

AP Biology builds students' understanding of biology on both the micro and macro scales. After studying cell biology, students move on to understand how evolution drives the diversity and unity of life. Students will examine how living systems store, retrieve, transmit, and respond to information and how organisms utilize free energy. The equivalent of an introductory college-level biology course, AP Biology prepares students for the AP exam and for further study in science, health sciences, or engineering.

The AP Biology course provides a learning experience focused on allowing students to develop their critical thinking skills and cognitive strategies. Frequent no- and low-stakes assessments allow students to measure their comprehension and improve their performance as they progress through each activity. Students regularly engage with primary sources, allowing them to practice the critical reading and analysis skills that they will need in order to pass the AP exam and succeed in a college biology course. Students perform hands-on labs that give them insight into the nature of science and help them understand biological concepts, as well as how evidence can be obtained to support those concepts. Students also complete several virtual lab studies in which they form hypotheses; collect, analyze, and manipulate data; and report their findings and conclusions. During both virtual and traditional lab investigations and research opportunities, students summarize their findings and analyze others' findings in summaries, using statistical and mathematical calculations when appropriate. Summative tests are offered at the end of each unit as well as at the end of each semester, and contain objective and constructed response items. Robust scaffolding, rigorous instruction, relevant material and regular active learning opportunities ensure that students can achieve mastery of the skills necessary to excel on the AP exam.

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Length: Two semesters

UNIT 1: CELL BIOLOGY

LESSON 1: CELL STRUCTURE AND FUNCTION

Read: Cell Structure and Function

Read about the many conserved core processes and features that are shared by all organisms.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Cell Structure and Function

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Cell Organelles

Describe the specific structures and functions of various animal-cell and plant-cell organelles.

Duration: 1 hr Scoring: 0 points

Quiz: Cell Organelles

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: When Organelles Go Astray

Predict how interactions between and malfunctions of organelles can impact cells and organisms.

Duration: 1 hr Scoring: 0 points

Quiz: When Organelles Go Astray

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Cell Structure and Function

Explain conserved cellular processes, the differences between prokaryotes and eukaryotes, and how the structure of internal membranes and organelles contributes to cellular functions.

Duration: 1 hr Scoring: 25 points

Explore: The World's Water Problems

Analyze and evaluate scientific evidence, and then communicate this evidence to your peers and apply it to your own experiences.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 2: CELL MEMBRANE STRUCTURE AND FUNCTION**Read: Cell Membrane Structure and Function**

Read about how organisms exchange matter with their environment in order to grow, reproduce, and maintain organization.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Cell Membrane Structure and Function

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Calculating Surface-Area-to-Volume Ratios

Calculate the surface areas and volumes of cells with various shapes, and analyze how surface area-to-volume ratios affect cells.

Duration: 1 hr Scoring: 0 points

Quiz: Calculating Surface-Area-to-Volume Ratios

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Water's Amazing Properties

Explain how the biological effects of hydrogen bonding result in polarity.

Duration: 1 hr Scoring: 0 points

Quiz: Water's Amazing Properties

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Cell Membrane Structure and Function

Discuss how organisms exchange matter with the environment, explain how hydrogen bonding impacts biological systems, and use calculated surface area-to-volume ratios to predict which cell(s) might eliminate wastes or procure nutrients fastest by diffusion.

Duration: 1 hr Scoring: 25 points

Lab: Osmosis, Diffusion, and the Effects on Transpiration

Investigate how cells maintain dynamic homeostasis.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Osmosis, Diffusion, and the Effects on Transpiration

Discuss your findings from the lab.

Duration: 1 hr Scoring: 15 points

LESSON 3: CELL BIOLOGY WRAP-UP**Test (CS): Cell Biology Unit Test**

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Cell Biology Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 2: PROTEIN STRUCTURE AND FUNCTIONS AND THE IMPACT ON EVOLUTIONARY BIOLOGY

LESSON 1: PROTEIN STRUCTURE, FUNCTION, AND SYNTHESIS

Read: Protein Structure, Function, and Synthesis

Read about the events of protein synthesis.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Protein Structure, Function, and Synthesis

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Modeling Protein Synthesis

Describe models that show how genetic information is translated into polypeptides.

