

Welcome to 9th Grade Advanced Biology!
Mrs. J.G. Monaghan
jmonaghan@philasd.org
215-400-7580

Dear Parents,

Advanced Biology is a comprehensive course that covers all areas of introductory biology. See course topics below. In addition to the general biology curriculum, students will participate in supplemental labs provided by the University of Pennsylvania and Drexel University. The course emphasizes the scientific process and critical thinking, but students are also responsible for learning terminology and background information for each unit.

Grades are based on tests, quizzes, labs, classwork and homework.

Homework is given on a need basis. Lab reports are due one week from the lab.

Projects are to be submitted on the due date, and will receive a grade deduction of 10% the first day, 20% the second day, etc. Homework assignments receive half credit if one day late, and no credit if more than one day late. Assignments must still be completed even if they are not submitted on the due date.

Textbooks will be used in class on occasion. Students will have a copy of the textbook to keep at home. It is the student's responsibility to complete home reading assignments. Information from readings will be included on quizzes and tests.

Each week of activities generally includes double period laboratory activities and computer-assisted instruction either in the computer lab or with laptops. Other periods during the week include lecture, reinforcement activities, reading, presentations and cooperative learning groups.

Tests will be approximately every two weeks. Students will receive at least 5 days notice before tests. Quizzes may occur at anytime and may be unannounced. Students will take a midterm and comprehensive final exam.

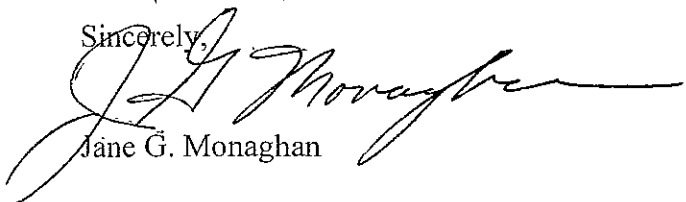
Grading policy:

100% under tests. Quizzes, projects, and labs are graded under tests.

Please contact me at any time with questions, concerns, or to offer enrichment opportunities for the students. Thank you for your support.

Sincerely,

Jane G. Monaghan



9th Grade Advanced Biology
Course Outline
JANE G. MONAGHAN

Text:

Biology

Miller & Levine

Topics Covered:

Lab Safety

Metric Measurement

Scientific method

Biochemistry

Cell Structure and Function

Cellular Respiration and Photosynthesis

Mitosis / Meiosis

Mendelian Genetics

Molecular Basis of Inheritance

Diversity and Evolution

Taxonomy

Ecology

Advanced topics:

Physiology

Ethics

Nanotechnology

Embryology.

Supplemental Materials: (Optional)

Princeton Review Cracking the SAT Biology E / M or Barron's SAT Biology

The book serves as a review of material and will benefit those students who choose to take the Biology SAT Subject Test at the end of the year.

AP BIOLOGY – ABOUT THE CLASS

Course Description:

This second year course prepares students for the AP Biology Exam. Topics covered include biochemistry, cells, photosynthesis, respiration, heredity, molecular, genetics, evolution, diversity of life, plant and animal form and function, and ecology. This course follows the College Board Advanced Placement syllabus and students must take the national college board exam in May.

Prerequisites:

A average in Biology 1 and A or B average in Chemistry.

Topic Outline:

- I. Molecules and Cells (25%)**
 - A. Chemistry of Life (7%)**
 - 1. Water
 - 2. Organic molecules in organisms
 - 3. Free energy changes
 - 4. Enzymes
 - B. Cells (10%)**
 - 1. Prokaryotic and eukaryotic cells
 - 2. Membranes
 - 3. Subcellular organization
 - 4. Cell cycle and its regulation
 - C. Cellular Energetics (8%)**
 - 1. Coupled reactions
 - 2. Fermentation and cellular respiration
 - 3. Photosynthesis
- II. Heredity and Evolution (25%)**
 - A. Heredity (8%)**
 - 1. Meiosis and gametogenesis
 - 2. Eukaryotic chromosomes
 - 3. Inheritance patterns

- B. Molecular Genetics (9%)**
 - 1. RNA and DNA structure and function
 - 2. Gene regulation
 - 3. Mutation
 - 4. Viral structure and replication
 - 5. Nucleic acid technology and applications
 - C. Evolutionary Biology (8%)**
 - 1. Early evolution of life
 - 2. Evidence for evolution
 - 3. Mechanisms of evolution
- III. Organisms and Populations (50%)**
- A. Diversity of Organisms (8%)**
 - 1. Evolutionary patterns
 - 2. Survey of the diversity of life
 - 3. Phylogenetic classification
 - 4. Evolutionary relationships
 - B. Structure and Function of Plants and Animals (32%)**
 - 1. Reproduction, growth, and development
 - 2. Structural, physiological, and behavioral adaptations
 - 3. Response to the environment
 - C. Ecology (10%)**
 - 1. Population dynamics
 - 2. Communities and ecosystems
 - 3. Global issues

Major Themes:

In an attempt to develop unifying constructs in biology, the AP Biology Development Committee has identified eight major themes that recur throughout the course:

- I. Science as Process
- II. Evolution
- III. Energy Transfer
- IV. Continuity and Change
- V. Relationship of Structure to Function
- VI. Regulation
- VII. Interdependence in Nature
- VIII. Science, Technology, and Society

Textbook:

Biology, Seventh Edition
Neil A. Campbell, Jane B. Reece, Lawrence G. Mitchell
Copyright 2005 by Benjamin/Cummings
Distributed by Scott-Foresman-Addison Wesley

The Laboratory:

12 Recommended Biology Laboratories

Laboratory Topic

1. Diffusion and Osmosis
2. Enzyme Catalysis
3. Mitosis and Meiosis
4. Plant Pigments and Photosynthesis
5. Cell Respiration
6. Molecular Biology
7. Genetics of Organisms
8. Population Genetics and Evolution
9. Transpiration
10. Physiology of the Circulatory System
11. Animal Behavior
12. Dissolved Oxygen and Aquatic Primary Productivity

In summary: These labs allow students to show their mastery of laboratory science skills and knowledge, some questions on the objective portion and/or one or more of the four mandatory essay questions on the AP Biology Examination each year reflect the topics and objectives associated with the 12 AP Biology laboratories.

AP Biology Examination:

The AP Biology Examination is three hours in length and is designed to measure a student's knowledge and understanding of modern biology. The examination consists of a 90 minute, 100-item multiple choice section, and a 90-minute free-response section, consisting of four mandatory questions. The number of multiple-choice items taken from each major subset of biology reflects the percentage of the course as designated in the Topic Outline. In the free-response portion, usually one essay question is taken from the Molecules and Cells section, one question is taken from the Heredity and Evolution section, and two questions focus on the Organisms and Populations section. The multiple-choice section counts for 60 percent of the student's examination grade, and the free-response for 40 percent.

In Conclusion:

I am looking forward to helping all my AP Biology students build confidence as we work our way to May and the AP Biology Exam. This exam is usually in the second week of the AP Exam schedule.

