current environmental situation, including captive breeding, Hurricane Katrina, the Colorado River, sustainable agriculture practices, overpopulation concerns, the Keystone XL pipeline, pollution, the Flint water crisis, global earthquakes, and measuring ecological footprints. Additional changes include updated statistics throughout the text, revised and updated figures and tables, and more coverage of sustainability, climate change, fossil fuels, national parks, and water resources. We believe that all of these changes will make the book both more timely and more accessible to the reader. The five sections of the book are:

Section 1, The Environment and People (Chapters 1 and 2), introduces the systems approach and gives an overview of environmental science in Chapter 1, while Chapter 2 focuses on the increasing impact that the growing human population has had on all natural systems.

Section 2, The Environment of Life on Planet Earth (Chapters 3 through 5), describes how natural systems work, including both biological systems and physical systems. Here we introduce such concepts as populations, communities, ecosystems, the distribution of life on Earth, biogeochemical cycles, weather patterns and climatic zones, the rock cycle and plate tectonics, deep time, and natural hazards.

Section 3, Resource Use and Management (Chapters 6 through 13), deals with issues surrounding the use of natural resources by human society. Chapter 6 introduces the broad principles of resource management, both in urban and wild environments. The following chapters address energy use, water use, mineral use, ecosystem services, and the use of biological resources (including agriculture and soil resources). A major theme is that humans have been rapidly depleting many of these resources and that we must begin using them in a sustainable manner if we are to survive and flourish in the future.

Section 4, Dealing with Environmental Degradation (Chapters 14 through 18), concentrates on various forms of pollution and waste—the results of dumping large amounts of the by-products of human society into the environment. Chapter 14 introduces the principles of pollution control, toxicology, and risk, while subsequent chapters deal with such subjects as water pollution, air pollution, the destruction of the ozone layer, global climate change, municipal solid waste, and hazardous waste. Every chapter includes discussions of how we can limit or mitigate the effects of excessive pollution, especially by limiting the production of pollutants in the first place, as well as by increased efficiency, reuse, recycling, and substitutions.

Section 5, Social Solutions to Environmental Concerns (Chapters 19 and 20), includes discussions of economic, social, historical, and legal aspects of environmental issues. A major emphasis of the book is on solutions to current environmental concerns. Woven throughout the text are discussions and examples of environmentally friendly technological, legal, and economic solutions. We firmly believe that sustainable and realistic solutions must be implemented and that the root causes of the environmental problems we now face must be addressed. Such problems cannot be solved using science and technology alone; the human aspect must also be taken into account. This section is available online and in eBook formats.

Using This Book for a Course in Environmental Science or Environmental Studies

We designed this book to be accessible to introductory nonmajor students, but it has enough depth and breadth to be used in a majors' course. It can be adapted to either an environmental science course or an environmental studies course, and it can be used for either one or two semesters. Also, we designed the book so that the chapters need not necessarily be used in the order in which they appear. In particular, depending on the nature and emphasis of a specific course, an instructor may choose to use the chapters of Section 5 (Social Solutions to Environmental Concerns) at either the beginning or end of the course, or these or other chapters may be omitted entirely.

Assuming a standard 15 full weeks for a semester (usually about a week is lost due to holidays, exams, and the like), the chapters of this text might be assigned according to one of the following schedules:

