SCIENCE CURRICULUM FRAMEWORK

CHEMISTRY

2005-2006

TABLE OF CONTENTS

Brownsville Independent School District
MISSION STATEMENT

The mission of the Brownsville Independent School District, an international community respected for its rich cultural heritage is to produce responsible, well-rounded graduates

who

- have the ability to pursue a post-secondary education and/or career
- possess a capability for independent learning and thinking with a competitive edge in a multi-cultural, multi-lingual world

by

- identifying and maximizing physical, financial, and human resources and
- unifying community and school commitment to excellence in education and equal educational opportunity.

Brownsville Independent School District
BELIEF STATEMENT

- Excellence is our common goal.
- Parental responsibility is an integral factor in student success.
- Belief in self is fundamental to success.
- Everyone deserves respect as a human being.
- Perseverance and hard work are essential for success.
- Change creates opportunities for growth.
- Truthfulness is important for effective communication.
- Public schools are an extension of the community.
- Sensitivity is essential for understanding the needs of others.
- Great achievements follow high expectations.
- Cooperation is necessary to get things done.
- Active listening is essential for effective communication.
- Successful students are active participants in the learning process.

Acknowledgment

The Brownsville Independent School District gratefully acknowledges the contributions given by the Science teachers who participated in the development of this secondary Science curriculum framework. Science teachers from the following campuses assisted in the development of the framework:

- Hanna High School
- Lopez High School
- Pace High School
- Porter High School
- Rivera High School
- Lincoln Park School
- BUSP Secondary Science Mentors
- Secondary Science Curriculum Specialist

Introduction

Texas Legislation requires that all Texas school districts develop, implement, and evaluate a comprehensive educational program aimed at student mastery of the Texas Essential Knowledge and Skills as defined in Chapter 112.

The purpose of this Secondary Science Curriculum Framework is to match learning experiences to the Texas Essential Knowledge and Skills and provide a sequence of objectives and lab activities that are also aligned, including the **40% lab requirement** for all High School Science courses. Brownsville ISD also requires the 40% lab minimum curriculum requirement for all Middle School Science courses.

In addition, this document includes sample activities and **required "EXEMPLAR" labs** to be taught in each course. EXEMPLAR labs are not intended to be the only labs taught in each course, but are provided to ensure consistency in high-quality instruction throughout the district. They should further serve to avoid overemphasis in one area while neglecting another, and thus, focus on student needs.

Pre-AP accommodations are indicated throughout the document, either as additional TEKS added to the course to meet the needs of the Pre-AP course sequence, or emphasized TEKS that need to be taught with added depth to the Pre-AP student in order to prepare them for the AP or Dual Enrollment course. Adaptations for other special populations will be made as needed, but the basic curriculum is the same for all students.

The **textbook** provided by the state **is a resource** for teaching the course, **not the curriculum**. Although the textbook "covers" all TEKS for the course, it does not necessarily provide instructional support for teaching the TEKS to the level of depth necessary to fulfill the TEKS intention. Therefore, it is highly recommended that teachers use a variety of additional resources from multiple sources in order to meet the TEKS requirements. Some of these resources may include, but are not limited to required Exemplar Labs, FOSS kits (which should be taught in their entirety as a unit), TEXTEAMS activities, Calculator Based Labs, Snapshot Activities and Vistas provided through the Charles A. Dana Center Science Toolkit.

This curriculum framework is primarily a working document that prescribes what is to be taught in a given subject or area of study. It gives both structure and direction to the educational program. As a formal document, it is an official statement of the curriculum and a teacher's guide to instruction.

Student Participation in TEKS-Based Inquiry and the BISD Science Fairs

Research, inquiry and invention are essential skills successful students must develop as they grow academically. Students must be able to discuss and evaluate social, technological and scientific issues evident today and trends influencing the future. A challenge for educators is to exploit the natural curiosity all students possess. Allowing time, opportunity and support during school hours for student-based inquiry permits learners to expose their misconceptions and pursue the "why" questions they have. Students should plan investigations and conduct research that can help them test their ideas, interpret differing points of view and justify consequent discoveries. Students are much more likely to internalize and remember concepts learned if they are actively involved with them, rather than passively observing them take place.

TEKS-based investigations enable students to effectively learn and use content-area concepts and skills. Through these types of direct investigations students are able to "maximize their ability to make sense of the world and to learn more about it." (*Science for All Americans)* Therefore, it is a **BISD requirement that all students participate in a research-based inquiry project at the sixth, eighth, and ninth grades**. Participation at other grades or courses is highly recommended. When students are engaged in research-based inquiry, they are involved in using a rich variety of primary and secondary source materials and the Science Process Skills as required by law in the Science TEKS.

A successful classroom science investigation **may be** developed into a research-based inquiry project and **entered in the Science Fair**. Students who choose to enter the fair will be able to create investigations from among fifteen different categories. The Science Fair will be held annually in the fall, allowing teachers and students to prepare for one science competition per year following the rules of the Intel International Science and Engineering Fair, (www.sciserv.org/isef). Individual campuses, teachers and students will be able to choose which projects to enter in the Science Fair, but **all students will have the opportunity to complete an original investigation, whether they are enrolled in a fall or spring science course**.

Chemistry
Fall Semester Year 2004-2005
1st 6 weeks (29 days)

Chapter 1 (1 week)

- Safety
- Equipment
- What is Chemistry?
- Scientific Method

Chapter 2, 19 (3 weeks)

- Scientific Notation
- Units and Prefixes (SI)
- Introduction to basic Dimensional Analysis
- Measurements (length, volume, mass)
- Basic pH measurements
- Uncertainty in Measurement
- Significant Figures
- Accuracy vs. Precision
- Density
- Temperature Conversions
- Graphing Skills

Chapter 3, 13, 16 (2 weeks)

- Phases of Matter
- Phase Changes
- Introduction of Kinetic Theory (volume and pressure relationship)
- Introduction to Energy (specific heat, basic calorie/Joule conversions)
- Elements and Compounds
- Mixtures and Pure Substances
- Separation of Mixtures
- Physical and Chemical Properties and Changes

2nd 6 weeks (29 days)

Chapters 4 & 25 (2 weeks)

- The Elements and Their Symbols
- History of the Atomic Theory
- The Structure of the Atom
- Isotopes
- Introduction to Nuclear Chemistry (to include basic terminology, fission & fusion, & radioactive decay)

Chapter 5 (½ week)

- Light and Quantized Energy
- Quantum Theory
- Electron Configurations

Chapters 6 and 7 (1½ weeks)

- History of the Modern Periodic Table
- Groups and Periods
- Periodic Trends
- Valence Electrons
- Electron Dot Structures (Lewis Dot)
- Oxidation Numbers
- Electronegativity

