AP Biology Course and Exam Description

The AP Biology course is an introductory college-level biology course. Students cultivate their understanding of biology through inquiry-based investigations as they explore the following topics: evolution, cellular processes, energy and communication, genetics, information transfer, ecology, and interactions.

RECOMMENDED PREREQUISITES

Students should have successfully completed high school courses in biology and chemistry.

AP Biology Course and Exam Content

LABORATORY REQUIREMENT

This course requires that 25 percent of the instructional time will be spent in hands-on laboratory work, with an emphasis on inquiry-based investigations that provide students with opportunities to apply the science practices.
Students should be able to describe how to collect data, use data to form conclusions, and apply their conclusions to larger biological concepts. Students should report recorded data and quantitative conclusions drawn from the data with appropriate precision (i.e., significant figures). Students should also develop an understanding of how changes in the design of the experiments would impact the validity and accuracy of their results. Many questions on the AP exam are written in an experimental context, so these skills will prove invaluable for both concept comprehension and exam performance.

Course Content

The AP Biology course is organized into commonly taught units of study that provide a suggested sequence for the course. These units comprise the content and skills colleges and universities typically expect students to master to qualify for college credit and/or placement.

Big Ideas

Following are the big ideas of the course and a brief description of each:

■ Evolution

♦ The process of evolution drives the diversity and unity of life.

■ Energetics

♦ Biological systems use energy and molecular building blocks to grow, reproduce, and maintain dynamic homeostasis.

■ Information Storage and Transmission

♦ Living systems store, retrieve, transmit, and respond to information essential to life

processes.
■ Systems Interactions
♦ Biological systems interact, and these systems and their interactions exhibit complex properties.

AP Biology Science Practices
■ Concept Explanation
♦ Explain biological concepts, processes, and models presented in written format.
■ Visual Representations
♦ Analyze visual representations of biological concepts and processes.
■ Questions and Methods
♦ Determine scientific questions and methods.
■ Representing and Describing Data
♦ Represent and Describe Data
■ Statistical Tests and Data Analysis
♦ Perform statistical tests and mathematical calculations to analyze and interpret data.
■ Argumentation
♦ Develop and justify scientific arguments using evidence

	AP Biology Course and Exam
	UNIT 1 CHEMISTRY OF LIFE
1.1	Structure of Water and Hydrogen
1.2	Elements of Life
1.3	Introduction to Biological Macromolecules
1.4	Properties of Biological Macromolecules
1.5	Structure and Function of Biological Macromolecules
1.6	Nucleic Acids
	UNIT 2 CELL STRUCTURE AND FUNCTION
2.1	Cell Structure: Subcellular Components
2.2	Cell Structure and Function
2.3	Cell Size
2.4	Plasma Membranes

2.5	Membrane Permeability
2.6	Membrane Transport
2.7	Facilitated Diffusion
2.8	Tonicity and Osmoregulation
2.9	Mechanisms of Transport
2.10	Cell Compartmentalization
2.11	Origins of Cell Compartmentalization
	UNIT 3 CELLULAR ENERGETICS
3.1	Enzyme Structure
3.2	Enzyme Catalysis
3.3	Environmental Impacts on Enzyme Function
3.4	Cellular Energy
3.5	Photosynthesis
3.6	Cellular Respiration
3.7	Fitness

UNIT 4 CELL COMMUNICATION AND CELL CYCLE
4.1 Cell Communication
4.2 Introduction to Signal Transduction
4.3 Signal Transduction
4.4 Changes in Signal Transduction Pathways
4.5 Feedback
4.6 Cell Cycle
4.7 Regulation of Cell Cycle
UNIT 5 HEREDITY
5.1 Meiosis
5.2 Meiosis and Genetic Diversity
5.3 Mendelian Genetics
5.4 Non-Mendelian Genetics
5.5 Environmental Effects on Phenotype
5.6 Chromosomal Inheritance

UNIT 6 GENE EXPRESSION AND REGULATION
6.1 DNA and RNA Structure
6.2 Replication
6.3 Transcription and RNA Processing
6.4 Translation
6.5 Regulation of Gene Expression
6.6 Gene Expression and Cell Specialization
6.7 Mutations
6.8 Biotechnology

UNIT 7 NATURAL SELECTION
7.1 Introduction to Natural Selection
7.2 Natural Selection
7.3 Artificial Selection
7.4 Population Genetics
7.5 Hardy-Weinberg Equilibrium
7.6 Evidence of Evolution
7.7 Common Ancestry
7.8 Continuing Evolution
7.9 Phylogeny
7.10 Speciation
7.11 Extinction
7.12 Variations in Populations
7.13 Origin of Life on Earth

UNIT 8 ECOLOGY
8.1 Responses to the Environment
8.2 Energy Flow Through Ecosystems
8.3 Population Ecology
8.4 Effect of Density of Populations
8.5 Community Ecology
8.6 Biodiversity
8.7 Disruptions to Ecosystems

AP Biology EXAM: 3 Hours

The AP Biology Exam assesses student understanding of the science practices and learning objectives outlined in the course framework.
The exam is 3 hours long and includes 60 multiple-choice questions and 6 free-response questions. A four-function, scientific, or graphing calculator is allowed on both sections of the exam.

Další informace:

AP Biology Course Overview – 2 stránky
https://apcentral.collegeboard.org/pdf/ap-biology-course-overview.pdf?course=ap-biology

AP Biology Course at a glance – 3 strany
https://apcentral.collegeboard.org/pdf/ap-biology-course-a-glance.pdf?course=ap-biology

AP Biology Course and Exam Description – 230 stran
https://apcentral.collegeboard.org/pdf/ap-biology-course-and-exam-description-0.pdf?course=ap-biology

Příklady zkouškových otázek
https://apcentral.collegeboard.org/courses/ap-biology/exam/past-exam-questions?course=ap-biology
https://apcentral.collegeboard.org/pdf/ap21-frq-biology.pdf?course=ap-biology

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