

# WORLD OF CHEMISTRY

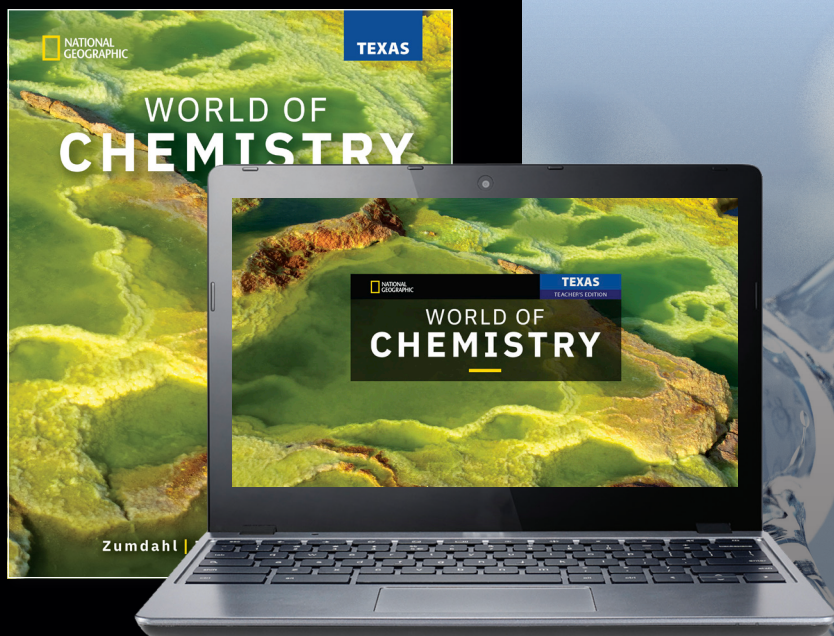
SCOPE AND SEQUENCE

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Texas Edition



# SCOPE AND SEQUENCE WITH PACING



Use the relative times shown as one tool to help prioritize segments of your course instruction and homework assignments. Timing is based on 50-minute periods or 90-minute blocks with consideration given to the amount and depth of the content presentation and the TEKS addressed.

As you allocate time, consider your students' backgrounds and their available resources. Many activities require very simple or no materials or advance preparation and may be assigned as homework, such as the Case Studies and Minilabs.

Assessment tools such as the Section Reviews, Chapter Reviews, and Chapter Assessments are not included in this scope and sequence as their application varies widely with teacher discretion.

The Investigations offer ways to assess TEKS that may require in-class time. Choose among these based on how you want to promote understanding of various concepts and your available laboratory equipment.

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## CHAPTER 1 *Chemistry: An Introduction*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
1.1 The Science of Chemistry (pp. 6–9)	1	0.5	Introduction 1, 5, 6; 1.A; 4.B; 4.C
1.2 Using Science to Solve Problems (pp. 10–15)	2	1	Introduction 2, 3, 4, 5, 6; 1.A; 1.B; 1.E; 1.G; 1.H; 2.A; 2.B; 2.C; 3.A; 3.B; 3.C; 4.A; 4.B; 4.C
1.3 Using Chemistry to Design Solutions (pp. 16–19)	2	1	Introduction 4, 5; 1.A; 1.B; 1.E; 1.G; 2.D; 3.A; 4.B; 4.C
1.4 Learning Chemistry (pp. 20–21)	2	1	Introduction 1; 1.a
Case Study: Octopus-Inspired Camouflage (p. 22)	0.5	0.25	4.B
Chapter 1 Investigation: Observations and Explanations (pp. 26–27)	1	0.5	1.B; 1.C; 1.D; 1.E; 1.F

CHAPTER 2 *Matter*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
2.1 The Nature of Matter (pp. 32–37)	1	0.5	
Hands-on Chemistry: Air Matters!	0.5	0.25	1.B; 1.E; 3.A
2.2 Properties of Matter (pp. 38–42)	3	1.5	
2.3 Classifying Matter (pp. 43–50)	5	2.5	1.D; ; 3.B; 11.B
Hands-on Chemistry: Mysterious Mixing	0.5	0.25	1.E; 1.G; 3.A
Case Study: Rare Earth Elements and Discarded Electronics (p. 51)	0.5	0.25	Introduction 5; 3.A; 4.B
Chapter 2 Investigation: Separation Challenge (p. 55)	1	0.5	1.A; 1.B; 1.C; 1.D; 3.B; 4.A