3rd 6 weeks (26 days)

Chapters 8 and 9 (6 weeks)

- Ionic and Metallic Bonds
- Stable Electron Configurations and Charges on Ions
- Ionic Bonding and Structure of Ionic Compounds
- Covalent Bonds
- Bond Polarity and Dipole Moments
- Intermolecular Forces (Pgs 393 - 395)
- Molecular Structure

Spring Semester Year 2004-2005
4th 6 weeks (29 days)

Chapters 8 & 9 (2½ weeks)

- Nomenclature

Chapters 10, 17, 19 (2½ weeks)

- Evidence of a Chemical Reaction
- Chemical Equations
- Conditions that affect reaction rate (include acid/base concentrations) (pgs 536 - 541)
- Balancing Chemical Equations
- Predicting Products
- Reactions in Which a Solid Forms (Solubility Rules)

5th 6 weeks (32 days)

Chapters 11 & 15 (3 weeks)

- Dimensional Analysis (Pgs 34 - 35)
- Atomic Mass and the Mole
- Molar Mass
- Solutions

- % by Mass (Pgs 462 - 463)
- Molarity (Pgs 464 - 465)
- Percent Composition
- Empirical & Molecular Formulas

Chapter 12 (2 weeks)
- Stoichiometric Calculations
- Limiting Reactants
- Percent Yield

6th 6 weeks (33 days)

Chapter 13 & 14 (2 weeks)
- Kinetic Theory
- Gases (Pgs 385 - 390)
- Dalton's Law of Partial Pressure (Pgs 391 - 392)
- The Gas Laws (Boyle's law, Charles's Law, Gay-Lussac's law)
- The Combined Gas Law
- Volume and the Mole (Avogadro's Law)
- The Ideal Gas Law

Chapter 16 (1 week)
- Evaporation and Vapor Pressure (Pgs 404 - 409)
- Energy
- Heat

Chapter 19 (2 weeks)
- Acids and Bases
- Buffered Solutions
- Neutralization & Titration

Chapters 20 &21 (2 week)
- Oxidation-Reduction Reactions
- Electrochemistry

Six-Week Chapters	Exemplar Lab(s)* and Unit Content	Concepts TEKS	Processes TEKS
1st Six Weeks Glencoe: *Chemistry: Matter & Change* Chapters 1-3, 13, 16, 19	**"Density of Pennies (and Atomic Weights)"** **"Household Acids & Bases"** Nature of Science, Safety, Measurements in Science, Characteristics of Matter, Intro to Solutions, Science Project	**4 A, B, C, D** **14 A**	**1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E**
2nd Six Weeks Glencoe: *Chemistry: Matter & Change* Chapters 4-7, 25	**"Periodicity", "Eating M&M's Causes Decay"** Atomic History & Structure, Intro to Nuclear Chem, Periodic Table History & Trends, Science Project	**6A, B, C** **4D** **11B**	**1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E**
3rd Six Weeks Glencoe: *Chemistry: Matter & Change* Chapters 8 & 9	**"Conductivity"** Bonding, Science Project	**8A-D**	**1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E**
4th Six Weeks Glencoe: *Chemistry: Matter & Change* Chapters 8-10, 15, 17, 19	**"Concentration & Reaction Rates"** Nomenclature, Chemical & Nuclear Reactions, Factors of Reaction Rates	**9A-D** **11A-C** **15A-B**	**1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E**
5th Six Weeks Glencoe: *Chemistry: Matter & Change* Chapters 11, 12, 15	**"Hydrated Crystals", Beer's Law",** Dimensional Analysis, Molar Conversions, Solutions, Acids & Bases	**11A-C** **12A-C** **13A-C** **14A-D**	**1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E**
6th Six Weeks Glencoe: *Chemistry: Matter & Change* Chapters 12-14, 16, 19, 20, 21	**"Calorimetry", "Small Scale Redox", "Gay-Lussac's Law"** Stoichiometric Calculations, Gas Laws, Energy, Oxidation-Reduction	**5A-C** **7A-B** **10A-B** **11A-C**	**1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E**

*Required Lab as part of 40% TEKS Lab Requirement

Chemistry

Time Frame: 1st Six Weeks—*weeks 1-6* (page 1 of 5)

Unit Concepts:	**Chapters**

Nature of Science Safety Scientific Measurements Characteristics of Matter Science Project (optional)	Chapter 1: Introduction to Chemistry Chapter 2: Data Analysis Chapter 3: Matter – Properties and Changes Chapter 13: States of Matter Chapter 16: Energy and Chemical Change Chapter 19: Acids/Bases

TAKS Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **4 A, B, C, D** **5 A, 7 A, 14 A**	**Required Exemplar Labs,** "Density of Pennies (and Atomic Weights)" "Household Acids and Bases" **and Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
1 1 1	**Scientific Processes:** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** (40% Course Requirement minimum) Ongoing / Integrated with concepts throughout unit.	**Objectives:** • Associate symbols for safety in Lab Manuals with specific safety procedures and cautions. • Relate units used in the metric system to describe mass, volume, linear measure, temperature, time. • Perform measurement labs which require student to make measurements in the metric system, and measure to the limits of accuracy of the measuring device. (metric ruler, graduated cylinder, triple-beam balance) • Perform density calculations.	ISEF Science Fair: http://www.sciserv.org/isef Snapshot Activities 4A, 4B, 4C, 4D: http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities. Graphs, Charts and Tables Activities: http://www.tenet.edu/teks/science/instruction/tutorial.html

Chemistry

Time Frame: 1st Six Weeks—*weeks 1-6* (page 2 of 5)

TAKS Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **4 A, B, C, D** **5 A, 7 A, 14 A**	**Required Exemplar Labs,** "Density of Pennies (and Atomic Weights)" "Household Acids and Bases" **and Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	**(4)** Science concepts. The student knows the characteristics of matter. The student is expected to: (A) differentiate between physical and chemical properties of matter;	• Labs: measurement, volume, area, density, mass. • Apply knowledge of laboratory safety. • Explain why chemists are interested in a submicroscopic description of matter. • Explain and apply the scientific method. • Describe basic acid/base and pH. • Compare and contrast pure research, applied research and technology research. • Describe the SI Base Units for time, length, mass, temperature, and Dimensional Analysis. • Express numbers in scientific notation. • Use significant figures (digits) and rounding to reflect the certainty of data. • Compare and contrast accuracy and precision. • Compare the derived units for volume and density. • Construct data tables. • Compare and contrast types of data and variables.	Vista: "Things That Make You Go Hmmm" http://www.tenet.edu/teks/science/instruction/vistas/index.html?hi "Newton's Law of Cooling" Texas Instruments T³ Chem-Bio Institute © (2000). p. 2-13 to 2-18. *Get this lab from your department chair.*