Duration: 1 hr Scoring: 0 points

Quiz: Modeling Protein Synthesis

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Mutations and the Rise of Antibiotic Resistance

Explain how changes in the nucleotide sequence result in mutations.

Duration: 1 hr Scoring: 0 points

Quiz: Mutations and the Rise of Antibiotic Resistance

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Protein Structure, Function, and Synthesis

Use models to predict changes in the subcomponents of a biological polymer and justify the way they affect the functionality of the molecule; discuss protein synthesis; and describe how mutations occur.

Duration: 1 hr Scoring: 25 points

Explore: GFP: Lighting Up Life

Analyze and evaluate scientific evidence, and then communicate this evidence to your peers and apply it to your own experiences.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 2: NATURAL SELECTION AND SPECIATION

Read: Natural Selection and Speciation

Read about natural selection as a major mechanism of evolution.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Natural Selection and Speciation

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Artificial Selection

Investigate natural selection as a major mechanism of evolution.

Duration: 1 hr Scoring: 0 points

Quiz: Artificial Selection

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Analyzing Patterns of Speciation

Explain how microevolutionary change affects gene pools.

Duration: 1 hr Scoring: 0 points

Quiz: Analyzing Patterns of Speciation

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Natural Selection and Speciation

Evaluate evidence to qualitatively and quantitatively investigate the role of natural selection in evolution; discuss the impact of microevolution on gene pools; and describe how natural selection impacts evolution.

Duration: 1 hr Scoring: 25 points

Lab: Hardy-Weinberg Equilibrium

Investigate how mathematical models can be used to relate allele frequencies with evolutionary changes in populations of organisms.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Hardy-Weinberg Equilibrium

Analyze the data you collected and make predictions about allele frequencies and Hardy-Weinberg equilibrium in the real world.

Duration: 1 hr Scoring: 15 points

LESSON 3: PROTEIN STRUCTURE AND FUNCTION, AND THE IMPACT ON EVOLUTIONARY BIOLOGY WRAP-UP

Test (CS): Protein Structure and Function, and the Impact on Evolutionary Biology Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Protein Structure and Function, and the Impact on Evolutionary Biology Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 3: A HISTORICAL PERSPECTIVE ON THE EVIDENCE FOR EVOLUTION

LESSON 1: EARTH'S HISTORY

Read: Earth's History

Read about how biological evolution is supported by scientific evidence from many disciplines, including mathematics.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Earth's History

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Analyzing the Evidence for Evolution

Evaluate the different forms of evidence for evolution and determine which is most persuasive.

Duration: 1 hr Scoring: 0 points

Quiz: Analyzing the Evidence for Evolution

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: The Early Earth

Explain the major events in Earth's history.

Duration: 1 hr Scoring: 0 points

Quiz: The Early Earth

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Earth's History

Discuss how biological evolution is supported by scientific evidence, and explain the types of evidence and how they support the description of the major events in Earth's history.

Duration: 1 hr Scoring: 25 points

Explore: The Last Universal Ancestor

Analyze and evaluate scientific evidence, and then communicate this evidence to your peers and apply it to your own experiences.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 2: EVOLUTIONARY RELATIONSHIPS

Read: Evolutionary Relationships

Read about how organisms share many conserved core processes and features that evolved over time.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Evolutionary Relationships

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Creating Cladograms and Phylogenetic Trees

Construct a cladogram by using evidence for evolution.

Duration: 1 hr Scoring: 0 points

Quiz: Creating Cladograms and Phylogenetic Trees

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Biotechnology and the Relatedness of Organisms

Describe the function of restriction enzymes and how they can produce recombinant DNA molecules.

Duration: 1 hr Scoring: 0 points

Quiz: Biotechnology and the Relatedness of Organisms

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Evolutionary Relationships

Discuss how DNA, morphological characteristics, and other evidence is used in the creation of cladographs and phylogenetic trees to describe evolutionary relationships.

Duration: 1 hr Scoring: 25 points

Lab: Comparing DNA Sequences to Understand Evolutionary Relationships with BLAST

Use cladograms and bioinformatics tools to ask questions and test your ability to apply concepts relating to genetics and evolution.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Comparing DNA Sequences to Understand Evolutionary Relationships With BLAST

Discuss and evaluate evidence provided by a data set in conjunction with a phylogenetic tree or a simple cladogram to determine evolutionary history and speciation.

