Introductory Chemistry: A Foundation

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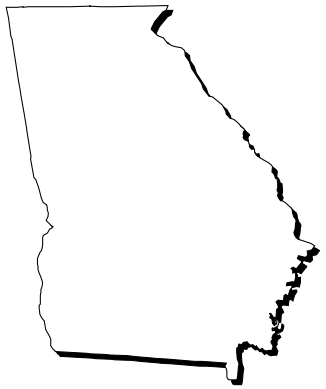

Georgia
Quality Core Curriculum

Chemistry

McDougal Littell

5/2001
2000

Georgia Quality Core Curriculum

Subject Area: Science: Grades 9-12 State-Funded Course: Chemistry II 40.05200

Textbook Title: Introductory Chemistry: A Foundation

Publisher: McDougal Littell Inc.

Number	Content Standards and Objectives	Where Taught
Topic: *Inquiry, Process and Problem Solving*		
S.9-12.1	Standard: Uses science process skills in laboratory or field investigations, including observation, classification, communication, metric measurement, prediction, inference, collecting and analyzing data.	**PE:** The Scientific Method, 7-9; Measurement and Calculations, 15-48; Appendix, A1-A7 **PP:** Figure 1.1, Ch 2; Chapters 1 and 2 Notes **IA:** Chapters 1 and 2 **LM:** Experiments 1-29
1.1	Designs and conducts a scientific experiment that identifies the problem, distinguishes manipulated, responding and controlled variables, collects, analyzes and communicates data, and makes valid inferences and conclusions.	**PE:** The Scientific Method, 7-9; Measurement and Calculations, 15-48; Appendix, A1-A7 **PP:** Figure 1.1, Ch 2; Chapters 1 and 2 Notes **IA:** Chapters 1 and 2 **LM:** Introductions, Experiment Objectives, and Reports throughout
1.2	Evaluates procedures, data and conclusions to determine the scientific validity of research.	**PE:** Solving Problems Using a Scientific Approach, 5-6; The Scientific Method, 7-9 **PP:** Figure 1.1; Chapter 1 Notes **IA:** Chapter 1 **LM:** Experiment Procedures and Reports throughout
S.9-12.2	Standard: Uses traditional reference materials to explore background and historical information regarding a scientific concept.	**PE:** Chapter Openers and Chemistry in Focus may be used as starting points for student explorations and research **LM:** Pre-Laboratory and Report Questions throughout

Number	Content Standards and Objectives	Where Taught
2.1	Uses current technologies such as CD-ROM, Internet and on-line data search to explore current research related to a science concept.	**IA:** complete interactive CD-ROM support for topics within each chapter; launch to Houghton Mifflin Chemistry Web Page, Internet, and on-line data search
S.9-12.3	Standard: Learns and uses on a regular basis standard safety practices for laboratory or field investigations.	**LM:** Safety in the Chemistry Laboratory, xv-xxviii; Appendix H: Properties of Substances, 286-290
3.1	Learns and uses safety procedures specific to an investigation or research activity.	**LM:** Safety Precautions, 3, 14, 23, 32, 40, 50, 62, 75, 86, 94, 105, 114, 122, 130, 138, 146, 154, 163, 170, 178, 186, 194, 202, 211, 222, 232, 245, 257, 266
S.9-12.4	Standard: Gives examples of industrial processes that have been derived from scientific research and describe the impact on society.	**PE:** Chemistry in Focus (selected examples related to industrial processes): 40, 98, 111, 128, 202, 222, 270, 341, 394, 434, 436, 449, 486, 490, 494, 514, 570, 593, 601, 644, 666, 677

Topic: *Atomic Structure and Patterns of Reactivity*

S.9-12.5	Standard: Describes the fundamental parts of the atom.	**PE:** The Structure of the Atom, 96-99; Introduction to the Modern Concept of Atomic Structure, 99; Isotopes, 100-103; The Bohr Model of the Atom, 301-302; The Wave Mechanical Model of the Atom 302-303 **PP:** Figures 4.3-4.10, 10.13-10.15; Chapter 4 Notes **IA:** Sections 4.5, 4.6, 4.7, 10.3, 10.4
5.1	Uses the periodic table to identify atomic number and mass.	**PE:** Introduction to the Periodic Table, 103-104, 106 **PP:** Figure 4.11; Chapter 4 Notes **IA:** Section 4.8