CHAPTER 3 *Measurements and Calculations*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
3.1 Scientific Notation and Units (pp. 60–67)	1	0.5	1.D; 1.E; 2.C; 4.B; 4.C
3.2 Uncertainty in Measurement and Significant Figures (pp. 68–75)	3	1.5	1.E; 2.B; 2.C; 3.A
3.3 Problem Solving and Unit Conversions (pp. 76–93)	3	1.5	1.E; 2.C; 3.A
Hands-on Chemistry: The Density of Clay	0.5	0.25	3.A
Hands-on Chemistry: Cooking in a Metric World	0.5	0.25	2.C
Case Study: Redefining the Kilogram (p. 94)	0.5	0.25	3.B; 4.B
Chapter 3 Investigation: Measurement and Density (pp. 100–101)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.F; 2.C

CHAPTER 4 *Chemical Foundations: Elements, Atoms, and Ions*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
4.1 The Elements (pp. 106–111)	2	1	4.B; 5.A
4.2 Atoms and Compounds (pp. 112–115)	2	1	1.G; 4.B; 6.A
4.3 Atomic Structure (pp. 116–123)	1	0.5	1.G; 3.A; 4.A; 4.B; 4.C; 6.A; 6.B
Hands-on Chemistry: How Big Is an Atom?	0.5	0.25	
4.4 The Periodic Table (pp. 124–133)	2	1	3.A; 5.A; 5.B; 5.B; 5.C; 7.A
Hands-on Chemistry: Names and Symbols? Elementary!	0.5	0.25	
4.5 Ions and Their Compounds (pp. 134–141)	2	1	3.A; 4.C; 5.B; 6.A; 6.B; 7.A
Case Study: Earth's Helium Resources (p. 142)	0.5	0.25	Introduction 5; 3.A
Chapter 4 Investigation: Electric Solutions (p. 149)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.F; 1.G; 2.B; 3.A; 6.B

CHAPTER 5 *Nomenclature*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
5.1 Naming Binary Compounds (pp. 154–168)	2	1	Introduction 5; 2.B; 4.A; 4.B; 5.B; 7.A; 7.B;
Hands-on Chemistry: Name Game I: Binary Ionic Compounds	0.5	0.25	7.B
5.2 Naming and Writing Formulas for More Complex Compounds (pp. 169–176)	2	1	2.A; 7.B; 12.A
Hands-on Chemistry: Name Game II: Polyatomic Ions	0.5	0.25	7.B
Case Study: Compound Semiconductors (p. 177)	0.5	0.25	2.A; 7.A; 7.B
Chapter 5 Investigation: Forming and Naming Ions (p. 183)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 7.B; 11.D;

CHAPTER 6 *Chemical Composition*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
6.1 Atoms and Moles (pp. 188–199)	2	1	2.C; 6.D; 8.A; 8.B
Hands-on Chemistry: Counting Pennies Without Counting	0.5	0.25	1.G;
6.2 Molar Mass and Percent Composition (pp. 200–209)	2	1	2.C; 8.A; 8.B; 8.C
Hands-on Chemistry: Relative Masses	0.5	0.25	1.G; 2.C
Hands-on Chemistry: And the Winner Is...	0.5	0.25	8.C
6.3 Formulas of Compounds (pp. 210–220)	2	1	2.C; 4.B; 8.C; 8.D
Case Study: Measuring the Mass of Life on Earth (p. 221)	0.5	0.25	1.G; 2.C
Chapter 6 Investigation: Decomposing Copper Oxide (pp. 228–229)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.G; 2.C; 3.A; 11.D