Duration: 1 hr Scoring: 15 points

LESSON 3: A HISTORICAL PERSPECTIVE ON THE EVIDENCE FOR EVOLUTION WRAP-UP

Test (CS): A Historical Perspective on the Evidence for Evolution Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): A Historical Perspective on the Evidence for Evolution Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 4: MECHANISMS OF INHERITANCE

LESSON 1: CELL REPRODUCTION

Read: Cell Reproduction

Read about how genetic information is transmitted from one generation to the next through DNA or RNA.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Cell Reproduction

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Modeling DNA Replication

Provide evidence as to whether a given sample of genetic material is DNA or protein.

Duration: 1 hr Scoring: 0 points

Quiz: Modeling DNA Replication

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Cell Cycle, Checkpoints, and Cancer

Predict the effects of a malfunction in the cell cycle control system.

Duration: 1 hr Scoring: 0 points

Quiz: Cell Cycle, Checkpoints, and Cancer

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Cell Reproduction

Connect concepts in and across domains to show that timing and coordination of specific events is necessary for normal development in an organism and that these events are regulated by multiple mechanisms.

Duration: 1 hr Scoring: 25 points

Lab: Meiosis and Mitosis

Use a graph or diagram to analyze situations or solve problems (quantitatively or qualitatively) that involve timing and coordination of events necessary for normal development in an organism.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Meiosis and Mitosis

Discuss how the cell cycle provides a mechanism for passing on genetic information to offspring and how it is controlled by the cell cycle control system.

Duration: 1 hr Scoring: 15 points

LESSON 2: GENETICS AND GENE EXPRESSION

Read: Genetics and Gene Expression

Read about the many biological processes involved in growth, reproduction, and dynamic homeostasis that include temporal regulation and coordination.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Genetics and Gene Expression

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Probability Demonstrations and Punnett Squares

Describe how Punnett squares can be used to predict genetic outcomes and how mathematical probabilities can replace the use of Punnett squares for geneticists.

Duration: 1 hr Scoring: 0 points

Quiz: Probability Demonstrations and Punnett Squares

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Pedigree Analysis of Human Genetic Disorders

Predict how a change in a specific DNA or RNA sequence can result in changes in gene expression.

Duration: 1 hr Scoring: 0 points

Quiz: Pedigree Analysis of Human Genetic Disorders

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Genetics and Gene Expression

Describe how models can be used to predict genetic outcomes.

Duration: 1 hr Scoring: 25 points

Explore: Embryonic Stem Cells and Gene Expression

Identify the factors necessary for cells to express genes at the appropriate times.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 3: MECHANISMS OF INHERITANCE WRAP-UP**Test (CS): Unit Test**

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 5: SEMESTER 1 EXAM**LESSON 1: SEMESTER 1 EXAM****Exam: Semester 1 Exam**

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 100 points

Final Exam: Semester 1 Exam

Take a teacher-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 100 points

UNIT 6: HOMEOSTASIS**LESSON 1: INTRODUCTION TO METABOLISM AND HOMEOSTASIS****Read: Introduction to Metabolism and Homeostasis**

Read about how all living systems require constant input of free energy.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Introduction to Metabolism and Homeostasis

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Understanding Endothermy and Ectothermy

Distinguish between endotherms and ectotherms.

Duration: 1 hr Scoring: 0 points

Quiz: Understanding Endothermy and Ectothermy

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Detection of Enzyme Activity Levels

Explain activation energy and how enzymes impact the energy requirements of reactions.

Duration: 1 hr Scoring: 0 points

Quiz: Detection of Enzyme Activity Levels

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Introduction to Metabolism and Homeostasis

Predict properties of substances based on their chemical formulas, and provide explanations of their properties based on particle views.

Duration: 1 hr Scoring: 25 points

Lab: Understanding Enzymes

Determine which factors can change the rate of an enzyme reaction.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Understanding Enzymes

Make and discuss some generalizations about enzymes by studying just one enzyme in particular.

