

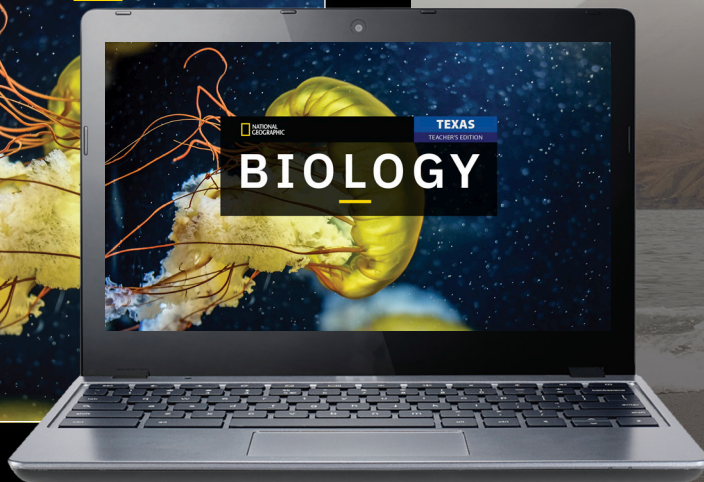
BIOLOGY

SCOPE AND SEQUENCE

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 Looking at the Data activities, Case Study/Tying It All Together activities, and many of the 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. Also excluded are the National Geographic Explorer and Photographer features, which give students avenues to explore STEM careers on their own. These features address TEKS 4.B and 4.C as well as other TEKS associated with scientific practices and content. The Investigations and Performance Tasks listed after this scope and sequence 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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CHAPTERS / SECTIONS

CHAPTER 1 *Introduction to Biology*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
1.1 The Study of Life (pp. 4–7)	0.75	0.3	Introduction 1, 2.B, 3.A, 5.A, 5.C
Minilab Extracting DNA from Fruit (p. 8)	0.6	0.3	1.B, 1.C, 1.E, 1.F, 2.D, 3.A, 4.A
1.2 Constructing Explanations about the Natural World (pp. 9–15)	1	0.5	Introduction 1–6, 1.H
1.3 Using Biology to Develop Solutions (pp. 18–21)	0.75	0.4	Introduction 1, Introduction 4, 4.B
1.4 Collecting and Organizing Data (pp. 22–29)	2	1	1.E, 1.F
Looking at the Data Mass Distribution of Mammals (pp. 30–31)	0.5	0.3	1.F, 2.B, 2.C, 3.A, 3.B, 4.A
Case Study / Tying It All Together (p. 3, p. 33)	0.5	0.3	Introduction 4, 1.A
Total Chapter 1	6.1	3.1	

CHAPTER 2 *Energy and Matter in Ecosystems*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
2.1 Ecological Systems (pp. 42–45)	0.75	0.3	13.B
2.2 Modeling the Transfer of Energy and Matter (pp. 46–49)	1	0.5	13.B
2.3 Modeling Energy and Matter Distribution (pp. 51–54)	0.75	0.4	13.B, 13.D
Minilab Model a Biomass Pyramid (p. 56)	0.6	0.3	2.B, 3.A
2.4 Cycling of Matter (pp. 57–63)	1	0.3	13.B, 13.C
Looking at the Data Biomagnification of Mercury (p. 64)	0.5	0.3	1.G, 3.A, 3.B
Case Study / Tying It All Together (p. 41, p. 65)	0.5	0.3	1.G
Total Chapter 2	5.1	2.4	

CHAPTER 3 *Biodiversity and Ecosystem Stability*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
3.1 Ecological Relationships (pp. 70–72)	0.75	0.3	13.A
3.2 Biodiversity (pp. 74–76, p. 78)	0.75	0	13.D
Looking at the Data The Biodiversity Conservation Paradox (p. 79)	0.5	0.3	2.B, 2C, 13.D
3.3 Ecosystem Stability and Change (pp. 80–85)	1	0.5	13.D
Minilab Observing Biodiversity in Pond Water (p. 86)	0.6	0.3	1.B, 3.A, 3.B, 13.D
Case Study / Tying It All Together (p. 69, p. 87)	0.5	0.3	1.A, 1.B, 3.A, 13.D
Total Chapter 3	4.1	2.1	

