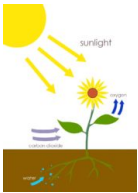




Foundations Biology:

This course is a graduation requirement and a prerequisite for future courses at NAHS. It also prepares students for the Biology Keystone Exam, which is administered at the end of the course. While in Foundations Biology, students will experience many different learning environments, such as working independently, collaborating with others during hands on lab activities, and participating in class discussions. Students will develop critical thinking and problem solving skills throughout the course.

By the end of Foundations Biology, students will know:



1. Cell & Cell Processes

- Basic Biological Principles- including cell types, organelles, and characteristics of life
- Chemical Basis for Life- including basic chemistry of cells, macromolecules, properties of water, and enzyme activity and regulation
- Bioenergetics- including the processes of photosynthesis and cellular respiration
- Homeostasis & Cell Transport- including structure and function of the cell membrane, passive & active transport, concentration gradient movement, and how/why cells maintain homeostasis



2. Continuity and Unity of Life

- Cell Growth and Reproduction-including the importance of both asexual cellular division (mitosis) and sexual cellular division (meiosis) as well as comparing the results of the two processes, DNA replication, and the functional relationships between DNA, genes, alleles, and chromosomes
- Genetics- Mendelian and Non Mendelian genetics including Punnett square problems on dominant/recessive, incomplete dominance, codominance, multiple allele, and sex-linked disorders, how genetic mutations alter DNA, protein synthesis, and biotechnology
- The Theory of Evolution- including how natural selection drives evolution, the contributing factors to speciation, allele frequencies/genetic mutation contributions to evolution, evidence for evolution, and distinguishing between hypothesis, inference, law, theory, principle, fact and observation
- Ecology- including the levels of ecological organization, biotic vs. abiotic components of an ecosystem, energy flow through an ecosystem, biotic interactions in an ecosystem, Earth's natural cycles, changes in ecosystems as a response to natural and human disturbances, and the effects of limiting factors on population dynamics and potential species extinction