Duration: 1 hr Scoring: 15 points

LESSON 2: ADAPTATIONS, BEHAVIOR, AND LEARNING

Read: Adaptations, Behavior, and Learning

Read about how natural selection acts on phenotypic variations in populations.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Adaptations, Behavior, and Learning

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Graphing and Understanding Relationships

Apply mathematical relationships or estimation to determine macroscopic variables for ideal gases.

Duration: 1 hr Scoring: 0 points

Quiz: Graphing and Understanding Relationships

Use representations and models to analyze situations qualitatively and quantitatively.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Maintaining Homeostasis

OUTLINE HAS CHANGED. NEED NEW DESCRIPTION.

Duration: 1 hr Scoring: 0 points

Quiz: Maintaining Homeostasis

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Adaptations, Behavior, and Learning

Evaluate data that show the effect(s) of changes in concentrations of key molecules on negative feedback mechanisms.

Duration: 1 hr Scoring: 25 points

Explore: Thermoregulation in Turtle Embryos

Analyze and evaluate scientific evidence, and then communicate this evidence to your peers and apply it to your own experiences.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 3: HOMEOSTASIS WRAP-UP

Test (CS): Homeostasis Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Homeostasis Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 7: CELLULAR ENERGETICS

LESSON 1: UNDERSTANDING PHOTOSYNTHESIS

Read: Understanding Photosynthesis

Read about how all organisms require constant energy input to maintain organization, to grow, and to reproduce.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Understanding Photosynthesis

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Historical Perspectives on Photosynthesis

Describe experiments in the history of the understanding of photosynthesis.

Duration: 1 hr Scoring: 0 points

Quiz: Historical Perspectives on Photosynthesis

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Inhibitors of Photosynthesis

Explain how chemosynthetic organisms capture free energy.

Duration: 1 hr Scoring: 0 points

Quiz: Inhibitors of Photosynthesis

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Understanding Photosynthesis

Explain how biological systems use free energy, based on empirical data that all organisms require constant energy input to maintain organization, to grow, and to reproduce.

Duration: 1 hr Scoring: 25 points

Explore: Photosynthesis Over the Last 100 Years

Analyze and evaluate scientific evidence, and then communicate this evidence to your peers and apply it to your own experiences.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 2: UNDERSTANDING CELLULAR RESPIRATION**Read: Understanding Cellular Respiration**

Read about the stages of cellular respiration.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Understanding Cellular Respiration

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Products of Glucose Metabolism

Determine the net yield of ATP from the oxidation of glucose during the different stages of glycolysis and cellular respiration.

Duration: 1 hr Scoring: 0 points

Quiz: Products of Glucose Metabolism

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Carbon Transfer Through Snails and Elodea

Compare rates of carbon transfer in different organisms.

Duration: 1 hr Scoring: 0 points

Quiz: Carbon Transfer Through Snails and Elodea

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Understanding Cellular Respiration

Explain changes in reaction rates arising from the use of acid-base catalysts, surface catalysts, or enzyme catalysts, including selecting appropriate mechanisms with or without the catalyst present.

Duration: 1 hr Scoring: 25 points

Lab: Cellular Energetics Labs: Photosynthesis (Part A) and Cellular Respiration (Part B)

Connect and apply concepts, including the relationship between cell structure and function (mitochondria); strategies for capture, storage, and use of free energy; diffusion of gases across cell membranes; and the physical laws pertaining to the properties and behaviors of gases.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Cellular Energetics Labs: Photosynthesis (Part A) and Cellular Respiration (Part B)

Discussion

Duration: 1 hr Scoring: 15 points

LESSON 3: CELLULAR ENERGETICS WRAP-UP

Test (CS): Cellular Energetics Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Cellular Energetics Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 8: CELL COMMUNICATION AND BODY SYSTEMS

LESSON 1: INTEGRATING CELL COMMUNICATION AND THE IMMUNE SYSTEM

Read: Cell Communication

Read about nonspecific and specific immune defenses in plants and animals.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Cell Communication

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Signal Transduction Pathways

Identify how a signaling molecule binds to a receptor protein, causing it to change shape.

Duration: 1 hr Scoring: 0 points

Quiz: Signal Transduction Pathways

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Graphing the Effectiveness of Vaccines

Create representations or models to describe nonspecific immune defenses in plants and animals.