Chemistry

Time Frame: 1st Six Weeks—*weeks 1-6* (page 3 of 5)

TAKS Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **4 A, B, C, D** **5 A, 7 A, 14 A**	**Required Exemplar Labs,** "Density of Pennies (and Atomic Weights)" "Household Acids and Bases" **and Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	(B) analyze examples of solids, liquids, and gases to determine their compressibility, structure, motion of particles, shape, and volume; (C) investigate and identify properties of mixtures and pure substances; and (D) describe the physical and chemical characteristics of an element using the periodic table and make inferences about its chemical behavior **(5)** Science Concepts The student knows that Energy transformations occur during physical or chemical changes in matter. The student is expected to: (A) identify changes in matter, determine the nature of the change, and examine the forms of energy involved. -	• Create graphs and interpret patterns in data. • Analyze, review and critique past, present and current scientific literature. • Apply knowledge to everyday situations. **Objectives:** • Define chemical/physical change and list several indications that a chemical/physical change has taken place. • Describe volume /pressure relationships determined by the Kinetic Theory. • Distinguish between physical and chemical properties. • List the characteristics among the physical states of matter. • Define energy in terms of specific heat. • Differentiate among the physical states of matter. • Compare and contrast mixtures and pure substances. • Classify mixtures as homogeneous and heterogeneous.	http://www.vanderkrogt.net.elements http://dbhs.wvusd.k12.ca.us/webdocs/ChemTeamIndex.html http://www.chemistrycoach.com/tutorial.htm http://www.education.ti.com http://www.webelements.com http://www.schoolnotes.com http://www.chemtutor.com http://hw.utexas.edu http://www.sciencenetlinks.com http://qphs.org/chem.htm

Chemistry

Time Frame: 1st Six Weeks—*weeks 1-6* (page 4 of 5)

TAKS Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **4 A, B, C, D** **5 A, 7 A, 14 A**	**Required Exemplar Labs,** "Density of Pennies (and Atomic Weights)" "Household Acids and Bases" **and Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	**(7)** Science Concepts. The student knows the variables that influence the behavior of gases. The student is expected to: (A) describe interrelationships among temperature, particle number, pressure, and volume of gases contained within a closed system.	**Science Project: (optional)** • Choose a limited subject, ask a question; identify or originate/define a problem to study. • Review published materials related to problem or question. • Evaluate possible solutions and make hypothesis.	
4	**(14)** Science Concepts. The student knows the properties and behavior of acids and bases The student is expected to: (A) analyze and measure common household products using a variety of indicators to classify the products as acids or bases.	**Exemplar Labs:** "Density of Pennies (and Atomic Weights)" —Use graphing calculator and experimental data to prepare scatter plot and make a prediction based on analysis of data. "Household Acids and Bases"	

STUDENT PRODUCTS may include (but are not limited to): ● Models ● Projects ● Labs ● Research Papers ● Presentations

Copies of Exemplar Lab , **"Density of Pennies (and Atomic Weights)"** are available from your department chair.

Chemistry
Alignment and Correlations Charts

Time Frame: 1st Six Weeks (page 5 of 5)

TEKS/TAKS Correlations*

Chemistry TEKS	Prior Knowledge (IPC & Biology) TEKS	Subsequent Knowledge (Physics) TEKS	Exit level TAKS Correlation
Concepts: 4 a, b, c, d 5a, b 7a 14a	IPC: 7a, d, e		Objective 4
Processes: 1a, b 2 a, b, c, d, e 3 a, b, c, d, e	IPC: 1 a-b, 2 a-d, 3 a-e Biology: 1 a-b, 2 a-d, 3 a-f	1a, b 2 a, b, c, d, e, f 3 a, b, c, d, e	Objective 1

Refer to Appendix for complete TEKS and TAKS objectives.

Pre-AP Course Curricular Requirements**

See Appendix for Pre-AP/AP Alignment Chart

TEKS/National Science Education Standards Correlations***

TEKS	National Science Education Standards
Concepts: 4 a, b, c, d	Physical Science Standard B
Processes: 1 a, b 2 a 2 b 2 c, d 2 e 3 a 3 b 3 c, d, e	 Science as Inquiry Standard A Science in Personal and Social Perspectives Standard F Science as Inquiry Standard A Science and Technology Standard E Science and Technology Standard E Science as Inquiry Standard A Science and Technology Standard E Science and Technology Standard E Science as Inquiry Standard A History and Nature of Science Standard G Science as Inquiry Standard A Science as Inquiry Standard A History and Nature of Science Standard G

****Refer to Appendix for complete TEKS Objectives and National Science Education Standards***

Chemistry

Time Frame: 2nd Six Weeks—*weeks 7-12* (page 1 of 5)

Unit Concepts:	Chapters:	Titles:
Atomic Structure Periodic Table Science Project (optional)	Ch. 4-7, &25	Ch. 4: The Structure of the Atom & Ch. 25: Nuclear Chem Ch. 5: Electrons in Atoms Ch. 6: The Periodic Table and Periodic Law Ch. 7: The Elements

TAKS Objective(s)	Concept and Process TEKS **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **4 D** **6 A, B, C** **11 B, C**	**Required Exemplar Labs,** "Periodicity", "Eating M&M's Causes Decay", **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
1 1 1 4	**Scientific Processes:** **1 A, B,** **2 A, B, C, D, E** **3 A, B, C, D, E** (40% Course Requirement minimum) Ongoing / Integrated with concepts throughout unit. **(4)** Science concepts. The student knows the characteristics of matter. The student is expected to (D) describe the physical and chemical characteristics of an element using the periodic table and make inferences about its chemical behavior	**Objectives:** • Compare and contrast the atomic models of Democritus, Dalton, Thomson and Rutherford. • Distinguish between the subatomic particles in terms of relative charge and mass. • Calculate the number of electrons, protons, and neutrons in an atom given its mass number and atomic number. • Name the energy levels, sublevels, orbitals and number of electrons. • Describe the shape of the s and p orbitals. • Write orbital and electron configuration notation for atoms and ions. • Draw electron dot diagrams.	Snapshot Activities: 6A, 6B, 6C, 4D, 11B, 11C. http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 2nd Six Weeks—*weeks 7-12* (page 2 of 5)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **4 D** **6 A, B, C** **11 B, C**	**Required Exemplar Labs,** "Periodicity", "Eating M&M's Causes Decay", **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	**(6)** Science concepts. The student knows that atomic structure is determined by nuclear composition, allowable electron cloud, and subatomic particles. The student is expected to: (A) describe the existence and properties of subatomic particles; and (B) analyze stable and unstable isotopes of an element to determine the relationship between the isotope's stability and its application; and (C) summarize the historical development of the periodic table to understand the concept of periodicity.	• Recognize the filling order of electron orbitals. • Trace the historical development and identify key features of the periodic table. • Compare period and group trends of several periods. • Relate period and group trends in atomic radii, ionization energy, electrostatic attraction. • Explain how elements in a given group are both similar and different. • Identify different isotopes and provide examples. • Identify characteristics for metals, nonmetals, metalloids, inner transitional metals and transitional metals. • Identify the different properties of the elements on the Periodic Table of the Elements. • "Play" Periodic Table Bingo. • Produce posters of Electron arrangement of Row 3 Elements.	