Number	Content Standards and Objectives	Where Taught
5.2	Relates relative position of elements on the periodic chart to period and group reactivity trends.	**PE:** Introduction to the Periodic Table, 104-106; Atomic Properties and the Periodic Table, 317-320, 322 **PP:** Figures 4.11, 10.30, 10.31, 10.32; Chapters 4, 10 Notes **IA:** Sections 4.8 and 10.9 **LM:** Experiment 7
5.3	Describes the relationships of ionization energy and electron affinity to atomic radius and describes the relationship of valence electrons to reactivity trends in the periodic table.	**PE:** Atomic Properties and the Periodic Table, 320-322 **PP:** Figures 10.31, 10.32; Chapter 10 Notes **IA:** Section 10.9 **LM:** Experiment 7
S.9-12.6	Standard: Describes electron orbital configuration of common elements.	**PE:** Electron Arrangements in the First Eighteen Atoms of the Periodic Table, 309-313; Electron Configurations and the Periodic Table, 313-317 **PP:** Figures 10.25-10.29; Chapter 10 Notes **IA:** Sections 10.7, 10.8
6.1	Illustrates the patterns of filling s, p, d, and f orbitals and its relation to quantum number.	**PE:** The Hydrogen Orbitals, 304-307; The Wave Mechanical Model: Further Development, 307-309; Electron Configurations and the Periodic Table, 313-317 **PP:** Figures 10.17-10.24, 10.26-10.29; Chapter 10 Notes **IA:** Sections 10.5, 10.6, 10.8
6.2	Uses emission spectroscopy to illustrate change in energy levels between orbitals.	**PE:** The Energy Levels of Hydrogen, 299-301 **PP:** Figures 10.5-10.11; Chapter 10 Notes **IA:** Section 10.2 **LM:** Experiment 17

Number	Content Standards and Objectives	Where Taught
6.3	Draws electron dot structures to represent electron arrangements of atoms and molecules.	**PE:** Lewis Structures, 343-346; Lewis Structures of Molecules with Multiple Bonds, 347-353 **PP:** Figure 11.10; Chapter 11 Notes **IA:** Sections 11.6, 11.7 **LM:** Experiment 18

Topic: *Nuclear Chemistry*

S.9-12.7	Standard: Describes how energy is produced in nuclear fission reactions.	**PE:** Nuclear Energy, 595; Nuclear Fission, 595-596; Nuclear Reactors, 597-598 **PP:** Figures 18.4, 18.5, 18.6, 18.7; Chapter 18 Notes **IA:** Sections 18.6, 18.7, 18.8
7.1	Describes alpha, beta and gamma particles and how they are involved in nuclear reactions.	**PE:** Radioactive Decay, 584-589 **PP:** Figure 18.1; Chapter 18 Notes **IA:** Section 18.1
7.2	Evaluates the societal, economic, political and environmental impact of nuclear reactions.	**PE:** Dating by Radioactivity, 582-593; Medical Applications of Radioactivity, 594; Nuclear Reactors, 597-598; Nuclear Fusion, 598-600; Effects of Radiation, 600-602 **PP:** Figures 18.3, 18.8; Chapter 18 Notes **IA:** Sections 18.4, 18.5, 18.8, 18.9, 18.10

Number	Content Standards and Objectives	Where Taught
Topic: *Bonding and Formation of Chemical Compounds*		
S.9-12.8	Standard: Writes formulas for and names a variety of compounds.	**PE:** Symbols for the Elements, 91-92; Formulas of Compounds, 94-95; Naming Compounds, 127-128; Naming Compounds That Contain a Metal and a Nonmetal, 128-136; Naming Binary Compounds That Contain Only Nonmetals (Type III), 136-139; Naming Binary Compounds: A Review, 139-141; Naming Compounds That Contain Polyatomic Ions, 141-144; Naming Acids, 145-146; Writing Formulas from Names, 146-147 **PP:** Figures 5.1, 5.2, 5.3; Chapters 4 and 5 Notes **IA:** Sections 4.2, 4.4, 5.1-5.7
8.1	Describes ionic and covalent bonds and describes conditions under which each would occur.	**PE:** Types of Chemical Bonds, 332-334; Electronegativity, 334-337 **PP:** Figures 11.1-11.4; Chapter 11 Notes **IA:** Sections 11.1, 11.2
8.2	Uses electron configuration to predict the shape and therefore properties of molecules.	**PE:** Stable Electron Configurations and Charges on Ions, 337-341; Ionic Bonding and Structures of Ionic Compounds, 341-343; Lewis Structures, 343-346; Lewis Structures of Molecules with Multiple Bonds, 347-353; Molecular Structure, 352-253; Molecular Structure: The VSEPR Model, 353-359; Molecular Structure: Molecules with Double Bonds, 359-362 **PP:** Figures 11.8, 11.10-11.14; Chapter 11 Notes **IA:** Sections 11.4-11.10 **LM:** Experiment 18

