

## Valued Input Went into Striving to Meet Your Needs

Text development today involves a team that includes authors and publishers and valuable input from instructors who share their knowledge and experience with publishers and authors through reviews and focus groups. Such feedback has shaped this edition, resulting in reorganization of existing content and expanded coverage in key areas. This text has continued to evolve as a result of feedback from instructors actually teaching integrated science courses in the classroom. Reviewers point out that current and accurate content, a clear writing style with concise explanations, quality illustrations, and dynamic presentation materials are important factors considered when evaluating textbooks. Those criteria have guided the revision of the *Integrated Science* text and the development of its ancillary resources.

### New to This Edition

This third edition has several added features that develop sociocultural connections and highlight the integrated nature of science in order to underscore the relevance of science to students' everyday lives:

- A core concept map has been added to the beginning of each chapter. This concept map identifies the central theme of the chapter and shows how the content of the chapter supports that theme. In addition, it shows how the content of the chapter is related to concepts discussed elsewhere in the text. The core concept map, combined with the chapter outline and overview, help to give the student the big picture of the chapter content and the even bigger picture of the integrated nature of science.
- Science and Society boxes relate the chapter's content to current societal issues. Many of these boxes also include questions that are designed to promote classroom discussion and encourage student participation.
- Myths, Mistakes, and Misunderstandings boxes provide brief scientific explanations to dispel a societal myth or a home experiment or project that enables students to see the fallacy of the myth.
- For Further Analysis exercises have also been added to the end of each chapter. This set of exercises may include analysis or discussion questions, independent investigations, or activities intended to emphasize societal issues and develop critical thinking skills and a deeper understanding of the chapter content.
- Invitation to Inquiry exercises have been added to the end of each chapter. These consist of short, open-ended activities meant to pique student interest in the chapter content.

A number of organizational changes have also been made and new topic areas added to the text:

- Some computational examples have been added back into the Third Edition, often with an optional heading, to offer instructors material to place a greater emphasis on problem solving in their courses, if so desired.

**Chapter 1 What Is Science?:** The section on pseudoscience has been expanded, and a Concepts Applied on inverse square law has also been added.

**Chapter 2 Motion:** A discussion of fundamental forces was added. The scope of Newton's third law has been expanded.

**Chapter 3 Energy:** A new section on alternative sources of energy has been included.

**Chapter 4 Heat and Temperature:** The section on thermometers was reorganized, while the content on plasma and the thermodynamics section were expanded.

**Chapter 5 Wave Motions and Sound:** A Connections box on red shift was added.

**Chapter 6 Electricity:** New Connections boxes on Michael Faraday and Thomas Edison have been included.

**Chapter 7 Light:** A new Concepts Applied on why the sky is blue has been added.

**Chapter 9 Chemical Reactions:** The section on mixtures has been expanded.

**Chapter 11 Nuclear Reactions:** There are new Closer Look boxes on Marie Curie and on how half-life is determined.

**Chapter 12 The Universe:** The section on apparent magnitude scale has been expanded. The material on COBE, WMAP and the age of the universe has been updated. A Closer Look on Hubble's Law has also been added.

**Chapter 13 The Solar System:** A discussion of the *MESSENGER* spacecraft mission has been added, while the information on more recent missions, such as the *Cassini-Huygens* mission, *Mars Exploration Rovers*, *Spirit* and *Opportunity*, has been updated. New photos from the *Mars Exploration Rover* mission have also been included.

**Chapter 14 Earth in Space:** This chapter has been restored and updated from the previous edition. A Closer Look on the celestial sphere has also been added.

**Chapter 15 The Earth** (previously chapter 14): There are expanded sections of coverage, including the rock cycle and surface earthquake waves. A new section on "ridge-push" and "slab-pull" models of plate tectonics has been added, complete with illustrations.

**Chapter 16 The Earth's Surface** (previously chapter 15): The section on earthquakes has been reorganized and expanded. The coverage of the Mount St. Helens volcano has been updated.

**Chapter 19 Organic and Biochemistry** (previously chapter 18): The section on nomenclature has been simplified. The discussions of cholesterol and lipoproteins, stereo isomers as drugs, and thermoplastic polymers have all been updated. There are also several revised graphics and a new Connections box on generic drugs as stereo isomers.

**Chapter 20 The Nature of Living Things** (previously chapter 19): The discussion of photosynthesis and cellular respiration has been moved into the text and expanded to improve the coverage and simplify the discussion. A new table describing the levels of organization for living things has been added. Additional information on microscopes, and iso-, hyper-, and hypotonic solutions has been incorporated. New sections on what enzymes are and how they work, and on energy transfer molecules of living things—ATP—have also been added. This revised chapter also includes a greatly modified presentation on mitosis, additional information on cancer, and an abundance of new figures intended to better address the interests of the nonscience major.

**Chapter 21 *The Origin and Evolution of Life*** (previously chapter 20): There is a new section on the contributions of Louis Pasteur. A new Closer Look box on the life of Darwin has been added. Two contemporary examples of the process of evolution—changes in beak size of Darwin’s finches and the evolution of insecticide resistance in poultry houses—have also been incorporated. There is a new section on the Hardy-Weinberg concept. The section on domains was rewritten, and the material on the central dogma was deleted. A new Closer Look on emerging viral diseases and a Science and Society box on how human behavior contributes to the development of antibiotic resistance have been included.

**Chapter 22 *The History of Life on Earth*** (previously chapter 21): This chapter includes a new section on radioactive isotope half-lives and their importance to radioactive dating. The section on human evolution has been updated with more recent findings. There are also several new figures and many new section headings to help the reader better follow the discussion.

**Chapter 23: *Ecology and Environment*** (previously chapter 22): Several new sections including a discussion of the phosphorus cycle, a comparison of the population characteristics of more-developed and less-developed countries, and a discussion of how human population growth affects the global ecosystem have been added. There are also many new and revised illustrations intended to better address the interests of the nonscience major.

**Chapter 24 *Human Biology***: The coverage of materials exchange and control mechanisms includes many revisions suggested by reviewers. A new section on skin and a new Closer Look on the dynamic skeleton have been added. The material on nutrition from chapter 23 in the second edition has been moved to this chapter to improve the flow of the discussion and to better associate the coverage of nutrition and the human digestive system. The nutrition material has also been substantially rewritten.

**Chapter 25 *Sex and Sexuality***: This is a dramatically revised chapter, partially created from a version of the previous chapter 23. Both the text and graphics are essentially new to this edition. See the table of contents for a complete listing of topics.

**Chapter 26 *Mendelian and Molecular Genetics*** (previously chapter 25): A new section, Using DNA to Our Advantage, has been added. This section presents such topics as biotechnology, recombinant DNA, genetically modified foods, gene therapy, the PCR reaction, genetic fingerprinting, and cloning. There are also many new and revised illustrations intended to better address the interests of the nonscience major.