Chemistry

Time Frame: 2nd Six Weeks—*weeks 7-12* (page 3 of 5)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **4 D** **6 A, B, C** **11 B, C**	**Required Exemplar Labs,** "Periodicity", "Eating M&M's Causes Decay", **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	**(11)** Science concepts. The student knows that balanced chemical equations are used to interpret and describe the interactions of matter. The student is expected to: (B) demonstrate the use of symbols, formulas, and equations in describing interactions of matter such as chemical and nuclear reactions; and (C) explain and balance chemical and nuclear equations using number of atoms, masses, and charge.	• Explain how elements in a given group are both similar and different. • Compare electron configurations between groups. • Using the forms of the 5 main chemical reactions, predict products when given the reactants. • Identify different parts of an equation. • Balance chemical equations. • Describe how a mole is used in chemistry. • Convert moles to number of representative particles and number of representative particles to moles. • Recognize the mole relationships shown by a chemical formula. • Calculate the molar mass of a compound.	

Chemistry

Time Frame: 2nd Six Weeks—*weeks 7-12* (page 4 of 5)

TAKS Objective(s)	Concept and Process TEKS 1 A, B 2 A, B, C, D, E 3 A, B, C, D, E 4 D 6 A, B, C 11 B, C	Required Exemplar Labs, "Periodicity", "Eating M&M's Causes Decay", **and** Suggested Instructional Objectives Integrating Concepts & Processes	Suggested Resources (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4		• Calculate the percent composition, empirical and molecular formulas for any given compound from data provided. • Identify the quantitative relationships in a balanced chemical equation. • Create a plan for an experiment. • Complete ISEF Required paperwork; before beginning experimentation; consult with project sponsors. • Challenge and test hypothesis through experimentation (data collection) and analysis. **Exemplar Lab:** "Periodicity" **Science Project**: (optional - continued from 1st 3 weeks)	

STUDENT PRODUCTS may include (but are not limited to): ● Models ● Projects ● Labs ● Research Papers ● Presentations

Copy of Exemplar Lab, "Periodicity" is available from your department chair.

Chemistry
Alignment and Correlations Charts

Time Frame: 2nd Six Weeks (page 5 of 5)

TEKS/TAKS Correlations*

Chemistry TEKS	Prior Knowledge (IPC & Biology) TEKS	**Subsequent Knowledge (Physics) TEKS**	**Exit level TAKS Correlation**
Concepts: 4 d 6 a, b, c 11 b ,c	IPC: 7e, 8c		Objective 4
Processes: 1a, b 2 a, b, c, d, e 3 a, b, c, d, e	IPC: 1 a-b, 2 a-d, 3 a-e Biology: 1 a-b, 2 a-d, 3 a-f	1a, b 2 a, b, c, d, e, f 3 a, b, c, d, e	Objective 1

Refer to Appendix for complete TEKS and TAKS objectives.

Pre-AP Course Curricular Requirements**

See Appendix for Pre-AP/AP Alignment Chart

TEKS/National Science Education Standards Correlations***

TEKS	**National Science Education Standards**
Concepts:	
6 a, b, c	Physical Science Standard B
4 d	Physical Science Standard B
11 a, b, c	Physical Science Standard B
Processes:	
1 a, b	Science as Inquiry Standard A Science in Personal and Social Perspectives Standard F
2 a	Science as Inquiry Standard A Science and Technology Standard E
2 b	Science and Technology Standard E
2 c, d	Science as Inquiry Standard A Science and Technology Standard E
2 e	Science and Technology Standard E
3 a	Science as Inquiry Standard A History and Nature of Science Standard G
3 b	Science as Inquiry Standard A
3 c, d, e	Science as Inquiry Standard A History and Nature of Science Standard G

****Refer to Appendix for complete TEKS Objectives and National Science Education Standards***

Chemistry

Time Frame: 3rd Six Weeks—*weeks 13-18* (page 1 of 3)

Unit Concepts:	**Chapters:**	**Titles:**
Ionic & Metallic Bonds Stable Electron Configurations & changes on Ions Ionic Bonding and Structure of Ionic Compounds Covalent Bonds Bond Polarity & Dipole Moments Intermolecular Forces Molecular Structure Science Project (optional)	Ch. 8, 9	Ch. 8: Ionic Compounds Ch. 9: Covalent Bonding

TAKS Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **8 A, B, C, D**	**Required Exemplar Labs,** " Conductivity" **and Suggested Instructional Activities Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
1 1 1 4	**Scientific Processes:** **1 A, B,** **2 A, B, C, D, E** **3 A, B, C, D, E** (40% Course Requirement minimum) Ongoing / Integrated with concepts throughout unit. **(8)** Science concepts. The student knows how atoms form bonds to acquire a stable arrangement of electrons. The student is expected to: (A) identify characteristics of atoms involved in chemical bonding; (B) investigate and compare the physical and chemical properties of ionic and covalent compounds;	**Objectives:** • Identify characteristics for covalent and ionic and covalent bonding. • Describe the formation of ionic bonds. • Compare and contrast the physical and chemical properties of chemical bonding. • Construct molecular and geometric molecules to demonstrate arrangement of molecules, ionic crystals, polymers and metallic substances. • Differentiate between intermolecular forces on the physical and chemical properties of covalent compounds.	Snapshot Activities: 8 A, B, C, D http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 3rd Six Weeks—*weeks 13-18* (page 2 of 3)

TAKS Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **8 A,B,C,D**	**Required Exemplar Labs,** "Conductivity" **and Suggested Instructional Activities Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	(C) compare the arrangement of atoms in molecules, ionic crystals, polymers, and metallic substances; and (D) describe the influence of intermolecular forces on the physical and chemical properties of covalent compounds.	**Science Project:** (continued) • Prepare report and exhibit. **Exemplar Labs:** "Conductivity"	

STUDENT PRODUCTS may include (but are not limited to): ● Models ● Projects ● Labs ● Research Papers ● Presentations

Copies of Exemplar Labs, "Conductivity" is available from your department chair.

