

Wilson Area School District Planned Course Guide

Title of planned course: Chemistry

Subject Area: Science

Level: 10

Course Description: Chemistry is the study of matter and the changes it undergoes. Students studying chemistry will investigate the physical properties and physical changes of matter including elements, compounds, and mixtures. Chemical properties will encompass a study of the formation of chemical compounds based on the Law of Definite Proportions, the mathematical determination of empirical and molecular formulas, chemical reactions and stoichiometry. Students will study states of matter and gas laws.

Time/Credit for this Course: 5 periods per week / 1.0 credit

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Wilson Area School District Planned Course Materials

Title of Planned Course: Chemistry

Textbook: Modern Chemistry;
Holt McDougal: Copyright 2012

Resources: Teacher guide for textbook including ancillary materials and a CD with PowerPoint presentations, transparencies, labs, and handouts

The following web sites may be helpful:

- myhrw.com
- ck12.org
- <https://phet.colorado.edu/en/simulations/category/chemistry>
- www.fordhamprep.org/gcurran/sho/sho/index.htm
- www.chemtutor.com/
- antoine.frostburg.edu/chem/senese/101/tutorials/
- www.learnchem.net/tutorials/
- www.chemicalheritage.org
- www.americanchemistry.org
- www.amnh.org/science/divisions/physsci/
- www.nasa.gov/audience/forstudents/9-12/index.html
- <http://genesission.jpl.nasa.gov/index.html>

Demonstrations: Chemical Demonstrations, Shakashiri
<http://www.flinnsci.com/>

Curriculum Map

<u>August:</u>	Review of Math Concepts International System of Measurement Dimensional Analysis
<u>September:</u>	Lab Safety Reliability of Measurement Understanding precision in measurement Properties and Classification of Matter Separation methods
<u>October:</u>	Atomic Theory Scientific Method Historical Development of the Atomic Model
<u>November:</u>	Quantum Mechanical Model of the Atom Periodic Table and Atomic Trends
<u>December:</u>	Ionic Bonding and Compounds Writing and Naming Formulas for Ionic Compounds
<u>January:</u>	Covalent Bonding and Molecular Compounds
<u>February:</u>	Empirical and Molecular Formulas Chemical Reactions
<u>March:</u>	Stoichiometry Molarity
<u>April:</u>	States of Matter Entropy Gases
<u>May:</u>	Solutions
<u>June:</u>	Final Exams

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Measurement

Time frame: 3 Weeks

State Standards: 3.1.10.C; 3.1.10.D; 3.7.10.B

Anchor(s) or adopted anchor: S11.A.1.1.5; S11.A.2.2.1

Essential content/objectives: At end of the unit, students will be able to:

- Solve algebraic expressions which involve scientific variables
- Evaluating precision in measurements
- Perform safely in the lab
- Identify and use common lab equipment properly
- Use the SI system
- Use dimensional analysis to perform unit conversions within the metric system including metric conversions and mole conversions
- Draw and interpret line graphs using scientific data
- Compare experimental values to actual values and discuss possible sources of error

Core Activities: Students will complete/participate in the following:

- Textbook problems in Chapter 2 and Appendix A
- Study Guides for Chapter 2
- Textbook resources / handouts
- Teacher prepared handouts
- Labs
 - Measurement and Laboratory Techniques
 - Density of a Metal
- Videos on High School Website

Extensions:

- Apply real life issues to chemistry using data obtained from reliable sources
- Read and analyze current scientific research
- Prepare questions and answers on a topic of interest that relate to the unit
- Prepare instructional video for school video library

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Direct instruction
- PowerPoint presentations/ notes
- Guided practice
- Videos

Materials & Resources:

- Textbook chapter 2
- Math Handbook (Textbook Appendix A)
- CD-ROM for textbook with the transparency masters and study guides
- World of Chemistry Video: Measurement

Assessments:

- Quizzes
- Test
- Lab Analysis
- Homework
- Warm-ups / ticket out
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Matter