CHAPTER 7 *Chemical Reactions: An Introduction*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
7.1 Evidence for a Chemical Reaction (pp. 234–235)	1	0.5	3.A
7.2 Chemical Equations (pp. 236–239)	2	1	9.A
7.3 Balancing Chemical Equations (pp. 240–247)	2	1	9.A
Hands-on Chemistry: Modeling Equations	0.5	0.25	1.G
Case Study: Neurotransmitters: The Body's Chemical Messengers (p. 248)	0.5	0.25	1.G
Chapter 7 Investigation: Examples of Chemical Reactions (p. 253)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 3.A; 9.A

CHAPTER 8 *Reactions in Aqueous Solutions*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
8.1 Understanding Reactions in Aqueous Solutions (pp. 258–271)	3	1.5	1.G; 3.A; 9.A; 9.B; 11.B; 11.D
Hands-on Chemistry: Forecast: Precipitation	0.5	0.25	9.A
8.2 Other Reactions in Aqueous Solutions (pp. 272–279)	3	1.5	1.G; 3.A; 9.A; 9.B; 11.B; 11.D; 12.B; 12.C; 12.D
8.3 Classifying Reactions (pp. 280–285)	4	2	9.A; 9.B; 11.D; 12.D
Case Study: The Flint Water Crisis (p. 286)	0.5	0.25	Introduction 5; 3.B; 4.B
Chapter 8 Investigation: Unknown Solutions (p. 293)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.F; 3.A

CHAPTER 9 *Chemical Quantities*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
9.1 Using Chemical Equations (pp. 298–304)	1	0.5	2.C; 9.A
9.2 Using Chemical Equations to Calculate Mass (pp. 305–311)	4	2	2.C; 8.A; 9.A; 9.C
9.3 Limiting Reactants and Percent Yield (pp. 312–326)	4	2	2.C; 9.A; 9.C; 9.D
Hands-on Chemistry: The Nuts and Bolts of Stoichiometry	0.5	0.25	1.G
Case Study: Green Chemistry (p. 327)	0.5	0.25	3.B
Chapter 9 Investigation: Limits and Excesses (pp. 336–337)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.F

CHAPTER 10 *Energy*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
10.1 Energy, Temperature, and Heat (pp. 342–347)	2	1	13.A; 13.C
10.2 The Flow of Energy (pp. 348–354)	2	1	1.E; 2.C; 13.A; 13.B; 13.D
10.3 Energy and Chemical Reactions (pp. 355–359)	6	3	1.D; 2.C; 4.B; 13.A; 13.B; 13.C; 13.D
10.4 Using Energy in the Real World (pp. 360–369)	1	0.5	Introduction 5; 1.G; 13.A; 13.C; 14.B
Hands-on Chemistry: Penny Probability	0.5	0.25	13.A
Case Study: Waste-to-Energy (p. 370)	0.5	0.25	Introduction 5; 3.B; 4.B
Chapter 10 Investigation: Test Your Metal (pp. 376–377)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.F; 2.C; 3.A; 4.A; 13.B

CHAPTER 11 *Modern Atomic Theory*

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11.1 Atoms and Energy (pp. 382–389)	3	1.5	1.G; 2.C; 4.C; 5.B; 5.C; 6.A; 6.C; 7.A
Hands-on Chemistry: Making Waves	0.5	0.25	3.A
11.2 The Hydrogen Atom (pp. 390–395)	2	1	1.G; 4.B; 4.C; 6.A; 6.B; 6.C;
11.3 Atomic Orbitals (pp. 396–401)	1	0.5	1.G; 5.B; 6.A; 6.B; 6.E; 7.A
11.4 Electron Configurations and Atomic Properties (pp. 402–415)	1	0.5	1.G; 4.B; 5.B; 5.C; 6.A; 6.B; 6.E; 7.A
Hands-on Chemistry: Which Element is It?	0.5	0.25	
Case Study: Imaging Emission Lines (p. 416)	0.5	0.25	4.B
Chapter 11 Investigation: Flames Tests (p. 423)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.G; 3.A