Chemistry
Alignment and Correlations Charts

Time Frame: 3rd Six Weeks (page 3 of 3)

TEKS/TAKS Correlations*

Chemistry TEKS	Prior Knowledge (IPC & Biology) TEKS	Subsequent Knowledge (Physics) TEKS	Exit level TAKS Correlation
Concepts: 8 a,b,c,d	IPC: 9b, d, 8a, 6b Bio: 4b		Objectives 4
Processes: 1a, b 2 a, b, c, d, e 3 a, b, c, d, e	IPC: 1 a-b, 2 a-d, 3 a-e Biology: 1 a-b, 2 a-d, 3 a-f	1a, b 2 a, b, c, d, e, f 3 a, b, c, d, e	Objective 1

Refer to Appendix for complete TEKS and TAKS objectives.

Pre-AP Course Curricular Requirements**

See Appendix for Pre-AP/AP Alignment Chart

TEKS/National Science Education Standards Correlations***

TEKS	National Science Education Standards
Concepts:	
7 a, b	Physical Science Standard B
5a, b, c	Physical Science Standard B
13 a, b, c	Physical Science Standard B
Processes:	
1 a, b	Science as Inquiry Standard A Science in Personal and Social Perspectives Standard F
2 a	Science as Inquiry Standard A Science and Technology Standard E
2 b	Science and Technology Standard E
2 c, d	Science as Inquiry Standard A Science and Technology Standard E
2 e	Science and Technology Standard E
3 a	Science as Inquiry Standard A History and Nature of Science Standard G
3 b	Science as Inquiry Standard A
3 c, d, e	Science as Inquiry Standard A History and Nature of Science Standard G

****Refer to Appendix for complete TEKS Objectives and National Science Education Standards***

Chemistry

Time Frame: 4th Six Weeks—*weeks 19-24* (page 1 of 4)

Unit Concepts:	Chapters:	Titles:
Nomenclature Evidence of a chemical reaction Chemical Equations Balancing chemical equations Predicting Products Solubility Rules	Ch. 8-10, 15, 17, 19	Ch. 8: Ionic Compounds Ch. 9: Covalent Bonding Ch. 10: Chemical Reactions Ch. 15: Solutions Ch. 17: Reaction rates Ch. 19: Acids and Bases

TAKS Objective(s)	Concept and Process TEKS **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **9 A-D** **11 A-C** **12 B** **15 A, B**	**Required Exemplar Labs,** "Concentration & Reaction Rates" **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
1 1 1 4	**1 A, B,** **2 A, B, C, D, E** **3 A, B, C, D, E** (40% Course Requirement minimum) Ongoing / Integrated with concepts throughout unit. **(9)** Science concepts. The student knows the processes, effects, and significance of nuclear fission and nuclear fusion. The student is expected: (A) compare fission and fusion reactions in terms of the masses of the reactants and products and the amount of energy released in the nuclear reactions; (B) Investigate radioactive elements to determine half-life.	**Objectives:** • Explain an application of radiation used in the treatment of disease. • Describe some of the damaging effects of radiation on biological systems. • Compare and contrast nuclear fission and nuclear fusion. • Solve problems involving radioactive decay rates. • Determine reaction orders using the method initial rates. • Calculate instantaneous rates of chemical reactions	Snapshot Activities: http://www.tenet.edu/teks/science/instruction/tekspert s.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 4th Six Weeks—*weeks 19-24* (page 1 of 4)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **9 A-D** **11 A-C** **12 B** **15 A,B**	**Required Exemplar Labs,** "Concentration & Reaction Rates" **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	(C) evaluate the commercial use of nuclear energy and medical uses of radioisotopes; and (D) Evaluate environmental issues associated with the storage, containment, and disposal of nuclear wastes. **(11)** Science concepts. The student knows that balanced chemical equations are used to interpret and describe the interactions of matter. The student is expected to: (A) identify common elements and compounds using scientific nomenclature. (B) demonstrate the use of symbols, formulas, and equations in describing interactions of matter such as chemical and nuclear reactions (C) explain and balance chemical and nuclear equations using number of atoms, masses, and charge.	**Objectives:** • Identify alpha, beta, and gamma radiation in terms of composition and key properties. • Apply your knowledge of radioactive decay to write balanced nuclear equations. • Using an Oxidation Number Handout, write correct names from the formulas of compounds. • Using the forms of the 5 main chemical reactions, predict products when given the reactants. • Identify different parts of an equation. • Balance chemical equations. • Distinguish between potential and kinetic energy. • Relate chemical potential energy to the heat lost/ gained in chemical reactions. • Relate rates of chemical reactions to collisions between reaction particles. • Identify factors that affect the rates of chemical reactions	Activities: http://www.tenet.edu/teks/science/instruction/tutorial.html Texas Instruments T³ Chem-Bio Institute © (2000). *Get this lab from your department chair.*

Chemistry

Time Frame: 4th Six Weeks—*weeks 19-24* (page 1 of 4)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **9 A-D** **11 A-C** **12 B** **15 A, B**	**Required Exemplar Labs,** "Concentration & Reaction Rates" **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
4	**(12)** Science concepts: The student knows the factors that influence the solubility of solutes in a solvent. The student is expected to: (B) develop general rules for solubility through investigations with aqueous solutions; **(15)** Science concepts: The student knows factors involved in chemical reactions. The student is expected to: (A) verify the law of conservation of energy by evaluating the energy exchange that occurs as a consequence of a chemical reactions; and (B) Relate the rate of a chemical reaction to temperature, concentration, surface area, and presence of a catalyst.	• Express the relationship between reaction rate to it's concentration (acid/base), temperature; surface areas and catalyst. • Explain the intermolecular forces in solutions; describe solubility and the factors that affect it. • Describe solubility and the factors that affect it; state the concentrations of solutions in different ways; and the relationship to net ionic equations. • Identify the significance of water as a universal solvent	Texas Instruments T³ Chem-Bio Institute © (2000). *Get this lab from your department chair.*

Copies of Exemplar Labs, "Concentration & Reaction Rates" are available from your department chair.