CHAPTER 4 *Population Measurement and Growth*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
4.1 Measuring Populations (pp. 92–95)	0.75	0.4	13.A
Minilab Mark-Recapture Sampling (p. 96)	0.6	0.3	1.G, 2.C
4.2 Modeling Population Growth Patterns (pp. 97–101)	1	0.5	13.A
4.3 Factors that Limit Population Growth (pp. 103–107)	0.75	0.3	13.A, 13.D
Looking at the Data Invasive Species Population Growth (p. 110)	0.5	0.3	13.D
Case Study / Tying It All Together (p. 91, p. 111)	0.5	0.3	3.C, 13.D
Total Chapter 4	4.1	2.1	

Unit 1 Activity (p. 115)	1	0.5	Introduction 6, 1.G, 13.A
Unit 2 Cell Systems	1	0.5	

CHAPTER 5 *Molecules in Living Systems*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
5.1 Elements and Compounds (pp. 122–128)	1	0.5	
5.2 Water (pp. 129–132)	1	0.5	1.A
Minilab Polar vs. Nonpolar Molecules (p. 133)	0.6	0.3	2.B, 3.A

5.3 Carbon-Based Molecules (pp. 134–142)	1.5	0.8	5.A, 7.A
5.4 Chemical Reactions (pp. 145–151)	1.5	0.8	5.A, 11.B
Looking at the Data Digestive Enzymes and pH (p. 152)	0.5	0.3	2.B
Case Study / Tying It All Together (p. 121, p. 153)	0.5	0.3	1.A, 3.B, 3.C
Total Chapter 5	6.6	3.5	

CHAPTER 6 *Cell Structure and Function*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
6.1 Cell Structures (pp. 158–166)	3	1.5	5.A, 5.B
Looking at the Data Microbiota of the Human Body (p. 167)	0.5	0.3	1.E
6.2 Cell Membranes (pp. 170–176)	2	1	5.A, 5.C, 11.B
Minilab Selectively Permeable Membranes (p. 176)	0.6	0.3	1.C, 1.G, 5.C
6.3 Photosynthesis and Cellular Respiration (p. 177–183)	2.5	1.2	5.A, 11.A, 11.B
Case Study / Tying It All Together (p. 157, p. 185)	0.5	0.3	3.A, 11.A
Total Chapter 6	9.1	4.6	

CHAPTER 7 *Cell Growth*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
7.1 Cell Cycles (pp. 190–194)	2	1	6.A, 7.B
Looking at the Data Identifying Gene Mutations in Cancer Cells (p. 195)	0.5	0.3	2.B, 3.A
7.2 Mitosis (pp. 196–199)	1.5	0.8	6.A
Minilab Modeling Mitosis (p. 200)	0.6	0.3	2.A
7.3 Cell Differentiation (pp. 201–204)	1.5	0.7	5.B, 6.B, 6.C, 7.B
Case Study / Tying It All Together (p. 189, p. 207)	0.5	0.3	Introduction 5, 3.B, 4.B
Total Chapter 7	6.6	3.4	

Unit 2 Activity (p. 211)	1	0.5	1.G, 5.B
Unit 3 Interactions in Living Systems	1	0.5	

CHAPTER 8 *Diversity of Living Systems*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
8.1 Bacteria and Archaea (pp. 218–225)	1.3	0.7	3.A, 5.B
8.2 Protists (pp. 226–233)	1.2	0.6	5.B
Minilab Features of Paramecium and Euglena (p. 234)	0.6	0.3	1.B, 5.B
8.3 Fungi (pp. 235–241)	1	0.5	2.A, 2.B, 3.A, 4.A
Looking at the Data The C-Value Enigma (pp. 242–243)	0.5	0.3	1.B, 1.F, 2.B, 3.C, 7.A
8.4 Viruses (pp. 244–250)	1.5	0.8	5.D
Case Study / Tying It All Together (p. 217, p. 253)	0.5	0.3	1.B, 1.G, 3.A, 3.B
Total Chapter 8	6.6	3.5	

CHAPTER 9 *Plant Systems*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
9.1 Plant Origins (pp. 258–263)	0.75	0.4	
Minilab Investigating Leaf Stomata (p. 264)	0.6	0.3	3.C, 12.B
9.2 Transport in Plants (p. 265–269)	1	0.5	5.C, 12.B
9.3 Plant Growth and Reproduction (pp. 271–277)	0.75	0.3	
9.4 Plant Responses to the Environment (pp. 279–283)	1	0.3	5.C
Looking at the Data Bud Burst and Flowering in a Changing Climate (p. 284)	0.5	0.3	2.C, 3.C
Case Study / Tying It All Together (p. 257, p. 285)	0.5	0.3	1.G, 4.A, 12.B
Total Chapter 9	5.1	2.4	