Number	Content Standards and Objectives	Where Taught
8.3	Determines polarity of bonds and molecules to describe characteristics of compounds.	**PE:** Electronegativity, 334-337; Bond Polarity and Dipole Moments, 336-337 **PP:** Figures 11.5, 11.6, 11.7; Chapter 11 Notes **IA:** Sections 11.2, 11.3
8.4	Describes weak bond interactions such as Van de Waals, hydrogen, dipole-dipole, or ion-dipole bonds.	**PE:** Intermolecular Forces, 424-426 **PP:** Figures 13.5-13.8; Chapter 13 Notes **IA:** Section 13.3

Topic: *Writing and Balancing Chemical Equations*

S.9-12.9	Standard: Classifies four types of chemical reactions.	**PE:** Ways to Classify Reactions, 199-203; Other Ways to Classify Reactions, 203-207 **PP:** Figures 7.11, 7.12; Chapter 7 Notes **IA:** Sections 7.6, 7.7
9.1	Uses the law of conservation of matter and provides standard rules for writing and balancing equations.	**PE:** Chemical Equations, 161-165; Balancing Chemical Equations, 165-172; and thereafter throughout **PP:** Figure 6.4; Chapter 6 Notes **IA:** Sections 6.2, 6.3
9.2	Predicts products of replacement reactions based on relative reactivity of reactants in terms of ionization energy, electronegativity and location in the periodic table.	**PE:** Predicting Whether a Reaction Will Occur, 179-180; Reactions in Which a Solid Forms, 180-190; Reactions That Form Water: Acids and Bases, 192-195; Reactions of Metals with Nonmetals (Oxidation-Reduction), 196-199; **PP:** Figures 7.1-7.7; Chapter 7 Notes **IA:** Sections 7.1-7.5 **LM:** Experiments 7, 10, 11, 12, 14, 15, 16

Number	Content Standards and Objectives	Where Taught
9.3	Classifies products of a reaction as heterogeneous or homogeneous and demonstrates how they may be separated.	**PE:** Mixtures and Pure Substances, 65-67; Separation of Mixtures, 67-69, 523 **PP:** Figures 3.4-3.10; Chapter 3 Notes **IA:** Sections 3.4, 3.5 **LM:** Experiment 8
9.4	Defines the term mole and uses this concept to determine relative amounts of reactants and products in a given equation.	**PE:** Counting by Weighing, 219-222; Atomic Masses: Counting Atoms by Weighing, 222-225; The Mole, 225-230; Molar Mass, 230-235; Percent Composition of Compounds, 235-237; Information Given by Chemical Equations, 259-261; Mole-Mole Relationships, 261-264 **PP:** Figures, 8.1, 8.2, 8.3; Chapters 8 and 9 Notes **IA:** Sections 8.1-8.5, 9.1, 9.2 **LM:** Experiments 13, 14, 15, 16
9.5	Determines empirical formula of a compound from experimental data.	**PE:** Formulas of Compounds, 237-240; Calculation of Empirical Formulas, 240-246 **PP:** Figure 8.4; Chapter 8 Notes **IA:** Sections 8.6, 8.7 **LM:** Experiments 14, 15, 16
9.6	Provides evidence from an experiment that a chemical reaction has occurred.	**PE:** Evidence for a Chemical Reaction, 160-161 **PP:** Figures 6.1, 6.2; Chapter 6 Notes **IA:** Section 6.1 **LM:** Experiments 7, 10, 11, 12, 14, 15, 16

Number	Content Standards and Objectives	Where Taught
9.7	Determines experimentally the percentage by weight or volume of a compound.	**PE:** Calculation of Molecular Formulas, 246-247; Mass Calculations, 264-272; Calculations Involving a Limiting Reactant, 272-278; Percent Yield, 279-280 **PP:** Figures 8.5, 9.1; Chapters 8 and 9 Notes **IA:** Sections 8.8, 9.3, 9.4, 9.5 **LM:** Experiments 14, 15, 16