Chemistry
Alignment and Correlations Charts

Time Frame: 4th Six Weeks (page 4 of 4)

TEKS/TAKS Correlations*

Chemistry TEKS	Prior Knowledge (IPC & Biology) TEKS	Subsequent Knowledge (Physics) TEKS	Exit level TAKS Correlation
Concepts: 9 a-d 11 a-c 15 a, b	IPC: 6A, 9A, D Bio: 4b	5d, 7a	Objectives 2, 4, 5
Processes: 1a, b 2 a, b, c, d, e 3 a, b, c, d, e	IPC: 1 a-b, 2 a-d, 3 a-e Biology: 1 a-b, 2 a-d, 3 a-f	1a, b 2 a, b, c, d, e, f 3 a, b, c, d, e	Objective 1

Refer to Appendix for complete TEKS and TAKS objectives.

Pre-AP Course Curricular Requirements**

See Appendix for Pre-AP/AP Alignment Chart

TEKS/National Science Education Standards Correlations***

TEKS	National Science Education Standards
Concepts:	
15 a, b	Physical Science Standard B
12 a, b, c	Physical Science Standard B
14 a, b, c	Physical Science Standard B
14 d	Physical Science Standard B
	Science in Personal and Social Perspectives Standard F
Processes:	
1 a, b	Science as Inquiry Standard A
	Science in Personal and Social Perspectives Standard F
2 a	Science as Inquiry Standard A
	Science and Technology Standard E
2 b	Science and Technology Standard E
2 c, d	Science as Inquiry Standard A
	Science and Technology Standard E
2 e	Science and Technology Standard E
3 a	Science as Inquiry Standard A
	History and Nature of Science Standard G
3 b	Science as Inquiry Standard A
3 c, d, e	Science as Inquiry Standard A
	History and Nature of Science Standard G

Refer to Appendix for complete TEKS Objectives and National Science Education Standards

Chemistry

Time Frame: 5th Six Weeks—*weeks 25-30* (page 1 of 4)

Unit Concepts:	Chapters:	Titles:
Dimensional Analysis Molar Conversions Solutions Stoichiometry	Ch. 11, 12, 15,	Ch. 11: The Mole Ch.12: Stoichiometry Ch. 15: Solutions

TAKS Objective(s)	Concept and Process TEKS 1 A, B 2 A, B, C, D, E 3 A, B, C, D, E 11 A-C 12 A-C 13 A-C	Required Exemplar Labs, "Hydrated Crystals," Beer's Law," and Suggested Instructional Objectives Integrating Concepts & Processes	Suggested Resources (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
1 1 1	**Scientific Processes:** **1 A, B,** **2 A, B, C, D, E** **3 A, B, C, D, E** (40% Course Requirement minimum) Ongoing / Integrated with concepts throughout unit. **(11)** Science concepts. The student knows that balanced chemical equations are used to interpret and describe the interactions of matter. The student is expected to: (A) identify common elements and compounds using scientific nomenclature. (B) demonstrate the use of symbols, formulas, and equations in describing interactions of matter such as chemical and nuclear reactions; and (C) explain and balance chemical and nuclear equations using number of atoms, masses, and charge.	**Objectives:** • Using an Oxidation Number Handout, write correct names from the formulas of compounds. • Using the forms of the 5 main chemical reactions, predict products when given the reactants. • Identify different parts of an equation. • Balance chemical equations. • Describe how a mole is used in chemistry. • Convert moles to number of representative particles and number of representative particles to moles. • Recognize the mole relationships shown by a chemical formula. • Calculate the molar mass of a compound.	Snapshot Activities: http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 5th Six Weeks—*weeks 25-30* (page 2 of 4)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **11 A-C** **12 A-C** **13 A-C**	**Required Exemplar Labs,** "Hydrated Crystals," Beer's Law," **and** **Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
	(12) Science concepts. The student knows the factors that influence the solubility of solutes in a solvent. The student is expected to: (A) demonstrate and explain effects of temperature and the nature of solid solutes on the solubility of solids; (B) develop general rules for solubility through investigations with aqueous solutions; and (C) evaluate the significance of water as a solvent in living organisms and in the environment. **(13)** Science concepts. The student knows relationships among the concentration, electrical conductivity, and colligative properties of a solution. The student is expected to: (A) compare unsaturated, saturated, and supersaturated solutions;	**Objectives:** • Calculate the percent composition, empirical and molecular formulas for any given compound from data provided. • Identify the quantitative relationships in a balanced chemical equation. • Explain the intermolecular forces in solutions. • Describe solubility and the factors that affect it. • State the concentrations of solutions in different ways. • Calculate the concentrations of solutions. • Identify the significance of water as a universal solvent.	Graphs, Charts and Tables Activities: http://www.tenet.edu/teks/science/instruction/tutorial.html

Chemistry

Time Frame: 5th Six Weeks—*weeks 25-30* (page 3 of 4)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **11 A-C** **12 A-C** **13 A-C**	**Required Exemplar Labs,** "Hydrated Crystals," Beer's Law," **and** **Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
	(B) interpret relationships among ionic and covalent compounds, electrical conductivity, and colligative properties of water. (C) measure and compare the rates of reaction of a solid reactant in solutions of varying concentration.	• **Exemplar Lab:** "*Hydrated Crystals," "Beer's Law,"*	

STUDENT PRODUCTS may include (but are not limited to): ● Models ● Projects ● Labs ● Research Papers ● Presentations

Chemistry
Alignment and Correlations Charts

Time Frame: 5th Six Weeks (page 4 of 4)

TEKS/TAKS Correlations*

Chemistry TEKS	Prior Knowledge (IPC & Biology) TEKS	Subsequent Knowledge (Physics) TEKS	Exit level TAKS Correlation
Concepts: 11 a, b, c 12 a, b, c 13 a, b, c	IPC: 6d, 8c	7b	Objectives 4, 5
Processes: 1a, b 2 a, b, c, d, e 3 a, b, c, d, e	IPC: 1 a-b, 2 a-d, 3 a-e Biology: 1 a-b, 2 a-d, 3 a-f	1a, b 2 a, b, c, d, e, f 3 a, b, c, d, e	Objective 1

Refer to Appendix for complete TEKS and TAKS objectives.

