Oakwood City School District

AP Biology Science Standards

One goal of science education is to help students become scientifically literate citizens able to use science as a way of knowing about the natural and material world. All students should have sufficient understanding of scientific knowledge and scientific processes to enable them to distinguish what is science from what is not science and to make informed decisions about career choices, health maintenance, quality of life, community and other decisions that impact both themselves and others.

AP Biology 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.

AP Biology Standards

Chemistry of Life

A. Structure of Water and Hydrogen Bonding
B. Elements of Life
C. Introduction to Biological Macromolecules
D. Properties of Biological Macromolecules
E. Structure and Function of Biological Macromolecules
F. Nucleic Acids

Cell Structure and Function

A. Cell Structure: Subcellular Components
B. Cell Structure and Function
C. Cell Size
D. Plasma Membranes
E. Membrane Permeability
F. Membrane Transport
G. Facilitated Diffusion
H. Tonicity and Osmoregulation
I. Mechanisms of Transport
J. Cell Compartmentalization
K. Origins of Cell Compartmentalization

Cellular Energetics

A. Enzyme Structure
B. Enzyme Catalysis
C. Environmental Impacts on Enzyme Function
D. Cellular Energy
E. Photosynthesis
F. Cellular Respiration
G. Fitness

Cell Communication and Cell Cycle

A. Cell Communication
B. Introduction to Signal Transduction
C. Signal Transduction

D. Changes in Signal Transduction Pathways
E. Feedback
F. Cell Cycle
G. Regulation of Cell Cycle

Heredity

A. Meiosis
B. Meiosis and Genetic Diversity
C. Mendelian Genetics
D. Non-Mendelian Genetics
E. Environmental Effects on Phenotype
F. Chromosomal Inheritance

Gene Expression and Regulation

A. DNA and RNA Structure
B. Replication
C. Transcription and RNA Processing
D. Translation
E. Regulation of Gene Expression
F. Gene Expression and Cell Specialization
G. Mutations
H. Biotechnology

Natural Selection

A. Introduction to Natural Selection
B. Natural Selection
C. Artificial Selection
D. Population Genetics
E. Hardy-Weinberg Equilibrium
F. Evidence of Evolution
G. Common Ancestry

Ecology

A. Responses to the Environment
B. Energy Flow Through Ecosystems
C. Population Ecology
D. Effect of Density of Populations
E. Community Ecology
F. Biodiversity
G. Disruptions to Ecosystems