SPRING GROVE AREA SCHOOL DISTRICT

PLANNED INSTRUCTION

Course Title:	**Chemistry I**	**Length of Course:**	**30 Cycles**
Grade Level(s):	**11**	**Periods Per Cycle:**	**6**
Units of Credit:	**1.1**	**Length of Period:**	**43 Minutes**
Required: X	**Core Science**	**Total Instructional Time:**	**129 Hours**

Course Description: **Chemistry I is the scientific study of matter, energy, and the changes they undergo. Students will examine the structure, properties, and transformations of matter on an atomic and molecular level. They will use laboratory activities to observe the chemical and physical behavior of matter. In addition to understanding the basic concepts of chemistry, students will develop critical thinking and problem – solving skills to use in daily life. They will apply chemical concepts to analyze and assess the impact of technology and science on society and the environment.**

Objectives of Planned Course:

1. **The student will examine the structure and properties of matter on an atomic and molecular level.**
2. **The student will examine interactions of matter on an atomic and molecular level.**
3. **The student will recognize and apply the language of chemistry.**
4. **The student will utilize the periodic table to predict trends and patterns in the organization of matter.**
5. **The student will identify and apply accepted laboratory techniques and procedures.**
6. **The student will apply chemical concepts in assessing the impact of science and technology on society.**
7. **The student will analyze the nature of science in the search for understanding the natural world and its connection to technological systems.**
8. **The student will apply knowledge of scientific investigation to develop or critique aspects of the experimental or design process.**

Relationship to Academic Standards and Strategic Plan:

S11.A.1 – Reasoning and Analysis
S11.A.2 – Processes, Procedures and Tools of Scientific Investigations
S11.A.3 – Systems, Models and Patterns
S11.C.1 – Structure, Properties, and Interaction of Matter and Energy
S11.C.2 – Forms, Sources, Conversion, and Transfer of Energy
S11.D.1 – Earth Features and Processes That Change Earth and Its Resources

Materials/Resources: Text Book: Modern Chemistry (Holt, 2007), Handouts, Laboratory Equipment, Safety Equipment, Technology Equipment

