounds.
15. Distinguish bond type based on laboratory data.

16. Write the Lewis structure for a polyatomic ion given the identity of the atoms combined and other appropriate information.
17. Describe the electron-sea model of metallic bonding and explain why metals are good electrical conductors.
18. Explain why metal surfaces are shiny.
19. Explain why metals are malleable and ductile but ionic crystalline compounds are not.
20. Explain VSEPR theory.
21. Predict the shapes of molecules or polyatomic ions using VSEPR.
22. Form and name the shape of molecules using VSEPR and modeling kits.
23. Explain how the shapes of molecules are accounted for by hybridization theory.
24. Describe dipole-dipole forces, hydrogen bonding, induce dipoles, and London dispersion forces and their effects on properties such as boiling and melting points.
25. Explain what determines molecular polarity.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test and quizzes.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
    a. Teacher observations.
    b. Teacher questioning.
    c. Guided practice.
    d. Teacher homework corrections penalty free for students.
    e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
    a. Unit quizzes.
    b. Unit test.
    c. Final exam at the end of course.
    d. Graded laboratories.
    e. Graded activities.
    f. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
   a. One-on-one work with guided practice during class time.
   b. Teacher made videos on Schoology.
   c. Before school and after school Science Lab.

2. Advanced Students – Extension
   a. More in-depth answers on laboratory questions and homework.
   b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: chemical bond, ionic bond, covalent bond, electronegativity number, polar covalent, nonpolar covalent, molecules, diatomic molecules, molecular compound, chemical formula, molecular formula, bond length, bond energy, stable octet, electron-dot notation, shared pairs of electrons, unshared pairs of electrons, lone pairs of electrons, Lewis structure, structural formula, single bonds, multiple bonds, double bonds, triple bonds, resonance bonds, ionic compounds, formula unit, lattice, lattice energy, polyatomic ions, metals, metallic bonds, metallic properties, malleability, ductility, lustrous, conductivity, molecular polarity, VSEPR theory, hybridization, hybrid orbits, intermolecular forces, dipole, dipole-dipole forces, hydrogen bonding, London dispersion forces, effective nuclear charge, covalent radius, vaporization, decompose, covalent molecular, and covalent network.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 8: Chemical Formulas and Composition	**TIMEFRAME: 9 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.9-12.A
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.

3.2.9-12.C
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.

3.2.9-12.D
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.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Explain the significance of a chemical formula.
2. Determine the formula of an ionic compound formed between two given ions.
3. Name an ionic compound given its formula.
4. Using prefixes, name a binary molecular compound from its formula.
5. Write the formula of a binary molecular compound given its name.
6. List the rules for assigning oxidation numbers.
7. Give the oxidation numbers for each element in the formula of a chemical compound.
8. Name binary molecular compounds using oxidation numbers and the stock system.
9. Calculate the formula mass or molar mass of any given compound.
10. Use molar mass to convert between mass in grams and amount in moles of a chemical compound.
11. Calculate the number of molecules, formula units, or ions in a given molar amount of a chemical compound.
12. Calculate the percentage composition of a given chemical compound.
13. Define empirical formula and explain how the term applies to ionic and molecular compounds.
14. Determine an empirical formula from either a percentage or a mass composition.
15. Explain the relationship between the empirical formula and the molecular formula of a given compound.
16. Determine a molecular formula from an empirical formula.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test and quiz.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
   a. Teacher observations.
   b. Teacher questioning.
   c. Guided practice.
   d. Teacher homework corrections penalty free for students.
   e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
   a. Unit quiz.
   b. Unit test.
   c. Final exam at the end of course.
   d. Graded laboratories.
   e. Graded activities.
   f. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
   a. One-on-one work with guided practice during class time.
   b. Teacher made videos on Schoology.
   c. Before school and after school Science Lab.

