



Honors Biology

2014-2015

Course Description:

Honors Biology has been developed to meet the state standards for Science & Technology and Ecology & Environment. This course will prepare you for the PA Biology Keystone Exam. Honors Biology is for the college bound student who wants to be challenged and is dedicated to working hard. This course will prepare you for upper level Biology courses. Throughout the course, students will perform experiments that will enhance and supplement concepts covered. Students will then have to display mastery of these concepts in lab assessments and other assessments.

The following topics are discussed and studied throughout the Honors Biology course: Scientific Method, Scientific tools, Metric System, Chemistry of Living Things, Cell Structure and Function, Photosynthesis, Cellular Respiration, Cell Cycle, Meiosis, Genetics, DNA, RNA, Protein Synthesis, 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 consistently completing independent reading and note taking 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. The Honors Biology course covers the topics mentioned above in greater detail and a faster pace than the Biology I course. Students in the Honors Biology course should have good time management skills as well as a good work ethic. Failure to complete assignments and submit them on time will adversely affect the student's 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 60 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.