Adopted: 4/12/89
Revised: 9/3/91; 11/19/97; 11/15/01; 8/20/07

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
I. Introduction to Chemistry • Laboratory Equipment and Safety • Scientific Method	**S11.A.2.2** Processes, Procedures, and Tools of Scientific Investigations **S11.A.2.1** Processes, Procedures, and Tools of Scientific Investigations	**S11.A.2.2.1** Evaluate appropriate methods, instruments, and scale for precise quantitative and qualitative observations **S11.A.2.1.1** Critique the elements of an experimental design (e.g., raising questions, formulating hypotheses, developing procedures, identifying variables, manipulating variables, interpreting data, and drawing conclusions) applicable to a specific experimental design	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 3 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
• Branches and Applications of Chemistry • Classification and Separation of Matter • Changes in Matter • Elements and Symbols **TIME:** 6 Class Periods	**S11.A.1.1** Reasoning and Analysis **S11.A.1.3** Reasoning and Analysis **S11.A.1.3** Reasoning and Analysis **11.A.3.3** Systems, Models and Patterns	**S11.A.1.1.4** Explain how specific scientific knowledge or technological design concepts solve practical problems **S11.A.1.3.1** Use appropriate quantitative data to describe or interpret change in systems **S11.A.1.3.2** Describe or interpret dynamic changes to stable systems (e.g., chemical reactions) **S11.A.3.3.1** Describe or interpret recurring patterns that form the basis of chemical periodicity	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
II. Measurement and Unit Analysis • Metric and English Units • Square and Cubic Units • Dimensional Analysis • Density and Specific Gravity	**S11.A.1.1** Reasoning and Analysis	**S11.A.1.1.4** Explain how specific scientific knowledge or technological design concepts solve practical problems	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 9 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
III. Atomic Structure • History of Atomic Theory • Modern Atomic Theory • Ions • Isotopes and Average Atomic Mass • Nuclear Reactions and Radiation • Applications of Nuclear Reactions	**S11.A.1.1** Reasoning and Analysis **S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy **S11.A.1.2** Reasoning and Analysis	**S11.A.1.1.5** Analyze or compare the use of both direct and indirect observation as means to study the world and the universe (e.g., behavior of atoms, functions of cells, birth of stars) **S11.C.1.1.1** Explain that matter is made of particles called atoms and that atoms are composed of even smaller particles (e.g., protons, neutrons, electrons) **S11A.1.2.1** Explain and apply scientific concepts to societal issues using case studies (e.g., environmental health, energy)	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 15 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
IV. Quantum Theory and Electron Arrangement • Electromagnetic Radiation • Quantum Energy Effects • Line Spectra • The Bohr Atom • Atomic Orbitals • Electron Configurations • Orbital Diagrams	**S11.C.2.1** Forms, Sources, Conversion, and Transfer of Energy **S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy	**S11.C.2.1.1** Compare or analyze waves in the electromagnetic spectrum (e.g., ultraviolet, infrared, visible light, X-rays, microwaves) as well as their properties, energy levels, and motion **S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 15 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
V. The Periodic Table • Organization • Properties Within a Family • Periodic Trends	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy	**S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure **S11.C.1.1.4** Explain how the relationships of chemical properties of elements are represented in the repeating patterns within the periodic table	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 9 Class Periods	**S11.A.3.3** Systems, Models, and Patterns	**S11.A.3.3.2** Compare stationary physical patterns (e.g., crystals, atomic structure) to the object's properties		
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment.				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
VI. Descriptive Chemistry • Reactive Metals • Transition Metals • Metalloids • Nonmetals • Carbon, Hydrogen, Oxygen, and Nitrogen	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy **S11.A.1.3.** Reasoning and Analysis	**S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure **S11.A.1.3.4** Compare the rate of use of natural resources and their impact on sustainability	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 3 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
VII. Chemical Bonding • Ionic Bonding • Covalent Bonding • Bond Polarity • Ionic Compounds • Molecular Compounds • Lewis Structures	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy	**S11.C.1.1.3** Explain the formation of compounds (ionic and covalent) and their resulting properties using bonding theories **S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 15 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
VIII. Nomenclature • Binary Ionic Compounds • Polyatomic Ions • Molecular Compounds • Acids • Hydrates	**S11.A.3.3** Systems Models and Patterns	**S11.A.3.3.1** Describe or interpret recurring patterns that form the basis of biological classification, chemical periodicity, geological order, or astronomical order	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 9 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
IX. Molecular Shape • VSEPR Theory • Shape and Bond Angles in Small Molecules • Exceptions to the Octet Rule • Polarity of Molecules • Hybridization of Atomic Orbitals in Molecules	**S11.A.3.2** Systems, Models, and Patterns **S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy	**S11.A.3.2.1** Compare the accuracy of predictions represented in a model to actual observations and behavior **S11.A.3.2.3** Describe how relationships represented in models are used to explain scientific or technological concepts (e.g., dimensions of objects within the solar system, life spans, size of atomic particles, topographic maps) **S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 9 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
X. Chemical Reactions • Writing and Balancing Equations • Classification of Reactions • Predicting Products of: 1. Decomposition 2. Synthesis 3. Single Displacement 4. Double Displacement 5. Neutralization	**S11.A.1.3** Reasoning and Analysis	**S11.A.1.3.1** Use appropriate quantitative data to describe or interpret change in systems **S11.A.1.3.2** Describe or interpret dynamic changes to stable systems (e.g., chemical reactions)	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Paper Pencil Test • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 15 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XI. Reaction Stoichiometry • Mole Mass Problems • Mass Mass Problems • Volume-Mass Problems • Limiting Reactant • Percent Yield	**S11.A.1.3** Reasoning and Analysis **S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy	**S11.A.1.3.1** Use appropriate quantitative data to describe or interpret change in systems **S11.A.1.3.2** Describe or interpret dynamic changes to stable systems (e.g., chemical reactions) **S11.C.1.1.6** Describe factors that influence the frequency of collisions during chemical reactions that might affect the reaction rates (e.g., surface area, concentration, catalyst, temperature)	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Paper Pencil Test • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 9 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XII. Thermochemistry • Exothermic and Endothermic Reactions • Enthalpy Changes • Thermochemical Equations • Hess's Law • Calorimetry	**S11.C.2.1** Forms, Sources, Conversion, and Transfer of Energy	**S11.C.2.1.2** Describe energy changes in chemical reactions **S11.C.2.1.3** Apply the knowledge of conservation of energy to explain common systems (e.g., refrigeration, rocket propulsion, heat pump)	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 9 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XIII. Behavior of Gases • Kinetic Molecular Theory • Pressure and Measurement • Gas Laws • Effusion and Diffusion • Real and Ideal Gases	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy	**S11.C.1.1.5** Predict the behavior of gases through the application of laws (e.g., Boyle's law, Charles' law, or ideal gas law)	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 15 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XIV. Solutions • Properties of Solutions • Concentration Units: 1. Molarity 2. Molality 3. Percent By Mass 4. Mole Fraction 5. Solution Stoichiometry 6. Dilution	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy **S11.A.3.1** Systems, Models, and Patterns	**S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure **S11.A.3.1.3** Use appropriate quantitative data to describe or interpret a system	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 15 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XV. Acid Base Chemistry • Properties of Acid and Base • Definitions of Acid and Base • Conjugate Acid/ Base Pairs • pH Scale and Calculations • Hydronium and Hydroxide Ion Calculations • Acid Base Titrations	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy **S11.A.3.1** Systems, Models, and Patterns	**S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure **S11.A.3.1.3** Use appropriate quantitative data to describe or interpret a system	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 12 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XVI. Environmental Chemistry Topics • Natural Resources **TIME:** 3 Class Periods	**S11.D.1.2** Earth Features and Processes that Change Earth and Its Resources **S11.B.3.3** Ecological Behavior and Systems	**S11.D.1.2.1** Evaluate factors affecting availability, location, extraction, and use of natural resources **S11.D.1.2.2** Explain the impact of obtaining and using natural resources for the production of energy and materials (e.g., resource renewal, amount of pollution, deforestation) **S11.B.3.3.1** Describe different human-made systems and how they use renewable and nonrenewable natural resources (i.e., energy, transportation, distribution, management, and processing) **S11.B.3.3.2** Compare the impact of management practices (e.g., production, processing, research, development, marketing, distribution, consumption, by-products) in meeting the need for commodities locally and globally	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
• Alternative Energy Sources **TIME:** 3 Class Periods	**S11.C.2.2** Forms, Sources Conversion and Transfer of Energy	**S11.C.2.2.1** Explain the environmental impacts of energy use by various economic sectors (e.g. mining, logging, transportation) on environmental systems **S11.C.2.2.2** Explain the practical uses of alternative sources of energy (i.e. wind, solar, and biomass) to address environmental problems (e.g. air quality, erosion, resource depletion) **S11.C.2.2.3** Give examples of renewable energy resources (e.g., wind, solar, biomass) and nonrenewable resources (e.g., coal, oil, natural gas) and explain the environmental and economic advantages and disadvantages of their use	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative • Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
• Atmospheric Pollution • Global Climate Change	**S11.D.2.1** Weather, Climate, and Atmospheric Processes	**S11.D.2.1.1** Describe how changes in concentration of minor components (e.g., O_2, CO_2, dust, pollution) in Earth's atmosphere may be linked to climate change **S11.D.2.1.2** Compare the transmission, reflection, absorption, and radiation of solar energy to and by Earth's surface under different environmental conditions (e.g., major volcanic eruptions, greenhouse effect, reduction of ozone layer, increased global cloud cover)	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: 6 Class Periods				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XVII. Liquids and Solids • Intermolecular Forces • Properties of Liquids • Types of Solids • Properties of Crystalline Solids • Changes of State • Vapor Liquid Equilibrium and Boiling Point	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy	**S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: Enrichment				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				

