



Biology I 2014-2015

Course Description:

Biology I has been developed to meet the state standards for Science & Technology and Ecology & Environment. This course will prepare you for the Biology Keystone exam.

Biology I is designed for the college bound student. Throughout the course, students will perform various hands-on applications of course concepts and experiments. Students will then have to display mastery of these concepts in lab reports and other assessments.

The following topics are discussed and studied throughout the Biology I course: Scientific Method, Characteristics of Living Things, Chemistry of Living Things, Cell Structure and Function, Photosynthesis, Cellular Respiration, Cell Cycle, DNA, RNA, Protein Synthesis, Genetics, Evolution, and Review of Ecology & Human Impact on the Environment.

Course Content:

Science of Biology:

- What is science
- How scientists work & the scientific method
- Characteristics of life
- Scientific tools and measurement

Chemistry of Living Things

- Subatomic Particles, Isotopes, Ions and Bonds
- Properties of Water
- Macromolecules
- Types of Reactions and Enzymes

Cell Structure & Function:

- Cell theory & types
- Cell structures form & function
- Photosynthesis
- Cellular Respiration
- Movement into/out of cells
- Levels of cellular organization

Photosynthesis

- ATP
- Light Independent and Light Dependent Reactions

Cellular Respiration

- Glycolysis
- Krebs
- Electron Transport Chain
- Fermentation

Cell Growth & Division:

- Limits to cell growth
- Cell division (Mitosis)

- Virus Cycles
- Regulating the cell cycle
- Genetics:
 - Several patterns of inheritance
 - Probability & punnett squares
 - Meiosis
 - Genetic technologies & their impact
- DNA/RNA:
 - DNA Discovery
 - DNA/RNA Structure
 - DNA Replication
 - RNA transcription/translation
 - Mutations
- Evolution:
 - Contributing scientists
 - Natural selection
 - History of Life
 - How populations evolve
- Review of Ecology:
 - Ecosystems
 - Population Dynamics
 - Relationships
 - Biogeochemical Cycles
 - Human Impact
 - Succession
 - IPM
 - Threatened, Endangered, and Invasive Species
 - Natural resources (technology, policies, management, conservation)

Required Textbooks and/or Other Reading/Research Materials

Biology by Miller & Levine, Pearson, 2010 (students will each have access to a digital version of this text)
Science World Magazine by Scholastic

Course Requirements:

Students are expected to take an active role in their education by completing independent reading and hand written note taking assignments, consistently completing assignments both in class and at home, conducting laboratory investigations and reporting results and analysis through lab assessments, and being responsible for their own appropriate classroom and laboratory behavior. Failure to complete assignments and submit them on-time will adversely affect the students grade.

Grade Components/Assessments:

The quarter grades will be based on percentages per category.
The categories that will be used and how much each is worth is listed below:
Homework: 10%
Classwork: 10%
Labs: 30%
Assessments: 50%

Students should expect to devote an average of 30 minutes to homework/studying each night.

Each marking period is worth 20% of a student's overall grade. The final is worth 20% of a student's overall average:

Quarter 1	20%
Quarter 2	20%
Quarter 3	20%
Quarter 4	20%
Final	20%

Required Summer Reading/Assignments:

There are no summer reading requirements for this course.