2. Advanced Students – Extension
   a. More in-depth answers on laboratory questions and homework.
   b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: chemical formula, monatomic ions, cation, anion, binary compound, formula writing, subscripts, stock system, polyatomic ions, oxyanions, binary molecular compounds, binary acids, polyatomic acids, salt compounds, oxidation number, algebraic sum, ionic compound, covalent compounds, atomic mass scale, molecular mass, percent composition, empirical formula, molecular formula, structural formula, mole ratio, supernatant liquid, hydrated crystal, and anhydrous.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 9: Chemical Equations and Reactions	**TIMEFRAME: 9 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.B
Develop a model that predicts and describes changes in the particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.9-12.A
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.

3.2.9-12.C
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.

3.2.9-12.D
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.

3.2.9-12.E
Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.

3.2.9-12.G
Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. List three observations that suggest that a chemical reaction has taken place.
2. List three requirements for a correctly written chemical equation.
3. Write a word equation and a formula equation for a given chemical reaction.
4. Balance a formula equation by inspection.
5. Define and give general equations for synthesis, decomposition, single-displacement, double-displacement, and combustion reaction.
6. Predict the products of simple reactions given the reactants.
7. Explain the significance of an activity series.
8. Use an activity series to predict whether a given reaction will occur and what the products will be.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test and quiz.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
    a. Teacher observations.
    b. Teacher questioning.
    c. Guided practice.
    d. Teacher homework corrections penalty free for students.
    e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
    a. Unit quiz.
    b. Unit test.
    c. Final exam at the end of course.
    d. Graded laboratories.
    e. Graded activities.
    f. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
    a. One-on-one work with guided practice during class time.
    b. Teacher made videos on Schoology.
    c. Before school and after school Science Lab.

2. Advanced Students – Extension
    a. More in-depth answers on laboratory questions and homework.
    b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston

2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: chemical reaction, reactant, product, chemical equation, indicators, precipitate, coefficient, word equation, formula equation, subscript, catalyst, endothermic reaction, exothermic reaction, activation energy, reversible reaction, synthesis reaction, decomposition reaction, single displacement reaction, double displacement reaction, combustion reaction, oxidation-reduction reaction, electrolysis and flare.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 10: Acids and Bases	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.9-12.A
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.

3.2.9-12.C
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.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Explain the differences between acids and bases.
2. Define, pH, and give the pH of a neutral solution.
3. Explain and use the pH scale.
4. Determine if a substance is an acid, base or neutral based on the formula and pH reading.
5. Utilize pH indicators to determine if a substance is an acid, base or neutral.
6. Given the hydronium ion or hydroxide ion concentration find the pH or pOH.
7. Given the pH or pOH find the hydronium ion or hydroxide concentration.
8. Convert pH to pOH and visa versa.
9. Describe how an acid-base indicator functions.
10. Utilize equipment to test pH levels.
11. Explain how to carry out an acid-base titration.
12. Utilize equipment properly to perform titrations.
13. Calculate the molarity or volume of an acid or base based on data from a titration.
14. Calculate the molarity of a solution from performing a titration.
15. Explain the process of neutralization.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.

4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
    a. Teacher observations.
    b. Teacher questioning.
    c. Guided practice.
    d. Teacher homework corrections penalty free for students.
    e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
    a. Unit test.
    b. Final exam at the end of course.
    c. Graded laboratories.
    d. Graded activities.
    e. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
    a. One-on-one work with guided practice during class time.
    b. Teacher made videos on Schoology.
    c. Before school and after school Science Lab.

2. Advanced Students – Extension
    a. More in-depth answers on laboratory questions and homework.
    b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: acid, base, neutral, hydronium ion concentration, hydroxide ion concentration, pH, pOH, pH scale, pOH scale, molarity, pH paper, litmus paper, bromothymol blue, indicators, titration, phenolthalein indicator solution, neutralization, and buret.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 11: Qualitative Analysis	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Follow directions without teacher input in a variety of laboratories.
2. Determine the identity of unknown compounds by performing a variety of laboratories.
3. Utilize laboratory equipment properly.
4. Create formulas based on laboratory evidence.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Board demonstrations.
3. Group work.
4. Individual work.
5. Guided practice.
6. Supervised self-paced chemical laboratory work in laboratory groups.
7. Cooperative learning groups.
8. Teacher made hands-on assessment to determine the identity of unknown chemicals.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
   a. Teacher observations.
   b. Teacher questioning.
   c. Guided practice.