Topic: *Equilibrium*

S.9-12.10	Standard: Writes a general expression for an equilibrium constant.	**PE:** The Equilibrium Condition, 516-517; Chemical Equilibrium: A Dynamic Condition, 517-519; The Equilibrium Constant: An Introduction, 519-523; Heterogeneous Equilibria, 523-525 **PP:** Figure 16.8; Chapter 16 Notes **IA:** Sections 16.3-16.6
10.1	Uses Le Châtelier's principle to predict relative position of an equilibrium during a reaction with a variation of temperature and pressure.	**PE:** Le Châtelier's Principle, 525-533 **PP:** Figures 16.9-16.12; Chapter 16 Notes **IA:** Section 16.7 **LM:** Experiment 24
10.2	Evaluates the importance of chemical equilibrium to production efficiency in industry.	**PE:** Chemistry in Focus, 514; Applications Involving the Equilibrium Constant, 533-535 **PP:** Chapter 16 Notes **IA:** Section 16.8
10.3	Calculates ionization constants of common salts in water.	**PE:** Solubility Equilibria, 535-538 **PP:** Chapter 16 Notes **IA:** Section 16.9 **LM:** Experiment 22

Number	Content Standards and Objectives	Where Taught
Topic: *Acids, Bases and Salts*		
S.9-12.11	Standard: Writes formulas for and names a variety of acids, bases and salts.	**PE:** Naming Acids, 145-146; Reactions That Form Water: Acids and Bases, 192-195; Acids and Bases, 483-486 **PP:** Figures 5.3, 7.5; Chapters 5, 7, 15 Notes **IA:** Sections 5.6, 7.4, 15.1 **LM:** Experiment 11
11.1	Operationally defines acids, bases and salts in an experimental setting using selected indicators.	**PE:** Reactions That Form Water: Acids and Bases, 192-195; Acid Strength, 486-490; Water as an Acid and a Base, 490-492 **PP:** Figures 7.5, 15.1; Chapters 7 and 15 Notes **IA:** Sections 7.4, 15.2, 15.3 **LM:** Experiment 11
11.2	Compares the descriptions of acid/bases including Arrhenius, Bronsted-Lowery and Lewis.	**PE:** Reactions That Form Water: Acids and Bases, 192-195; Acids and Bases, 483-486 **PP:** Figure 7.5; Chapters 7 and 15 Notes **IA:** Sections 7.4, 15.1
11.3	Uses experimentally determined pH to calculate hydrogen ion concentrations in solutions.	**PE:** The pH Scale, 493-499; Calculating the pH of Strong Acid Solutions, 499-500; Buffered Solutions, 500-502 **PP:** Figures 15.4, 15.5; Chapter 15 Notes **IA:** Sections 15.4, 15.5, 15.6 **LM:** Experiments 25, 26
11.4	Explains the roles of indicators in determining relative pH of a substance.	**PE:** The pH Scale, 493-499 **PP:** Figures 15.4, 15.5; Chapter 15 Notes **IA:** Section 15.4

Number	Content Standards and Objectives	Where Taught
11.5	Conducts neutralization reactions in a laboratory by titration method.	**PE:** Neutralization Reactions, 463-465 **PP:** Chapter 14 Notes **IA:** Section 14.8 **LM:** Experiments 25, 26

Topic: *Kinetics, Thermodynamics, Collision Theory, and Rates of Chemical Reaction.*

S.9-12.12	Standard: Graphically illustrates activation energy, activated complex, reactant, product and reaction rates by means of a potential energy diagram.	**PE:** How Chemical Reactions Occur, 512; Conditions That Affect Reactions Rates, 512-517 **PP:** Figures 16.1-16.5; Chapter 16 Notes **IA:** Sections 16.1, 16.2
12.1	Describes the rate and spontaneity of a reaction in terms of free energy, entropy and enthalpy.	**PE:** How Chemical Reactions Occur, 512; Conditions That Affect Reactions Rates, 512-517 **PP:** Figures 16.1-16.5; Chapter 16 Notes **IA:** Sections 16.1, 16.2
12.2	Uses potential energy diagram to predict the rate and extent of a reaction.	**PE:** Conditions That Affect Reactions Rates, 512-517; Chemical Equilibrium: A Dynamic Condition, 517-519 **PP:** Figures 16.4, 16.5, 16.7, 16.8; Chapter 16 Notes **IA:** Sections 16.2, 16.5
12.3	Explains the effect of concentration, temperature, pressure, surface area and catalysts on the rate of a reaction.	**PE:** Conditions That Affect Reactions Rates, 512-517; Le Châtelier's Principle, 525-533 **PP:** Figures 16.4, 16.5, 16.9-16.12; Chapter 16 Notes **IA:** Sections 16.2, 16.7 **LM:** Experiment 24