CHAPTER 10 *Animal Systems*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
10.1 Animal Diversity (pp. 290–293)	0.5	0.3	3.A
10.2 Defining Animal Systems (pp. 294–298)	1	0.5	12.A
Minilab Comparing Reaction Speed (p. 299)	0.6	0.3	2.B
10.3 Maintaining Homeostasis (pp. 300–302)	1	0.5	5.C, 12.A
Looking at the Data Thermoregulation (p. 303)	0.5	0.2	Introduction 5, 2.B, 3.B, 12.A
10.4 Animal Behavior (pp. 304–312)	2	1	3.A, 12.A
Case Study / Tying It All Together (p. 289, p. 315)	0.5	0.3	1.G, 2.B, 3.A, 3.B, 12.A
Total Chapter 10	6.1	3.1	

Unit 3 Activity	1	0.5	1.G, 5.C, 13.A
Unit 4 Genetics	1	0.5	

CHAPTER 11 *DNA, RNA and Proteins*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
11.1 Genetic Information (pp. 326–333)	3	1.5	Introduction 3, 3.A, 4.B, 5.A, 7.A, 7.B
11.2 Replication, Transcription, and Translation (pp. 336–343)	2.5	1.2	6.A, 7.B, 11.B
Minilab Extracting DNA from Fruit (p. 344)	0.6	0.3	1.G, 2.A
11.3 Regulating Gene Expression (pp. 345–351)	2.5	1.3	3.A, 7.B
Looking at the Data Decay of mRNA Molecules (p. 352)	0.5	0.3	1.F, 2.B, 2.C, 7.B
Case Study / Tying It All Together (p. 325, p. 353)	0.5	0.3	1.A, 3.A, 7.A
Total Chapter 11	9.6	4.9	

CHAPTER 12 *Genetic Variation and Heredity*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
12.1 Meiosis (pp. 358–366)	3	1.5	8.A
12.2 Mutations (pp. 368–371)	1.5	0.8	7.C
12.3 Mendelian Inheritance (pp. 374–379)	2	1	8.B
Looking at the Data Blood Type Compatibility (p. 380)	0.5	0.3	2.B, 8.B
12.4 Other Patterns of Inheritance (pp. 381–385)	2	1	7.B, 8.B
Minilab Modeling Inheritance (p. 381)	0.6	0.3	1.E, 2.B, 8.B
Case Study / Tying It All Together (p. 357, p. 387)	0.5	0.3	1.G, 3.C, 8.B
Total Chapter 12	11.6	5.2	

CHAPTER 13 *Genetic Technologies*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
13.1 Tools in Genetic Technology (pp. 392–399)	1.5	0.7	7.D
13.2 Applications in Genetic Engineering (pp. 402–412)	1.5	0.8	Introduction 5, 7.D
Looking at the Data Genetic Therapy Clinical Trials (pp. 414–415)	0.5	0.3	1.F, 2.B, 4.B, 7.D
13.3 Vaccine Development (pp. 416–425)	2	1	3.B, 5.D
Minilab Herd Immunity (p. 426)	0.6	0.3	2.C
Case Study / Tying It All Together (p. 391, p. 427)	0.5	0.3	Introduction 4, Introduction 5, 1.A, 1.B, 1.G, 4.A
Total Chapter 13	6.6	3.4	

Unit 4 Activity (p. 431)	1	0.5	5.D
Unit 5 Evolution and Changing Environments	1	0.5	

CHAPTER 14 *Evidence for Evolution*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
14.1 Evolution of Life (pp. 438–443)	2	1	3.C, 9.A
Minilab Organizing Fossil Evidence (p. 444)	0.6	0.3	Introduction 1, Introduction 6, 1.G, 9.A
14.2 Fossil and Geological Evidence (pp. 445–452)	2.5	1.3	9.A, 9.B
Looking at the Data Forensic Radiometric Dating (p. 453)	0.5	0.3	2.B
14.3 Developmental, Anatomical, and Genetic Evidence (pp. 456–461)	2.5	1.3	9.A
Case Study / Tying It All Together (p. 437, p. 463)	0.5	0.3	3.B, 9.A
Total Chapter 14	8.6	4.5	