CHAPTER 12 *Chemical Bonding*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
12.1 Characteristics of Chemical Bonds (pp. 428–434)	2	1	4.B; 5.C; 7.A; 7.D; 11.A
12.2 Characteristics of Ions and Ionic Compounds (pp. 435–440)	1	0.5	5.B; 6.B; 7.A; 7.B
12.3 Lewis Structures (pp. 441–449)	1	0.5	6.E; 7.A; 7.C
12.4 Structures of Molecules (pp. 450–459)	2	1	6.E; 7.B; 7.C
Hands-on Chemistry: Geometric Balloons	0.5	0.25	6.B; 6.E; 7.C
Case Study: Looking at Molecular Bonds (p. 460)	0.5	0.25	4.B
Chapter 12 Investigation: Models of Molecules (p. 465)	1	0.5	1.A; 1.G; 3.A

CHAPTER 13 *Gases*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
13.1 Describing the Properties of Gases (pp. 470–486)	2	1	Introduction 3; 1.B; 1.D; 1.E; 2.C; 9.C; 10.A; 10.B
Hands-on Chemistry: The Cartesian Diver	0.5	0.25	4.A
Hands-on Chemistry: The Candle and the Tumbler	0.5	0.25	10.B
13.2 Using Gas Laws to Solve Problems (pp. 487–501)	2	1	2.C; 4.B; 9.C; 10.B; 10.C; 11.B
13.3 Using a Model to Describe Gases (pp. 502–504)	2	1	1.G; 2.A; 10.A
Case Study: Saturation Diving (p. 505)	0.5	0.25	1.F; 10.A
Chapter 13 Investigation: Masses of Gases (p. 511)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.F

CHAPTER 14 *Liquids and Solids*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
14.1 Intermolecular Forces and Phase Changes (pp. 516–525)	6	3	2.C; 6.E; 7.D; 13.C; 13.D
14.2 Vapor Pressure and Boiling Point (pp. 526–531)	3	1.5	1.D; 4.B; 7.C; 7.D; 13.D
Hands-on Chemistry: Molecular Groupies	0.5	0.25	1.G; 2.A; 3.A; 7.D
14.3 Properties of Solids (pp. 532–538)	1	0.5	4.B; 4.C; 7.D
Case Study: Gecko-Inspired Adhesives (p. 539)	0.5	0.25	1.A; 4.B; 7.D
Chapter 14 Investigation: Heat of Fusion (p. 545)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 2.C; 3.A; 13.B; 13.D

CHAPTER 15 *Solutions*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
15.1 Forming Solutions (pp. 550–558)	5	2.5	4.C; 11.A; 11.B; 11.C; 11.D; 11.E
Hands-on Chemistry: Colors in Motion	0.5	0.25	1.B; 7.D; 11.D
15.2 Describing Solution Composition (pp. 559–571)	2	1	8.C; 11.E, 11.F
Hands-on Chemistry: Rainbow in a Straw	0.5	0.25	1.B; 11.D
Hands-on Chemistry: Can We Add Concentrations?	0.5	0.25	1.D; 11.F
Hands-on Chemistry: Good to the Last Drop!	0.5	0.25	1.B; 11.F
15.3 Properties of Solutions (pp. 572–583)	4	2	2.C; 11.C; 11.E; 12.B; 12.D
Case Study: Alternative Deicers (p. 584)	0.5	0.25	Introduction 5; 2.A; 3.A; 4.B
Chapter 15 Investigation: Chloride in Water (pp. 590–591)	2	1	1.A; 1.B; 1.C; 1.D; 1.E; 2.C; 3.A;

CHAPTER 16 *Acids and Bases*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
16.1 Properties of Acids and Bases (pp. 596–604)	2	1	2.C; 3.A; 12.B; 12.C; 12.D
16.2 Determining the Acidity of a Solution (pp. 605–613)	4	2	1.D; 2.C; 3.B; 12.E
Hands-on Chemistry: Cabbage Juice Indicator	0.5	0.25	12.B; 12.C; 12.E
16.3 Titrations and Buffers (pp. 614–618)	6	3	1.D; 2.C; 3.A; 12.C; 12.D
Case Study: Neutralizing Acid Deposition (p. 619)	0.5	0.25	Introduction 5; 3.A; 4.B
Chapter 16 Investigation: Acid Rain (pp. 626–627)	2	1	1.A; 1.B; 1.C; 1.D; 1.E; 2.C; 3.A; 12.E