Number	Content Standards and Objectives	Where Taught
Topic: *Oxidation, Reduction*		
S.9-12.13	Standard: Defines oxidation and reduction and describes common reactions of each.	**PE:** Reactions of Metals with Nonmetals (Oxidation-Reduction), 196-199; Chemistry in Focus, 202; Oxidation-Reduction Reactions, 551-553; Oxidation States, 553-556; Oxidation-Reduction Reactions Between Nonmetals, 557-559; Balancing Oxidation-Reduction Reactions by the Half-Reaction Method, 560-565 **PP:** Figures 7.7-7.10; Chapters 7 and 17 Notes **IA:** Sections 7.5, 17.1-17.4 **LM:** Experiment 12
13.1	Describes compounds as oxidizing or reducing agents.	**PE:** Oxidation-Reduction Reactions Between Nonmetals, 557-559; Balancing Oxidation-Reduction Reactions by the Half-Reaction Method, 560-565 **PP:** Chapter 17 Notes **IA:** Sections 17.3, 17.4 **LM:** Experiment 12
Topic: *Phase Changes*		
S.9-12.14	Standard: Uses vapor pressure to describe boiling points and intermolecular interactions and uses crystal structure to describe melting points.	**PE:** Water and Its Phase Changes, 418-420; Energy Requirements for the Changes of State, 420-424; Intermolecular Forces, 424-426; Evaporation and Vapor Pressure, 427-429 **PP:** Figures 13.1-13.10; Chapter 13 Notes **IA:** Sections 13.1-13.4

Number	Content Standards and Objectives	Where Taught
14.1	In a laboratory, determines variables which affect evaporation, vaporization, condensation and sublimation.	**PE:** Energy Requirements for the Changes of State, 420-424 **PP:** Figures 13.3, 13.4; Chapter 13 Notes **IA:** Section 13.2 **LM:** Experiments 5 and 6
14.2	Operationally defines calorie and temperature.	**PE:** Temperature Conversions, 36-44; Energy and Energy Changes, 69-76; The Implications of the Kinetic Molecular Theory, 401 **PP:** Figure 2.6-2.9, 3.11; Chapters 2, 3, 12 Notes **IA:** Sections 2.7, 3.6, 12.9 **LM:** Experiments 3 and 9
14.3	In a laboratory setting, determines and graphs the total heat involved in changing a solid to a gas (e.g., ice to steam).	**PE:** Water and Its Phase Changes, 418-420; Energy Requirements for the Changes of State, 420-424 **PP:** x **IA:** Sections 13.1, 13.2

Topic: *Solids, Liquids and Gases*

S.9-12.15	Standard: Compares solids, liquids, and gases in terms of collision theory and physical properties.	**PE:** Matter, 59-60, Physical and Chemical Properties and Changes, 60-64 **PP:** Figures 3.1-3.3 **IA:** Sections 3.1, 3.2
15.1	Describes crystalline structures that define types of solids.	**PE:** The Solid State: Types of Solids, 429-431; Bonding in Solids, 431-437 **PP:** Figures 13.11-13.18; Chapter 13 Notes **IA:** Sections 13.5, 13.6

Number	Content Standards and Objectives	Where Taught
15.2	Uses vapor pressure, density, and intermolecular interactions to describe liquids.	**PE:** Water and Its Phase Changes, 418-420; Energy Requirements for the Changes of State, 420-424; Intermolecular Forces, 424-426; Evaporation and Vapor Pressure, 427-429 **PP:** Figures 13.1-13.10; Chapter 13 Notes **IA:** Sections 13.1-13.4
15.3	Uses Boyle's, Charles', and ideal Gas Laws to calculate and explain the relationship of temperature, and pressure on the volume of a gas.	**PE:** Pressure, 374-377; Pressure and Volume: Boyle's Law, 378-382; Volume and Temperature: Charles's Law, 382-387; Volume and Moles: Avogadro's Law, 387-389; The Ideal Gas Law, 389-394 **PP:** Figures 12.1-12.9; Chapter 12 Notes **IA:** Sections 12.1-12.5 **LM:** Experiment 20
15.4	Uses concept of molar volume in calculations of gaseous products of a chemical reaction.	**PE:** Gas Stoichiometry, 402-405 **PP:** Chapter 12 Notes **IA:** Section 12.10 **LM:** Experiments 14 and 19
15.5	Distinguishes between ideal gases and those that are not.	**PE:** Dalton's Law of Partial Pressures, 395-399; Laws and Models: A Review, 399-401; The Kinetic Molecular Theory of Gases, 400-401; The Implications of the Kinetic Molecular Theory, 401-402 **PP:** Figures 12.10-12.13; Chapter 12 Notes **IA:** Sections 12.6-12.9 **LM:** Experiment 20