CHAPTER 15 *The Theory of Evolution*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
15.1 Developing the Theory of Evolution by Natural Selection (pp. 468–475)	2.5	1.2	Introduction 3, Introduction 4, 3.A, 3.C, 4.B, 9.A, 10.A, 10.B
Minilab Hawks and Mice (p. 476)	0.6	0.3	1.G, 2.B, 10.A
15.2 Evolution in Populations (pp. 477–482)	2	1	8.A, 10.A, 10.B, 10.D
Looking at the Data Tracking Evolution (pp. 484–485)	0.5	0.3	1.G, 2.B, 2.C, 4.A, 10.A
15.3 Other Patterns in Population Genetics (pp. 486–489)	1.5	0.8	10.D
Case Study / Tying It All Together (p. 467, p. 491)	0.5	0.3	1.A, 10.A
Total Chapter 15	7.6	3.9	

CHAPTER 16 *Survival in Changing Environments*

CHAPTER OR SECTION TITLE	PERIODS	BLOCKS	TEKS
16.1 Speciation (pp. 496–501)	2	1	9.B, 10.C
16.2 Extinction (pp. 502–503, pp. 506–507)	2	1	13.D
16.3 Human Impact on the Environment (pp. 510–518)	3.5	1.8	13.D
Looking at the Data Biodiversity and Deforestation (p. 519)	0.5	0.3	1.F, 3.A
16.4 Reducing Human Impact on the Environment (pp. 520–525)	2.5	1.3	Introduction 5, 13.D
Minilab Modeling Human-Caused Changes in the Environment (p. 526)	0.6	0.3	2.B, 13.D
Case Study / Tying It All Together (p. 495, p. 527)	0.5	0.3	1.G, 10.C, 13.D
Total Chapter 16	11.6	6	

Unit 5 Activity (p. 531)	1	0.5	1.G, 10.C, 13.D
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Total for all Chapters	123.6	63.1	
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CHAPTER INVESTIGATIONS

CHAPTER INVESTIGATIONS	PERIODS	BLOCKS	TEKS
1A: Making Real-World Observations	1	0.5	1.A, 1.B, 1.C, 1.D, 1.E, 1.F, 2.C, 3.A, 3.B, 4.A
1B: A Medicine Distribution Solution	2	1	1.A, 1.B, 1.F, 2.D, 4.A, 4.B
2A: Salinity and Brine Shrimp Survival	3	1.5	1.A, 1.G, 2.C, 13.B
2B: Exploring Brine Shrimp Survival	4	2	1.B, 2.C, 13.B
3A: Measuring Biodiversity Using Ecological Sampling Methods	2	0	1.B, 2.C, 13.D
3B: Ecological Succession in an Aquatic Community	3	1.5	1.B, 13.B
4A: Population Growth of Duckweed	4	3	1.B, 2.B, 2.C, 13.B, 13.D

4B: Designing a Seed Trap	3	1.5	1.A, 1.B, 1.G, 2.D
5A: Converting Carbohydrates	1	0.5	1.B, 1.D, 1.E, 1.F, 5.A
5B: Crime Scene Cleaners	4	2	1.B, 1.D, 5.A
6A: Factors Affecting Cellular Respiration	2	1	1.B, 1.E, 1.F, 11.A
6B: Designing a Photobioreactor	4	2	1.A, 1.G, 2.D, 3.A, 4.A, 11.A
7A: Plant Growth through Mitosis	0.5	0.3	1.B, 1.F, 2.B, 2.C, 4.A, 6.A, 6.C
7B: Cell Differentiation in Plant Leaves	1	0.5	1.F, 1.G, 4.A, 6.B
8A: Classification Systems	2	1	1.B, 1.F, 2.A, 3.A, 4.A, 5.B, 9.A
8B: Effects of Antimicrobials	3	1.5	1.B, 2.D
9A: Connecting Plant Structures with Their Functions	2	1	1.F, 1.G
9B: Homeostasis in Plants	3	1.5	1.B, 1.F, 3.A, 4.A, 12.B
10A: The Effect of Exercise on Homeostasis	2	1	1.A, 1.B, 1.F, 1.G, 3.C, 4.A, 5.C, 12.A
10B: Monitoring Animal Behavior	3	1.5	1.A, 1.G, 2.A, 2.D, 4.A
11A: Investigating the Building Blocks of Life	1	0.5	1.A, 1.B, 3.A, 3.B, 5.A, 7.B
11B: Regulation of Gene Expression	2	1	1.B, 2.B, 3.A, 4.A
12A: Design an Organism	1	0.5	2.C, 3.A, 8.A
12B: Mapping Fruit Fly Genes through Linkage	2	1	1.B, 2.B
13A: DNA Evidence	2	1	1.B, 2.B, 3.C, 7.A, 7.D
13B: Fluorescent Genes	2	1	2.D, 7.D
14A: Comparing Genetic Information Among Organisms	1	0.5	2.B, 2.C, 3.B, 3.C, 7.A, 9.A
14B: What Lived Here?	1	0.5	2.B, 3.B, 3.C, 7.A, 9.A
15A: Genetic Drift	1	0.5	1.A, 1.B, 1.G, 2.C, 3.A, 3.C, 4.A, 10.D
15B: Evolution of Antibiotic Resistance in Bacteria	2.5	1.5	1.A, 1.B, 2.B, 3.A, 3.C, 4.A, 10.B
16A: Modeling Speciation	2	1	1.A, 1.B, 2.A, 2.D, 13.D
16B: Wildlife Crossings and Corridors	2	1	1.G, 10.C, 13.D
Total for all Chapter Investigations	69	34.8	