Pre-AP Course Curricular Requirements**

See Appendix for Pre-AP/AP Alignment Chart

TEKS/National Science Education Standards Correlations***

TEKS	National Science Education Standards
Concepts:	
10 a, b	Physical Science Standard B
9 c, d	Physical Science Standard B Science in Personal and Social Perspectives Standard F
11 c	Physical Science Standard B
Processes:	
1 a, b	Science as Inquiry Standard A Science in Personal and Social Perspectives Standard F
2 a	Science as Inquiry Standard A Science and Technology Standard E
2 b	Science and Technology Standard E
2 c, d	Science as Inquiry Standard A Science and Technology Standard E
2 e	Science and Technology Standard E
3 a	Science as Inquiry Standard A History and Nature of Science Standard G
3 b	Science as Inquiry Standard A
3 c, d, e	Science as Inquiry Standard A History and Nature of Science Standard G

Refer to Appendix for complete TEKS Objectives and National Science Education Standards

Chemistry

Time Frame: 6th Six Weeks—*weeks 31-36* (page 1 of 6)

Unit Concepts:	Chapters:	Titles:
Stoichiometry Limiting Reactions Percent Yield Gas Laws Evaporation and Vapor Pressure Oxidation-Reduction rtns. Electrochemistry	Ch. 13, 14, 16, 19, 20, 21	Ch. 13: States of Matter Ch. 14: Gases Ch. 16: Energy and Chemical Changes Ch. 19: Acids and Bases Ch. 20: Redox Reactions Ch. 21: Electrochemistry

T A K S Objective(s)	Concept and Process TEKS 1 A, B 2 A, B, C, D, E 3 A, B, C, D, E 5 A-C 7 A, B 10 A, B 11 A-C 14 A-D	Required Exemplar Labs, "Calorimetry," "Small Scale Redox," "Gay-Lussac" and Suggested Instructional Objectives Integrating Concepts & Processes	Suggested Resources (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
1 1 1	**Scientific Processes:** **1 A, B,** **2 A, B, C, D, E** **3 A, B, C, D, E** (40% Course Requirement minimum) Ongoing / Integrated with concepts throughout unit. **(5)** Science concepts. The student knows that energy transformations occur during physical or chemical changes in matter. The student is expected to: (A) identify changes in matter, determine the nature of the change, and examine the forms of energy involved;	**Objectives:** • List different changes in matter. • Determine cause of changes in matter. • Identify forms of energy transformations during physical and/or chemical changes in matter. • Examine energy conversions, specific heat and enthalpy of phase changes.	Glencoe Chemistry Matter and Change textbook. Chapters:12-14, 16, 20, 21. ISEF Science Fair: http://www.sciserve.org/isef/teachers/index.asp Snapshot Activities: http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 6th Six Weeks—*weeks 31-36* (page 2 of 6)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **5 A-C** **7 A, B** **10 A, B** **11 A-C** **14 A-D**	**Required Exemplar Labs,** "Calorimetry," "Small Scale Redox," "Gay-Lussac" **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
	Scientific Processes: (B) identify and measure energy transformations and exchanges involved in chemical reactions; and (C) measure the effects of the gain or loss of heat energy on the properties of solids, liquids, and gases. **(7)** Science concepts. The student knows the variables that influence the behavior of gases. The student is expected to: (A) describe interrelationships among temperature, particle number, pressure, and volume of gases contained within a closed system	**Objectives:** • Apply Boyle's Law, Charles' Law, Dalton's Law and Gay-Lussac's law. • Apply the combined gas to problems involving the pressure, temperature and volume of a gas. • Relate numbers of particles and volumes by using Avogadro's principle. • Relate the amount of gas present to its pressure, temperature, and volume by using the ideal gas law. • Apply Standard Temperature and Pressure (STP). • Use Charles's and Boyle's Laws formulas to perform volume, pressure and temperature calculations.	Glencoe Chemistry Matter and Change textbook. Chapters:12-14, 16, 20, 21. ISEF Science Fair: http://www.sciserve.org/isef/teachers/index.asp Snapshot Activities: http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 6th Six Weeks—*weeks 31-36* (page 3 of 6)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **5 A-C** **7 A, B** **10 A, B** **11 A-C** **14 A-D**	**Required Exemplar Labs,** "Calorimetry," "Small Scale Redox," "Gay-Lussac" **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
	Scientific Processes: **(10)** Science concepts. The student knows common oxidation-reduction reactions. The student is expected to: (A) identify oxidation-reduction processes; and (B) demonstrate and document the effects of a corrosion process and evaluate the importance of electroplating metals. **(11)** Science concepts. The student knows that balanced chemical equations are used to interpret and describe the interactions of matter. The student is expected to:	**Objectives:** • Use the Kinetic-Molecular theory to explain the behavior of gases. • Explain what energy is and distinguish between potential and kinetic energy • Relate chemical potential energy to the heat lost or gained in chemical reactions. • Calculate the amount of heat absorbed or released by a substance as its temperature changes. • Describe how a calorimeter is used to measure energy absorbed or released	Glencoe Chemistry Matter and Change textbook. Chapters:12-14, 16, 20, 21. ISEF Science Fair: http://www.sciserve.org/isef/teachers/index.asp Snapshot Activities: http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 6th Six Weeks—*weeks 31-36* (page 4 of 6)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **5 A-C** **7 A, B** **10 A, B** **11 A-C** **14 A-D**	**Required Exemplar Labs,** "Calorimetry," "Small Scale Redox," "Gay-Lussac" **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
	Scientific Processes: (A) identify common elements and compounds using scientific nomenclature. (B) demonstrate the use of symbols, formulas, and equations in describing interactions of matter such as chemical and nuclear reactions; and (C) explain and balance chemical and nuclear equations using number of atoms, masses, and charge. **(14)** Science concepts. The student knows the properties and behavior of acids and bases. The student is expected to: (A) analyze and measure common household products using a variety of indicators to classify the products as acids or bases; (B) demonstrate the electrical conductivity of acids and bases;	**Objectives:** • Using an Oxidation Number Handout, write correct names from the formulas of compounds. • Using the forms of the 5 main chemical reactions, predict products when given the reactants. • Identify different parts of an equation. • Balance chemical equations. • Describe a way to obtain electrical energy from a redox reaction. • Identify physical and chemical properties of acids and bases. • Classify solutions as acidic, basic, or neutral. • Compare the Arrhenius and Bronsted-Lowry models of acids and bases. • Relate the strength of an acid or base to its degree of ionization. • Explain the relationship between the strengths of acids and bases and the values of their ionization constants.	Glencoe Chemistry Matter and Change textbook. Chapters:12-14, 16, 20, 21. ISEF Science Fair: http://www.sciserve.org/isef/teachers/index.asp Snapshot Activities: http://www.tenet.edu/teks/science/instruction/teksperts.html TEXTEAMS Chemistry Institute Activities.

Chemistry

Time Frame: 6th Six Weeks—*weeks 31-36* (page 5 of 6)

T A K S Objective(s)	**Concept and Process TEKS** **1 A, B** **2 A, B, C, D, E** **3 A, B, C, D, E** **5 A-C** **7 A, B** **10 A, B** **11 A-C** **14 A-D**	**Required Exemplar Labs,** "Calorimetry," "Small Scale Redox," "Gay-Lussac" **and Suggested Instructional Objectives Integrating Concepts & Processes**	**Suggested Resources** (Use of additional & various resources from multiple sources is necessary to meet the TEKS)
	(C) identify the characteristics of a neutralization reaction; and (D) describe effects of acids and bases on an ecological system.	• Write chemical equations for neutralization reaction. • Explain how neutralization reactions are used in acid-base titration; • Compare the properties of buffered and unbuffered solutions. • Explain the application of buffers in an ecological system.	