Time frame: 3 weeks

State Standards: 3.1.10.E; 3.2.10.B; 3.2.10.C; 3.4.10A

Anchor(s) or adopted anchor: S11.A.1.1.1; S11.A.1.1.2; S11.A.1.1.3; S11.A.1.1.5; S11.C.1.1.1; S11.A.1.3.3; S11.A.2.1.1; S11A.2.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Classify matter as pure substances or mixtures
- Compare and contrast pure substances and mixtures
- Classify mixtures as heterogeneous or homogeneous
- Identify elements and compounds as pure substances according to the Law of Definite Composition
- Classify elements and compounds
- Compare and contrast elements and compounds
- Identify elements as metals, nonmetals, or metalloids and locate these elements on the periodic table
- Differentiate between physical and chemical properties; physical, chemical, and nuclear changes
- Classify physical properties of matter as intensive or extensive
- Describe how changes in physical indicators (soil, plants, or animals) of water systems reflect changes in these systems
- Develop and perform an experiment to separate a mixture by physical means
- Classify observations of matter as qualitative, quantitative, direct or indirect

Core Activities: Students will complete/participate in the following:

- Textbook problems in Chapter 1
- Study Guides for Chapter 1
- Textbook resources / handouts
- Teacher prepared handouts
- Labs
 - Properties of Matter
 - Lab: Mixture Separation
- Videos on High School Website

Extensions:

- Read and write a response to National Geographic articles
- Investigate and report on the water quality of the local water supply
- Prepare questions and answers on a topic of interest that relate to the unit
- Prepare instructional video for school video library

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- CK12 website

Instructional Methods:

- Videos on school website
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Guided practice
- Labs

Materials & Resources:

- Textbook Chapter 1
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Videos

Assessments:

- Quizzes
- Test
- Lab Analysis
- Homework
- Warm-ups / ticket out
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Atomic Structure

Time frame: 3 weeks

State Standards: 3.1.10E; 3.2.10.A; 3.4.10.A

Anchor(s) or adopted anchor: S11.A.1.1.5; S11.C.1.1.1

Essential content/objectives: At end of the unit, students will be able to:

- Define atom
- Identify the properties of atoms (atomic mass, atomic number, mass number)
- Describe the smaller particles of an atom (electrons, protons, neutrons, quarks, etc.)
- Discuss the main components of the scientific method
- Discuss the development of atomic theory with respect to the use of the scientific method and improvements in technology
- Describe the contributions of Aristotle, Democritus, Lavoisier, Proust, Dalton, J.J. Thomson, Rutherford, Bohr
- Define isotope. Compare and contrast isotopes of the same element
- Understand that the atomic mass is a weighted average of various isotopes and reflects their natural abundances
- Identify nuclear reactions as alpha, beta, or gamma reactions
- Describe how radioactive isotopes that are subject to decay can be used to estimate the age of materials
- Apply the predictability of nuclear decay to estimate the age of materials that contain radioactive isotopes

Core Activities: Students will complete/participate in the following:

- Textbook problems in Chapter 3
- Study Guides for Chapter 3
- Textbook resources / handouts
- Teacher prepared handouts
- Labs
 - Conservation of Mass
- Videos on High School Website

Extensions:

- Is nuclear power a viable alternative to the energy crisis?
- Read and report on an article on nuclear power in France
- Write an article on nuclear power for the school newspaper / announcements
- Prepare questions and answers on a topic of interest that relate to the unit
- Prepare instructional video for school video library

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Videos on school website
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Guided practice
- Labs

Materials & Resources:

- Textbook Chapter 3
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Videos

Assessments:

- Quizzes
- Test
- Lab Analysis
- Homework
- Warm-ups / ticket out
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Quantum Model of Atom and Periodicity

Time frame: 3 weeks

State Standards: 3.1.10.A; 3.2.10.A; 3.2.10.B; 3.4.10.A; 3.4.10.C

Anchor(s) or adopted anchor: S11.A.1.1.1; S11.A.1.1.2; S11.A.1.1.3; S11.A.1.1.4; S11.A.1.1.5; S11.A.2.2.1; S11.A.2.2.2; S11.A.3.2.1; S11.A.3.2.3; S11.A.3.3.3; S11.C.2.1.1