2. Summative Assessments
   a. Final exam at the end of course.
   b. Graded laboratory set.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
   a. One-on-one work with guided practice during class time.
   b. Teacher made videos on Schoology.
   c. Before school and after school Science Lab.

2. Advanced Students – Extension
   a. Group leader for solving unknowns.
   b. Group recorder for approving the formulas and evidence.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: unknown, chemical formula, word formula, flame test, halides, carbonates, sulfates, and oxidation numbers.

Wallenpaupack Area School District Curriculum	
COURSE: Chemistry I	**GRADE/S: 10-12**
UNIT 12 Stoichiometry:	**TIMEFRAME: 7 days 84 minutes per day**

PA STEELS/NATIONAL STANDARDS:

3.2.5.E
Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

3.2.6-8.D
Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

3.2.6-8.E
Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.

3.2.9-12.A
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.

3.2.9-12.C
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.

3.2.9-12.E
Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.

3.2.9-12.G
Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.

UNIT OBJECTIVES (SWBATS):

The students will be able to …

1. Define stoichiometry.
2. Describe the importance of the mole ratio in stoichiometric calculations.
3. Write a mole ratio relating two substances in a chemical equation.
4. Calculating the amount in moles of a reactant or product from the amount in moles of a different reactant or product.
5. Calculate the mass of a reactant or product from the amount in moles of a different reactant or product.
6. Calculate the amount in moles of a reactant or product from the mass of a different reactant or product.
7. Calculate the mass of a reactant or product from the mass of a different reactant or product.
8. Describe a method for determining which of two reactants is a limiting reactant.
9. Calculate the amount in moles or mass in grams of a product, given the amounts in moles or masses in grams of two reactants, one of which is in excess.
10. Distinguish between theoretical yield, actual yield, and percentage yield.
11. Calculate percentage yield, given the actual yield and quantity of a reactant.

INSTRUCTIONAL STRATEGIES/ACTIVITIES:

1. Direct instruction.
2. Teacher made notes.
3. Board demonstrations.
4. Group work.
5. Individual work.
6. Guided practice.
7. Worksheets.
8. Teacher created instructional videos on Schoology.
9. Supervised self-paced chemical laboratory work in laboratory groups.
10. Individual project linked to their Academy, career goal, and chapter material.
11. Cooperative learning groups.
12. Homework.
13. Teacher made chapter test and quiz.

ASSESSMENTS (Diagnostic/Benchmark/Formative/Summative):

1. Formative Assessments
    a. Teacher observations.
    b. Teacher questioning.
    c. Guided practice.
    d. Teacher homework corrections penalty free for students.
    e. Academy project linking chapter topic and career corrected by teacher penalty free.

2. Summative Assessments
    a. Unit quiz.
    b. Unit test.
    c. Final exam at the end of course.
    d. Graded laboratories.
    e. Graded activities.
    f. Graded Academy project at the end of course.

DIFFERENTIATED INSTRUCTION (Acceleration/Enrichment):

1. Struggling Students – Remediation
    a. One-on-one work with guided practice during class time.
    b. Teacher made videos on Schoology.
    c. Before school and after school Science Lab.

2. Advanced Students – Extension
    a. More in-depth answers on laboratory questions and homework.
    b. Academy project to show greater understanding and depth of knowledge.

RESOURCES (Technology Based Resources, Text Resources, etc.):

1. Textbook – Modern Chemistry by Holt, Rinehart and Winston
2. Schoology Videos – Created by the teacher.
3. Laboratories - Modern Chemistry by Holt, Rinehart and Winston
4. Laboratories – Created by the teacher.
5. Worksheets – Created by the teacher.
6. General laboratory equipment.

KEY VOCABULARY:

Key vocabulary words for this unit are: stoichiometry, reaction stoichiometry, mole, molecules, atoms, ions, formula units, grams, limiting reactant, excess reactant, theoretical yield, actual yield, percent yield, percent, and mole ratio.