For a comprehensive environmental science and environmental studies course:
Week 1: Chapters 1 & 2, An Overview of Environmental Science and Human Population Growth
Week 2: Chapter 3, The Ever-Changing Earth: The Biosphere and Biogeochemical Cycles
Week 3: Chapters 4 & 5, The Distribution of Life on Earth and Dynamic Earth and Natural Hazards
Week 4: Chapter 6, People and Natural Resources
Week 5: Chapter 7, Fundamentals of Energy, Fossil Fuels, and Nuclear Energy
Week 6: Chapter 8, Renewable (including Hydropower) and Alternative Energy Sources
Week 7: Chapters 9 & 10, Water and Mineral Resources
Week 8: Chapter 11, Conserving Biological Resources
Week 9: Chapter 12, Land Resources and Management
Week 10: Chapter 13, Food and Soil Resources
Week 11: Chapters 14 & 15, Principles of Pollution Control and Water Pollution
Week 12: Chapter 16, Local and Regional Air Pollution
Week 13: Chapter 17, Destruction of the Ozone Layer and Global Climate Change
Week 14: Chapter 18, Municipal Solid Waste and Hazardous Waste
Week 15: Chapters 19 & 20, Economic, Historical, Social, and Legal Aspects of Current Environmental Concerns

For a basic environmental science course:
Week 1: Chapters 1 & 2, An Overview of Environmental Science and Human Population Growth
Week 2: Chapter 3, The Ever-Changing Earth: The Biosphere and Biogeochemical Cycles
Week 3: Chapter 4, The Distribution of Life on Earth
Week 4: Chapter 5, The Dynamic Earth and Natural Hazards
Week 5: Chapter 6, People and Natural Resources
Week 6: Chapter 7, Fossil Fuels and Nuclear Energy
Week 7: Chapter 8, Renewable (including Hydropower) and Alternative Energy Sources
Week 8: Chapters 9 & 10, Water and Mineral Resources
Week 9: Chapter 11, Conserving Biological Resources
Week 10: Chapter 12, Land Resources and Management
Week 11: Chapter 13, Food and Soil Resources
Week 12: Chapters 14 & 15, Principles of Pollution Control and Water Pollution
Week 13: Chapter 16, Local and Regional Air Pollution
Week 14: Chapter 17, Destruction of the Ozone Layer and Global Climate Change
Week 15: Chapter 18, Municipal Solid Waste and Hazardous Waste

For a general environmental studies course (emphasizing social and historical aspects):

Week 1: Chapter 1, An Overview of Environmental Science

Week 2: Chapter 17, Destruction of the Ozone Layer and Global Climate Change—Examples of the impacts humans are having on the environment

Week 3: Chapter 20, Historical, Cultural, and Legal Aspects of Current Environmental Concerns

Week 4: Chapter 2, Human Population Growth

Week 5: Chapter 6, People and Natural Resources

Week 6: Chapter 7, Fossil Fuels and Nuclear Energy

Week 7: Chapter 8, Renewable (including Hydropower) and Alternative Energy Sources

Week 8: Chapters 9 & 10, Water and Mineral Resources

Week 9: Chapter 11, Conserving Biological Resources

Week 10: Chapter 12, Land Resources and Management

Week 11: Chapter 13, Food and Soil Resources

Week 12: Chapters 14 & 15, Principles of Pollution Control and Water Pollution

Week 13: Chapter 16, Local and Regional Air Pollution

Week 14: Chapter 18, Municipal Solid Waste and Hazardous Waste

Week 15: Chapter 19, Environmental Economics

If this book is used for a two-semester course, some of the chapters should be used over a period longer than 1 week. In particular, we recommend that the following chapters be split as indicated and extended over 2 weeks:

Chapter 3, The Ever-Changing Earth: The Biosphere and Biogeochemical Cycles

Chapter 4, The Distribution of Life on Earth

Chapter 5, The Dynamic Earth and Natural Hazards

Chapter 7, Fundamentals of Energy & Fossil Fuels/Nuclear Energy

Chapter 8, Renewable and Alternative Energy Sources

Chapter 13, Food/Soil Resources

Chapter 14, Pollution Control/Toxicology

Chapter 17, Destruction of the Ozone Layer/Global Climate Change

Chapter 18, Municipal Solid Waste/Hazardous Waste

Chapter 20, Historical and Social Perspectives/Environmental Law and Decision Making

If these chapters are used as suggested, then chapter or subchapter readings from the text will easily fit into a two-semester schedule (approximately 30 full weeks).