Essential content/objectives: At end of the unit, students will be able to:

- Describe the contributions of deBroglie and Heisenberg to quantum model
- Write orbital diagrams and electron configurations of elements using the Aufbau Principle, Pauli Exclusion Principle, and Hund's Rule
- Analyze an atomic emission spectrum in terms of the energy transitions of electrons
- Identify the valence electrons of an atom
- Draw Lewis dot diagrams of atoms

Core Activities: Students will complete/participate in the following:

- Textbook problems in Chapter 4 and Appendix A
- Study Guides for Chapter 4
- Textbook resources / handouts
- Teacher prepared handouts
- Labs
 - Flame Tests
 - Observing Electromagnetic Spectra of Elements
- Videos on High School Websitextbook

Extensions:

- Research and report on the Northern Lights / auroras
- Research and report on the application of electromagnetic radiation in medicine
- Prepare an article for the school newspaper or announcements
- Prepare questions and answers on a topic of interest that relate to the unit
- Prepare instructional video for school video library

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Videos on school website
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Guided practice
- Labs

Materials & Resources:

- Textbook Chapter 4
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Videos

Assessments:

- Quizzes
- Test
- Lab Analysis
- Homework
- Warm-ups / ticket out
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Periodic Table

Time frame: 2 weeks

State Standards: 3.1.10.C; 3.1.10.E; 3.2.10.B; 3.4.10.A

Anchor(s) or adopted anchor: S11.A.3.3.1; S11.C.1.1.2; S11.C.1.1.4

Essential content/objectives: At end of the unit, students will be able to:

- Discuss the historical development of the periodic table, citing the work of Mendeleev and Moseley
- Identify the regions of the periodic table
- Describe the arrangement of the periodic table: periods, families, metals, nonmetals, metalloids
- Discuss the correlation between electron configuration and placement of an element on the periodic table
- State the octet rule
- Predict the properties of elements based on the valence electrons and the position on the periodic table
- Define the properties of electronegativity, ionization energy, and atomic radius. Discuss the trends in these properties on the periodic table

Core Activities: Students will complete/participate in the following:

- Textbook problems in Chapter 5 and Appendix A
- Study Guides for Chapter 5
- Textbook resources / handouts
- Teacher prepared handouts
- Labs
 - Making the Periodic Table
 - Descriptive Properties of the Elements
- Videos on High School Website
- Activity: Groups and regions of the Periodic Table
- Activity: Trends on the Periodic Table

Extensions:

- Research and report on a famous scientist
- Research and report on glass and how it is given different properties
- Research and report on semiconductors
- Write an article for the school newspaper / announcements
- Prepare questions and answers on a topic of interest that relate to the unit
- Prepare instructional video for school video library

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Videos on school website
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Guided practice
- Labs

Materials & Resources:

- Textbook Chapter 5
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Videos

Assessments:

- Quizzes
- Test
- Lab Analysis
- Homework
- Warm-ups / ticket out
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Ionic Bonding

Time frame: 2 weeks

State Standards: 3.1.10.C; 3.2.10.A; 3.2.10.B; 3.4.10.A

Anchor(s) or adopted anchor: S11.A.3.3.1; S11.A.3.2.3; S11.A.3.3.3; S11.C.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Define the terms chemical bonding, ionic bond, ion, cation, anion, electrolyte, lattice energy
- Describe the forces of attraction and repulsion which are present when two atoms bond
- Use Lewis dot structures to describe the formation of an ionic bond
- Account for the properties of ionic compounds with respect to an ionic bond
- Write names and formulas for ionic compounds
- Describe the bonding in metals and account for the properties of metals

Core Activities: Students will complete/participate in the following:

- Pretest
- Study Guides for Chapter 7
- Vocabulary
- Labs:
 - Properties of Ionic Compounds
 - Making an Ionic Compound
- Contribution to Blog
- Ionic Behavior Online Activity
 - <https://pbslm-contrib.s3.amazonaws.com/WGBH/arct15/SimBucket/Simulations/chemthink-ionicbonding/content/index.html>