Duration: 1 hr Scoring: 0 points

Quiz: Graphing the Effectiveness of Vaccines

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Integrating Cell Communication and the Immune System

Create representations and models to describe immune responses.

Duration: 1 hr Scoring: 25 points

Lab: Bacterial Transformation

Use Le Châtelier's principle to design a set of conditions that will optimize a desired outcome, such as product yield.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Bacterial Transformation

Discuss the findings of the Bacterial Transformation lab.

Duration: 1 hr Scoring: 15 points

LESSON 2: CELL SIGNALING IN THE NERVOUS AND ENDOCRINE SYSTEMS

Read: Cell Signaling in the Nervous and Endocrine Systems

Read about how nervous systems detect external and internal signals.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Cell Signaling in the Nervous and Endocrine Systems

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: How Neurons Fire

Compare interneurons, sensory neurons, and motor neurons.

Duration: 1 hr Scoring: 0 points

Quiz: How Neurons Fire

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Remarkable Sensory Capabilities

Describe the structure and function of the five types of receptors.

Duration: 1 hr Scoring: 0 points

Quiz: Remarkable Sensory Capabilities

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Cell Signaling in the Nervous and Endocrine Systems

Predict the solubility of a salt, or rank the solubility of salts, given the relevant K_{sp} values.

Duration: 1 hr Scoring: 25 points

Explore: Encounters with a Deadly Flatworm

Analyze and evaluate scientific evidence, and then communicate this evidence to your peers and apply it to your own experiences.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 3: CELL COMMUNICATION AND BODY SYSTEMS WRAP-UP

Test (CS): Cell Communication and Body Systems Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Cell Communication and Body Systems Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 9: ECOLOGICAL PRINCIPLES

LESSON 1: ORGANISMS AND POPULATIONS IN THEIR ENVIRONMENT

Read: Organisms and Populations in Their Environment

Read about how changes in the availability of free energy can result in changes in population size.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Organisms and Populations in Their Environment

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Food Chains and Webs

Explain the flow of energy through ecosystems.

Duration: 1 hr Scoring: 0 points

Quiz: Food Chains and Webs

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Carrying Capacity

Define carrying capacity and explain how it affects the increase in size of a population.

Duration: 1 hr Scoring: 0 points

Quiz: Carrying Capacity

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Organisms and Populations in Their Environment

Predict how changes in the availability of free energy affects organisms, populations, and ecosystems.

Duration: 1 hr Scoring: 25 points

Lab: Energy Dynamics

Conduct an experiment to investigate a question about energy capture and flow in an ecosystem.

Duration: 2 hrs 45 mins Scoring: 50 points

Discuss: Energy Dynamics

Discuss the findings of the Energy Dynamics lab.

Duration: 1 hr Scoring: 15 points

LESSON 2: ECOLOGICAL COMMUNITIES

Read: Ecological Communities

Read about how the availability of energy affects organisms, populations, and ecosystems.

Duration: 3 hrs 30 mins Scoring: 0 points

Quiz: Ecological Communities

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 30 points

Study: Mathematical Effects of Population Interactions

Illustrate and investigate population interactions within and environmental impacts on a community.

Duration: 1 hr Scoring: 0 points

Quiz: Mathematical Effects of Population Interactions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Study: Invasive Species

Explain how invasive species circumvent the natural predator-prey cycle in an ecosystem.

Duration: 1 hr Scoring: 0 points

Quiz: Invasive Species

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

Practice: Ecological Communities

Predict how changes in the availability of free energy affects organisms, populations, and ecosystems.

Duration: 1 hr Scoring: 25 points

Explore: Tree Rings, Carbon Dioxide, and Climatic Change

Analyze, evaluate, and critique scientific explanations by examining scientific evidence.

Duration: 1 hr 30 mins Scoring: 25 points

LESSON 3: ECOLOGICAL PRINCIPLES WRAP-UP

Test (CS): Ecological Principles Unit Test

Take a computer-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

Test (TS): Ecological Principles Unit Test

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 1 hr Scoring: 50 points

UNIT 10: SEMESTER 2 EXAM

LESSON 1: SEMESTER 2 EXAM

Exam: Semester 2 Exam

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 100 points

Final Exam: Semester 2 Exam

Take a teacher-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 1 hr Scoring: 100 points