STUDENT PRODUCTS may include (but are not limited to): ● Models ● Projects ● Labs ● Research Papers ● Presentations

Exemplar Labs located in your textbook.

Chemistry
Alignment and Correlations Charts

Time Frame: 6th Six Weeks (page 6 of 6)

TEKS/TAKS Correlations*

Chemistry TEKS	Prior Knowledge (IPC & Biology) TEKS	Subsequent Knowledge (Physics) TEKS	Exit level TAKS Correlation
Concepts: 5 a, b, c 7 a, b 10 a, b 11 a, b, c 14 b, c, d			
Processes: 1a, b 2 a, b, c, d, e 3 a, b, c, d, e	IPC: 1 a-b, 2 a-d, 3 a-e Biology: 1 a-b, 2 a-d, 3 a-f	1a, b 2 a, b, c, d, e, f 3 a, b, c, d, e	Objective 1

Refer to Appendix for complete TEKS and TAKS objectives.

Pre-AP Course Curricular Requirements**

See Appendix for Pre-AP/AP Alignment Chart

TEKS/National Science Education Standards Correlations***

TEKS	National Science Education Standards
Concepts:	
9 a, b	Physical Science Standard B
8 a, b, c, d	Physical Science Standard B
Processes:	
1 a, b	Science as Inquiry Standard A Science in Personal and Social Perspectives Standard F
2 a	Science as Inquiry Standard A Science and Technology Standard E
2 b	Science and Technology Standard E
2 c, d	Science as Inquiry Standard A Science and Technology Standard E
2 e	Science and Technology Standard E
3 a	Science as Inquiry Standard A History and Nature of Science Standard G
3 b	Science as Inquiry Standard A
3 c, d, e	Science as Inquiry Standard A History and Nature of Science Standard G

Refer to Appendix for complete TEKS Objectives and National Science Education Standards

APPENDIX

Texas Essential Knowledge and Skills (http://www.tea.state.tx.us/teks/index.html)
- Integrated Physics and Chemistry
- Biology
- Chemistry
- Physics

Texas Assessment of Knowledge and Skills Objectives (http://www.tea.state.tx.us/student.assessment/taks/booklets/index.html)
- Tenth Grade and Exit Level (10th and 11th Grade)

National Science Education Standards

Science TEKS Toolkit Excerpts (http://www.tenet.edu/teks/science/instruction/index.html)
- Materials and Safety Equipment List
- Checklist for Science Field Investigations
- Science Facility Safety Checklist
- Laboratory Safety Survey
- Assessment Methods
- Web-Based Resources

Texas Environmental Education Advisory Committee Contact Information (http://www.tea.state.tx.us/curriculum/teeac.html)

Pre-AP and AP Science Scope and Sequence Grades 6-12

Required Exemplar Labs:
- ***"Predicting Periodic Properties"
- ***"Newton's Law of Cooling"
- ***"Density of Pennies (and Atomic Weights)"
- ***"Evaporation and Intermolecular Attractions"
- ***"Ideal and Non-Ideal Gases"
- ***"Using Conductivity to Find an Equivalence Point"
- ***"Chemical Kinetics of Bleach"
- ***"Acid-Base Titration"
- "Making Ionic Compounds" (Glencoe textbook)
- "How do dispersion forces determine the boiling point of a substance?" (Glencoe textbook)

****These labs are **available from your Science Department Chair** and are **not** located in this document. (We do not have permission to print them in this document)*

Chemistry Exemplar Labs

Number	TEKS	Exemplar Lab	Source
1.	4 1st Three Weeks	"Predicting Periodic Properties"	T³ CHEM-BIO Institute. Texas Instruments © 1999. p. 7-7.
2.	4 1st Three Weeks	"Newton's Law of Cooling"	T³ CHEM-BIO Institute. Texas Instruments © 2000. p. 2-13 to 2-18.
3.	6 2nd Three Weeks	"Density of Pennies (and Atomic Weights)"	T³ CHEM-BIO Institute. Texas Instruments © 2000. p. 6-5 to 6-6.
4.	5 3rd Three Weeks	"Evaporation and Intermolecular Attractions"	T³ CHEM-BIO Institute. Texas Instruments © 1999. p. 6-33 to 6-34.
5.	7 3rd Three Weeks	"Ideal and Non-Ideal Gases"	T³ CHEM-BIO Institute. Texas Instruments © 2000. p. 6-18 to 6-20.
6.	13 3rd Three Weeks	"Using Conductivity to Find an Equivalence Point"	T³ CHEM-BIO Institute. Texas Instruments © 2000. p. 6-49 to 6-50.
7.	15 4th Three Weeks	"Chemical Kinetics of Bleach"	T³ CHEM-BIO Institute. Texas Instruments © 2000. p. 6-46 to 6-48.
8.	14 4th Three Weeks	"Acid-Base Titration"	T³ CHEM-BIO Institute. Texas Instruments © 2000. p. 6-39 to 6-41.
9.	8 6th Three Weeks	"Making Ionic Compounds"	Glencoe Chemistry: Matter and Change. Chemlab 8, p 232-233.
10.	8 6th Three Weeks	"How do dispersion forces determine the boiling point of a substance?"	Glencoe Chemistry: Matter and Change. Problem Solving Lab, p 267.

T³ CHEM-BIO labs were distributed during the T³ Training Institutes. Please see your Department Chair if you do not have copies.

National Science Education Content Standards for Grades 9 - 12

Content Standard	
A: Science As Inquiry	Abilities to do scientific inquiry Understandings about scientific inquiry
B: Physical Science	Structure of atoms Structure and properties of matter Chemical reactions Motions and forces Conservation of energy and increase in disorder Interactions of energy and matter
C: Life Science	The cell Molecular basis of heredity Biological evolution Interdependence of organisms Matter, energy, and organization in living systems Behavior of organisms
D: Earth and Space Science	Energy in the earth system Geochemical cycles Origin and evolution of the earth system Origin and evolution of the universe
E: Science and Technology	Abilities of technological design Understandings about science and technology
F: Science in Personal and Social Perspectives	Personal and community health Population growth Natural resources Environmental quality Natural and human-induced hazards Science and technology in local, national, and global challenges
G: History and Nature of Science	Science as a human endeavor Nature of scientific knowledge Historical perspectives