Extensions:

- Research and report on gems
- Research and present information on an ionic compound for its properties and uses
- Prepare questions and answers on a topic of interest that relate to the unit

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Independent reading in textbook (chapter 7)
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources:

- Textbook Chapter 7
- CD-ROM for textbook with study guides
- Lab manuals
- Solving Problems: A Chemistry Handbook
- United Streaming videos

Assessments:

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Kahoot/Plickers Activities
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Molecular Compounds and Covalent Bonding

Time frame: 3 weeks

State Standards: 3.1.10.A; 3.2.10.A; 3.2.10.C; 3.4.10A

Anchor(s) or adopted anchor: S11.A.1.1.5; S11.A.3.3.2; S11.C.1.1.2; S11.C.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Define the terms covalent bond, single bond, double bond, triple bond, polar bond, nonpolar bond, bond dissociation energy, bond length, resonance structure
- Name and write formulas for molecular compounds and acids
- Name and write formulas for simple hydrocarbons
- Describe the formation of single, double, and triple covalent bonds
- Relate the strength of covalent bond to bond length and bond dissociation energy
- Draw Lewis structures for molecular compounds
- Identify resonance structures and exceptions to the octet rule
- Use VSEPR theory to identify the shape of a molecule when given the possibilities
- Describe the role of electronegativity in the type of bonding of atoms
- Determine the polarity of a molecule and the effect on the properties of a compound
- Compare and contrast polar and nonpolar bonds and polar and nonpolar molecules
- Discuss the bonding in carbon and provide reasons for the multitude of carbon compounds
- Predict the types of bonding in a substance using data such as melting point, boiling point, electrical conductivity, and solubility

Core Activities: Students will complete/participate in the following:

- Study Guides for Chapter 6
- Questions in textbook
- Vocabulary
- Thinking Map: Multi-Flow Map on the relationship between electronegativity and the type of bonding and type of compound
- Labs:
 - Isomerism
 - The Ripening of Fruit with Ethene
- Inquiry Lab: What type of compound?
- Contribute to Blog

Extensions:

- Research and present information on the uniqueness of water based on its structure
- Prepare an announcement for the school
- Prepare questions and answers on a topic of interest that relate to the unit
- Kahoot/Plickers/Edulastic Activities

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Independent reading in textbook (chapter 6)
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources:

- Textbook Chapter 6
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Solving Problems: A Chemistry Handbook
- United Streaming videos
- World of Chemistry video: Chemical Bonding
- World of Chemistry video: Water
- World of Chemistry video: Carbon
-

Assessments:

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Chemical Formulas and the mole concept

Time frame: 2 weeks

State Standards: 3.1.10.A; 3.2.10.A; 3.2.10.C; 3.2.10.D; 3.4.10.A

Anchor(s) or adopted anchor: S11.A.1.1.1; S11.A.1.1.2; S11.C.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Calculate the molar mass and percent composition of a compound
- Determine the empirical formula of a compound given the mass or percent of each element in the compound
- Determine the molecular formula of a compound given the empirical formula and the molar mass
- Describe a hydrate and calculate the percent of water in a hydrate

Core Activities: Students will complete/participate in the following:

- Study Guides for Chapter 7 and 9
- Vocabulary
- Questions in textbook
- Labs
 - Determination of the empirical formula of a compound
 - Percent of oxygen in potassium chlorate
 - Percent of carbon dioxide in copper (II) carbonate
- Inquiry Lab: Percent of water in a hydrate

Extensions:

- Research and present common hydrates
- Prepare an announcement for the school
- Prepare questions and answers on a topic of interest that relate to the unit

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Independent reading in textbook (chapter 7 and 9)
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources:

- Textbook Chapters 7 and 9
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Solving Problems: A Chemistry Handbook

Assessments:

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Chemical Reactions

Time frame: 3 weeks

State Standards: 3.1.10.A; 3.1.10.C; 3.1.10.E; 3.2.10.C; 3.2.10.D; 3.4.10.A; 3.4.10.B; 4.8.10.A