VIRTUAL INVESTIGATIONS

UNIT	VIRTUAL INVESTIGATIONS	PERIODS	BLOCKS	TEKS
1	Sea Pigs on the Abyssal Plain	2–4	1–2	3.A, 3.B, 13.A, 13.B
2	Bacteria in the Digestive System	2–4	1–2	3.A, 3.B, 5.B
3	Communication in the Rainforest	2–4	1–2	1.D, 3.A, 3.B, 13.A, 13.D
4	Fighting a Viral Pandemic	2–4	1–2	3.A, 3.B, 5D
5	Hummingbirds on the Move	2–4	1–2	3.A, 3.B, 10.C
	Total for all Virtual Investigations	10–20	5–10	

PERFORMANCE TASKS

UNIT	PERFORMANCE TASKS	PERIODS	BLOCKS	TEKS
1	1: Why Should We Preserve Wetland Ecosystems?	3	1.5	1.G, 2.B, 3.B, 13.A, 13.C, 13.D
	2: How Do Seasonal Changes Affect Organisms in a Freshwater Ecosystem?	3	1.5	1.F, 1.G, 2.B, 3.A, 3.B, 13.A
	3: How Does a Sudden Disturbance Change a Rainforest Ecosystem?	3	1.5	2.B, 3.A, 3.B, 12.B, 13.A
	4: How Does Long-term Drought Change a Saltwater Ecosystem?	3	1.3	1.F, 1.G, 2.B, 3.B, 13.A, 13.B, 13.D
	5: What Is the Best Way to Restore Habitat for Endangered Bats?	1	0.5	1.A, 1.B, 2.A, 2.B, 3.A, 3.B, 13.B, 13.D
2	1: How Does Regenerative Medicine Reflect Nature?	3	1.5	1.G, 3.B, 6.A, 6.B
	2: What Are the Requirements for a Minimum Viable Ecosystem?	3	1.5	1.G, 3.B, 11.A, 13.B
	3: How Are Complex Carbon-based Molecules Built from Simple Atoms?	2	1	1.A, 1.G, 5.A
3	1: How Do Systems Interact to Maintain Homeostasis in Plants?	3	1.5	1.F, 1.G, 3.C, 12.B
	2: How Can We Test Systems that Interact to Maintain Homeostasis in Humans?	3	1.5	1.B, 1.F, 5.C
	3: How Important Is Group Behavior to the Survival of Individuals in a Population?	3	0	3.C, 12.A, 13.D
4	1: How Does a Single-gene Trait Disappear and Reappear in a Subsequent Generation?	2	0.5	1.A, 1.G, 2.B, 3.B, 7.C, 8.B
	2: What Caused the Unusual Skin Discoloration in the People Living in a Rural Area?	2	1	3.A, 3.B, 7.B
	3: What Are the Risks and Benefits of Genetically Engineered Food?	2	1	2.B, 3.B, 3.C, 7.B
	4: How Will We Curb the Spread of Mosquito-Borne Disease?	3	1.5	1.E, 2.B, 2.D, 3.A, 3.B, 4.B
5	1: How Can We Determine Evolutionary Relationships?	3	1.5	1.A, 1.G, 2.B, 9.A
	2: How Does Bacterial Evolution Affect Public Health Globally?	2	1	1.A, 2.B, 3.A, 7.B, 10.B
	3: How Is Climate Change Altering Species Evolution?	3	1.5	1.A, 1.G, 2.B, 3.A, 3.B, 10.C
	4: How Do Human-Induced Changes in the Environment Affect Different Species?	4	2	1.A, 1.G, 2.B, 3.A, 3.B, 4.A, 13.D
	5: What Kind of Artificial Reef Is Most Effective at Preserving and Restoring Biodiversity?	2	1	1.A, 1.E, 1.G, 13.D
Total for all Performance Tasks		53	24.3	