



Southmoreland School District

AP Biology Curriculum Overview

AP Biology Overview:

The AP Biology curriculum parallels an introductory college biology course, placing emphasis on the eight core AP Biology themes and the twelve AP labs. Main areas of focus include: molecules, cells genetics, evolution, organisms and populations. Completion of formal lab write-ups will be expected, as well as summer reading of *Origin of Species*, by Charles Darwin. Text for the course is college level and supplements in class lectures. Students completing the course may elect to take the AP Biology Exam.

Modules:

Module 1: Chemistry of life

Module 2: Ecology and Environment

Module 3: Cell structures and functions

Module 4: Organismal Genetics

Module 5: Molecular genetics

Module 6: Natural selection and Evolution

Module 7: Exam review

Module Overviews:

Module 1:

The goals of this unit are to identify the basic chemistry of life, molecule types and functions. There will be a review of general chemistry concepts that are applicable in Biology. Explorations and lab activities associated with biologically significant molecules.

Module 2:

Students will explore ecological relationships, examine the various biomes, and explore the concepts of niche, keystone species, and predator-prey interactions. Labs will focus on species diversity and nutrient flow through ecosystems as well as factors that have and continue to disrupt ecosystems, such as but not limited to invasive species, human impacts.



Southmoreland School District

AP Biology Curriculum Overview

Module 3:

Students will describe the relationship between cellular structure and function, compare cellular structures in prokaryotic and eukaryotic cells and identify key differences. Explore and model the structure of the plasma membrane and identify how its characteristics allow it to serve as a regulatory mechanism for the cell, including cell transport, surface proteins, etc. Cellular energetic processes and cellular metabolism will be explored via lab and lecture.

Module 4:

Both Mendelian and non-Mendelian genetics of organisms will be explored. Use statistics to predict genetic outcomes and analyze results of genetic crosses. Examine meiosis and its effects on genetic makeup, as well as the effects of sexual reproduction.

Module 5:

Examine the structure of DNA. Identify the similarities and differences in the genome of eukaryotes and prokaryotes. Model DNA replication, RNA processing, Protein synthesis. Explore the effects of mutation on phenotype, the role of mutation on evolutionary processes. Identify and model examples of DNA technology and genetic engineering.

Module 6:

Identify factors in nature that can impact allele frequency and lead to evolutionary change through natural selection. Provide various examples of evidence that demonstrate change in forms over time as a result of evolutionary processes. Utilize various technology (BLAST, uniprot) to examine the relationships of various organisms to one another. Examine factors that can lead to speciation

Module 7:

Recap of content from the year. Extra free-response writing practice and testing strategies for success. Practice exam.