Anchor(s) or adopted anchor: S11.A.1.1.2; S11.A.1.1.4; S11.A.1.1.5; S11.A.1.3.1; S11.A.2.2.1; S11.A.2.2.2; S11.A.3.1.3; S11.C.2.1.2

Essential content/objectives: At end of the unit, students will be able to:

- Identify the reactants and products in a chemical reaction
- Interpret and balance a chemical equation in accordance with the Law of Conservation of Mass
- Classify chemical reactions as synthesis, decomposition, single replacement, double replacement or combustion
- Predict the products of the aforementioned chemical reactions
- Determine the reactants needed for a chemical reaction when given the type of reaction and desired products
- Describe energy changes in chemical reactions
- Analyze factors which will affect the rate of a chemical reaction using collision theory

Core Activities: Students will complete/participate in the following:

- Study Guides for Chapters 8 and 9
- Vocabulary
- Questions from textbook
- Lab: Water Analysis
- Inquiry Lab: How do you make that?

Extensions:

- Research and present information on common chemical reactions
- Kahoot/Plickers/Edulastic Activities

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Independent reading in textbook (chapters 8 and 9)
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources:

- Textbook Chapters 8 and 9
- CD-ROM for textbook with study guides
- Lab manuals

Assessments:

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Stoichiometry

Time frame: 3 weeks

State Standards: 3.1.10.A; 3.1.10.B; 3.1.10.C; 3.1.10.E; 3.2.10.B; 3.2.10.D; 3.4.10.A; 4.1.10.B; 4.3.10.C; 4.6.10.A; 4.8.10.A;

Anchor(s) or adopted anchor: S11.A.1.1.3; S11.A.1.3.1; S11.A.1.3.2; S11.A.1.3.4; S11.A.2.1.2; S11.A.2.1.3; S11.A.2.1.4; S11A.3.1.1; S11.A.3.1.2; S11.A.3.2.1; S11.B.3.1.5; S11.B.3.3; S11.C.1.1.6

Essential content/objectives: At end of the unit, students will be able to:

- Define equilibrium, limiting reactant, excess reactant
- Discuss factors which will result in the completion of a reaction (equilibrium or until a limiting reactant is exhausted)
- Apply the mole concept in stoichiometric calculations, including those involving limiting reactants and percent yield

Core Activities: Students will complete/participate in the following:

- Study Guides for chapter 9 and 18
- Vocabulary
- Questions from textbook
- Project: Research and present a natural resource, its use, how it is a limiting reactant, possible substitutes. Discuss responsible management of the resource.
- Lab: A Mole Ratio
- Inquiry Lab: Preparation of 1.5 grams of an ionic compound
- Inquiry Lab: Factors that affect the rate of a reaction

Extensions:

- Prepare an announcement for school
- Prepare questions and answers on a topic of interest that relate to the unit
- Kahoot/Plickers/Edulastic Activities

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice
- ck12 website

Instructional Methods:

- Independent reading in textbook (chapter 9 and chapter 18)
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources:

- Textbook Chapter 9 and 18
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Solving Problems: A Chemistry Handbook
- United Streaming videos

Assessments:

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: States of Matter

Time frame: 2 weeks

State Standards: 3.4.10.A

Anchor(s) or adopted anchor: S11.C.1.1.1; S11.C.1.1.2; S11.C.1.1.3; S11.C.1.1.4

Essential content/objectives: At end of the unit, students will be able to:

- Compare and contrast the three major phases of matter based on kinetic theory
- Define the terms pressure, boiling point, melting point and vapor pressure
- Describe and compare intramolecular and intermolecular forces
- Distinguish among intermolecular forces: dispersion forces, dipole-dipole forces and hydrogen bonds
- Draw and interpret phase diagrams
- Analyze a melting/boiling curve on a particle level with respect to kinetic theory
- Interpret phase changes with respect to particles and kinetic theory

Core Activities: Students will complete/participate in the following

- Study Guides Chapter 10
- Vocabulary
- Questions in textbook for Chapter 10
- Labs:
 - Melting and Boiling Point Curve
 - Using Boiling Point to Determine an Unknown
 - Effect of Impurities on the Boiling Point and Freezing Point
 - Vapor Pressure and Boiling Point
 - Vapor Pressure and Intermolecular Forces