CONTENT Chemistry I – Grade 11	STANDARDS	GRADE-LEVEL BENCHMARKS GRADE SPECIFIC CRITERIA	INSTRUCTIONAL STRATEGIES, LEARNING PRACTICES, ACTIVITIES AND EXPERIENCES	ASSESSMENTS
XVIII. Ionic Solutions • Solubility Rules • Net Ionic Equations • Properties of Electrolytes • Colligative Properties	**S11.C.1.1** Structure, Properties, and Interaction of Matter and Energy **S11.A.3.1** Systems, Models, and Patterns	**S11.C.1.1.2** Explain the relationship between the physical properties of a substance and its molecular or atomic structure **S11.A.3.1.3** Use appropriate quantitative data to describe or interpret a system	• Inquiry Questioning • Direct Instruction • Scaffolded Note-Taking • Analogies • Summarization • Reading Assignments • Problem Solving • Guided Practice • Homework Assignments • Laboratory Experiments • Graphic Organizers • Cooperative Learning Activities • Web Quests • Teacher Demonstration • Models and Manipulatives • Review Games	• Teacher Observation • Power Point Presentation • Homework Problems • Laboratory Reports • Quiz Game • Laboratory Practicum • Written Examination
TIME: Enrichment				
MATERIALS AND RESOURCES: Textbooks, Teacher Made Note Outlines, Laboratory Materials, Safety Equipment, Technology Materials				
ENRICHMENT AND EXPANDED OPPORTUNITIES: Laboratory Experiments, Critical Thinking Questions, Science Fair Projects, Internet Research				
REMEDIATION AND INTERVENTION STRATEGIES: Reteaching, Content Area Reading Strategies, Vocabulary Reinforcement, Individual and Peer Tutoring, Reassessment				