Number	Content Standards and Objectives	Where Taught
15.6	Applies concepts related to the behavior of gases to everyday life (e.g., seasonal tire pressure variation).	**PE:** Chapter 12 Opener, 373; Pressure, 374-377; Chemistry in Focus, 394 **PP:** Chapter 12 Notes **IA:** Section 12.1 **LM:** Experiments 19 and 20

Topic: *Solutions*

S.9-12.16	Standard: Given a mixture of liquids and/or solids, classifies the mixture as: homogeneous, heterogeneous, miscible, immiscible, or a colloid.	**PE:** Mixtures and Pure Substances, 65-67; Separation of Mixtures, 67-69, 523 **PP:** Figures 3.4-3.10; Chapter 3 Notes **IA:** Sections 3.4, 3.5
16.1	Determines if a reaction is endothermic or exothermic when two substances are mixed.	**PE:** The Effect of a Change in Temperature, 531-533 **PP:** Figure 16.12; Chapter 16 Notes **IA:** Section 16.7
16.2	Identifies factors that affect solubility of a substance and theories that explain the formation of solutions.	**PE:** Solubility, 446-449; Solution Composition: An Introduction, 450 **PP:** Figures 14.1-14.5; Chapter 14 Notes **IA:** Sections 14.1, 14.2 **LM:** Experiment 22
16.3	Calculates appropriate amounts of substances and prepares solutions that have differing molarity, molality and normality.	**PE:** Solution Composition: Mass Percent, 450-452; Solution Composition: Molarity, 452-456; Dilution, 457-460; Stoichiometry of Solution Reactions, 460-463; Neutralization Reactions, 463-465; Solution Composition: Normality, 465-469 **PP:** Figures 14.7, 14.8; Chapter 14 Notes **IA:** Sections 14.3-14.8 **LM:** Experiment 22

Number	Content Standards and Objectives	Where Taught
16.4	Determines the effects of solute on boiling point elevation and freezing point depression and uses data to calculate molecular weight of a solute.	**PE:** (related topics) 47, 420-424, 637; This topic is taught in a more advanced chemistry course. Therefore, this topic is covered in Chapter 11 of *Chemistry* by Steven Zumdahl, McDougal Littell's text submitted for Advanced Placement Chemistry.
16.5	Describes the formation and properties (Tyndall effect) of colloids and their uses in the everyday world.	**PE:** This topic is taught in a more advanced chemistry course. Therefore, this topic is covered in Chapter 11 of *Chemistry* by Steven Zumdahl, McDougal Littell's text submitted for Advanced Placement Chemistry.

Topic: *Organic Chemistry*

S.9-12.17	Standard: Uses the structure of methane as a model structure to draw configurations of, and name, representative classes of organic compounds. Discusses the solubility properties of such compounds.	**PE:** Carbon Bonding, 610-611; Alkanes, 611-614; Structural Formulas and Isomerism, 614-617; Naming Alkanes, 617-623; Alkenes and Alkynes, 625-628; Aromatic Hydrocarbons, 628-629; Naming Aromatic Compounds, 629-633; Functional Groups, 633; Alcohols, 634-636; Aldehydes and Ketones, 637-638; Naming Aldehydes and Ketones, 638-640; Carboxylic Acids and Esters, 641-643 **PP:** Figures 19.1-19.4, 19.6-19.13; Chapter 19 Notes **IA:** Sections 19.1-19.4, 19.6-19.11, 19.13-19.15 **LM:** Experiments 27, 28, 29
17.1	Describes the applications of organic compounds to modern industry, such as the pharmaceuticals and plastics industries.	**PE:** Petroleum, 623-624; Properties and Uses of Alcohols, 636-637; Polymers, 643-646; Chemistry in Focus, 644, 666, 677 **PP:** Figure 19.5; Chapter 19 Notes **IA:** Sections 19.5, 19.12, 19.16