Extensions:

- Chapter 10 Challenge Problem
- Chapter 10 Problem of the Week
- Prepare an announcement for the school
- Prepare questions and answers on a topic of interest that relate to the unit

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice

Instructional Methods:

- Independent reading in textbook (chapter 10)
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources:

- Textbook Chapter 10
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Solving Problems: A Chemistry Handbook
- United Streaming videos

Assessments:

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Gases

Time frame: 2 weeks

State Standards: 3.1.10.A; 3.2.10.A; 3.1.10.A; 3.1.10.C; 3.1.10.E; 3.2.10.B; 3.2.10.D; 3.4.10.A; 4.3.10.C

Anchor(s) or adopted anchor: S11.A.1.1.3; S11.A.1.1.4; S11.A.1.3.1; S11.A.2.1.1; S11.A.2.1.3; S11.A.2.1.4; S11.A.3.1.3; S11.A.3.2.1; S11.A.3.2.2; S11.C.1.1.

Essential content/objectives: At end of the unit, students will be able to:

- Qualitatively predict the changes in temperature, pressure, and volume using Boyle's Law, Charles' Law and Gay-Lussac's Law
- State and apply Dalton's Law of Partial Pressures
- Define and describe the derivation of absolute temperature
- Apply gas laws to problems involving pressure, temperature, volume, and amount of gas

Core Activities: Students will complete/participate in the following

- Study Guides Chapter 11
- Vocabulary
- Questions in textbook for Chapter 11
- Labs:
 - Boyle's Law
 - Charles' Law
 - Gay-Lussac's Law
 - Calculation of the Ideal Gas Constant, R

Remediation:

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice

Instructional Methods:

- Independent reading in textbook (chapter 14)
- Vocabulary
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources:

- Textbook Chapter 11
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Solving Problems: A Chemistry Handbook
- World of Chemistry video: Our Atmosphere
- United Streaming videos

Assessments:

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Other individualized assessment strategies as necessary

Curriculum Scope & Sequence

Title of Planned Course: Chemistry

Unit: Solutions

Time frame: 2 weeks

State Standards: 3.1.10.A; 3.2.10.A; 3.1.10.A; 3.1.10.C; 3.1.10.E; 3.2.10.B; 3.2.10.D; 3.4.10.A; 3.4.12.A

Anchor(s) or adopted anchor: S11.A.1.1.3; S11.A.1.1.4; S11.A.1.3.1; S11.A.2.1.1; S11.A.2.1.3; S11.A.2.1.4; S11.A.3.1.3; S11.A.3.2.1; S11.A.3.2.2; S11.C.1.1.5

Essential content/objectives - At end of the unit, students will be able to:

- Describe the characteristics of solutions and identify the various types.
- Relate the intermolecular forces and the process of solvation.
- Define solubility and identify factors affecting it.
- State the concentrations of solutions in different ways.
- Calculate the concentrations of solutions.
- Identify the physical and chemical properties of acids and bases.

Core Activities - Students will complete/participate in the following:

- Chapter 12 Textbook Reading and Sample Problems
- Laboratory Experiments involving precipitation reactions and/or acids and bases
- Laboratory Experiments on preparing and diluting solutions
- Application of concentrations environment such as sea water, dissolved oxygen, etc.

Remediation

- Teacher directed based on formative assessment
- Completion of additional guided practice / independent practice

Instructional Methods

- Independent reading in textbook (chapter 12)
- Vocabulary
- Flipped Classroom
- Direct instruction with PowerPoint presentations / notes
- Demonstrations
- Cooperative learning structures
- Labs

Materials & Resources

- Textbook Chapter 15, 19
- CD-ROM for textbook with the transparency masters and study guides
- Lab manuals
- Solving Problems: A Chemistry Handbook
- World of Chemistry videos
- United Streaming videos

Assessment

- Lab report
- Quizzes
- Test
- Individual participation / consultation
- Other individualized assessment strategies as necessary