CHAPTER 17 *Equilibrium*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
17.1 Reaction Rates and Equilibrium (pp. 632–640)	2	1	3.A; 4.B; 13.C
Hands-on Chemistry: Modeling Equilibrium	0.5	0.25	1.B
17.2 Characteristics of Equilibrium (pp. 641–647)	1	0.5	Introduction 5; 2.C; 3.A
17.3 Applications of Equilibria (pp. 648–661)	4	2	2.C; 3.A; 4.B; 13.D
Case Study: Carbon Sinks and Disruption of the Carbon Cycle (p. 662)	4	2	Introduction 5
Chapter 17 Investigation: Chemical Competition (p. 669)	2	1	1.A; 1.B; 1.C; 1.D; 1.F; 1.G; 2.D; 3.A; 9.A

CHAPTER 18 *Oxidation–Reduction Reactions and Electrochemistry*

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18.1 Electron Transfer Reactions (pp. 674–679)	4	2	3.A; 5.C; 9.B
18.2 Balancing Oxidation–Reduction Reactions (pp. 680–687)	4	2	3.A; 9.A; 9.B
18.3 Electrochemistry and Its Applications (pp. 688–699)	3	1.5	1.D; 3.B; 4.B; 9.B; 11.B
Hands-on Chemistry: Lemon Power	0.5	0.25	11.B
Case Study: Battery Farms (p. 700)	0.5	0.25	Introduction 5; 3.A; 4.B
Chapter 18 Investigation: Activity Series (p. 705)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 3.A

CHAPTER 19 *Radioactivity and Nuclear Energy*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
19.1 Radioactivity (pp. 710–720)	2	1	1.D; 2.C; 3.A; 4.B; 4.C; 14.A; 14.C
Hands-on Chemistry: Modeling Decay Rates	0.5	0.25	1.G; 2.A; 3.A; 7.D; 14.A
19.2 Applications of Radioactivity (pp. 721–723)	2	1	3.A; 4.C; 14.A; 14.C
19.3 Using the Nucleus as a Source of Energy (pp. 724–731)	2	1	Introduction 5; 3.A; 4.B; 14.A; 14.B; 14.C
Case Study: Making an Element at CERN (p. 732)	0.5	0.25	4.B; 14.C
Chapter 19 Investigation: Modeling Half-life (p. 737)	1	0.5	1.A; 1.G; 3.A

CHAPTER 20 *Introduction to Organic Chemistry*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
20.1 Saturated Hydrocarbons (pp. 742–758)	3	1.5	Introduction 5; 3.A; 4.B; 7.B; 9.A
20.2 Unsaturated Hydrocarbons (pp. 759–765)	2	1	3.A; 7.B
20.3 Introduction to Functional Groups and Alcohols (pp. 766–770)	2	1	Introduction 5; 1.G; 3.A; 7.B
20.4 Additional Organic Compounds (pp. 771–780)	6	3	3.A; 7.B
Hands-on Chemistry: Guar Gum Slime	0.5	0.25	
Case Study: Solving the Plastic Problem (p. 781)	0.5	0.25	Introduction 5; 3.B; 4.B
Chapter 20 Investigation: Gluep (p. 787)	1	0.5	1.A; 1.B; 1.C; 1.D; 1.E; 1.G; 3.A

CHAPTER 21 *Introduction to Biochemistry*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
21.1 Introduction to Proteins (pp. 792–801)	4	2	1.G; 3.A; 4.B; 4.C
21.2 Carbohydrates, Nucleic Acids, and Lipids (pp. 802–814)	4	2	3.A; 4.B
Hands-on Chemistry: Colorful Milk	0.5	0.25	
Case Study: Spider Silk and Manufactured Materials (p. 815)	0.5	0.25	3.B; 4.B;
Chapter 21 Investigation: In a Lather (pp. 820–821)	2	1	1.A; 1.B; 1.C; 1.D; 1.E