

Neshannock High School Science Department

Advanced Placement[®] (AP) Biology

Mr. Thompson, Instructor

Course Goals:

The purpose and goals of this course are to 1) present an in depth, college level study of the biological sciences, 2) help students develop “college level” critical thinking skills and study habits, 3) prepare for the comprehensive AP Biology examination. This will involve detailed investigations of all the major areas of modern biology with a special focus on the molecular and chemical basis of life.

Students will be responsible for keeping their own chapter notes, all class materials and handouts, and completing all assignments on time. The 12 official AP Biology laboratory investigations, animal dissections, scientific journal readings, research problems in biology, and various class presentations will be included in the required course work.

Course Topics:

- Basic Chemistry: Inorganic & Biochemistry
- Cell Biology: Theory, Structure, and Function
- Enzymes: Structure, Function, and Kinetics
- Energy Transformations: Cellular Respiration & Photosynthesis
- Molecular Biology: DNA, RNA, and Protein Synthesis
- Heredity: Mendelian & Population Genetics
- Adaptation, Natural Selection, & Speciation
- Botany, Zoology, and Animal Behavior
- Ecology: Ecosystems, Communities, and Biochemical Cycles

Course Requirements:

AP Biology will be challenging, quick paced, and much will be expected from students enrolled in this class. The course will be taught conceptually with a substantial amount of individual, hands-on, and group learning activities. Since there is so much material to cover, students will be responsible for mastering a significant amount of class material on their own, especially the small factual details. Small student study groups and/or “study-buddies” are both recommended and encouraged as they make both the studying and class work load much easier. All students will be required to:

1. Read all assigned textbook chapters and submit reading guides prior to each class exam.
2. Submit an insect survey and identification project along with a working taxonomic key to their collection (*this will count as a 1st 9-week laboratory grade*).
3. Submit reviews of four scientific journal abstracts on current biological topics for each 9-week grading period. (*Students may be required to report on one abstract orally to the class.*)
4. Submit written lab reports for selected official AP Biology laboratory investigations.
5. Utilize computer technology and Internet access for completion of class assignments, research, and completing various online activities, tutorials, and assessments. (*Class computers and printers are always available for student use for those who need to use them.*)
6. All students are **REQUIRED** to take the AP Biology Exam from the College Board for credit in this class; currently scheduled for **May 11th, 2009 (AM)**.

Course Assignments:

Homework, labs, projects, and other assignments will be made regularly throughout the course and will add to the material discussed in class. Assignments will be graded either on completeness of the assignment, on accuracy and quality of the answers, or both. **It is your responsibility to have all assignments ready to hand in when they are due.** For full credit, assignments must be neat, complete, and submitted on time; sloppy, incomplete, or missing work will result in point deductions and/or a deficiency report being sent home. **Any assignment not handed in when collected will be considered late.**

Note 1: LATE ASSIGNMENTS (1 DAY) AUTOMATICALLY LOSE 25% OF THEIR TOTAL POINT VALUE, AFTER 1 DAY 50%. NO LATE ASSIGNMENT WILL BE ACCEPTED FOR CREDIT AFTER 1 WEEK PAST ITS DUE DATE AND WILL RECEIVE A SCORE OF 0%.

Note 2: If you should miss a class due to absence or illness, it is your responsibility to make up all work, get notes, or hand in any assignments that were made while you were gone. You will always have the number of days you were absent to make up your work with no penalty, but it must include an absentee HW credit slip for full credit.

Note 3: If a student is in school and knows in advance that he/she will miss class, they are expected to check and/or hand in their assignments before their absence and are accountable for any/all missed work.

Course Grading:

Class grades will be based on a weighted percentage point system. The grade components will be weighted as follows: class exams (60%), unit quizzes (15%), laboratory work (15%), and written homework (10%). Students always have access to their grades and individual progress reports are provided to all students every 4-½ weeks of each 9-week grading period.

Note: All report card grades will reflect a 10% addition to the raw class score, due to the increased difficulty level for the Advanced Placement classes at Neshannock High School.

Class Exams and Quizzes:

Exams and quizzes are an important part of this course and count for 75% of your grade. They will be college-level and in order to do well, you must be prepared. Class exams will be modeled after the AP Biology exam as to type and style of questions. All quiz and exam dates are listed on the class syllabus and since the AP Biology exam is cumulative in nature, students can expect exams to have questions that cover anything either currently or previously covered in class or from lab.

Online quizzes will be announced at least 1 week before they are due and may cover one to several chapters within a unit. Please note: online quizzes are NOT group or partner quizzes. Mr. Thompson reserves the right however, if he feels it is warranted, to go to unannounced quizzes if class performance falls, or to substitute an in-class quiz with an online quiz to save time in class. If you should miss an exam or quiz it is your responsibility to make it up when you return; it is always best to complete a missed exam or quiz as soon as possible.

Note: IN ALL CASES, A MISSED EXAM OR QUIZ MUST BE MADE UP WITHIN TWO SCHOOL DAYS, OR BY THE END OF THE WEEK IT WAS GIVEN. If there is a special or extenuating circumstance, let Mr. Thompson know. If no prior arrangements are made, the missed exam or quiz will be made up, during class and the student will be responsible for any missed notes or class work for that period.

Teacher Expectations:

In order to get the most from this course and be successful in AP Biology, it is your responsibility to be on time and in your seat when the bell rings. Like college, class starts on the bell. It is your responsibility to keep up with all readings, assignments, and come prepared with your textbook, notebook binder, calculator, and two writing instruments to every class.

Student Expectations:

You the AP Biology student can expect to work harder than you have in most other high school classes. If you make the time and commitment to study regularly, do all assignments, listen in class, and perform reasonably well on exams, you can and will be successful in this class. You will be working too hard not to try your best in this class; I know you can do it! **If you should ever encounter any difficulty in this class, be sure to let Mr. Thompson know, he is here to help. Remember, this is a college-level course and you are expected to be developing college-level study skills and study habits; the ultimate responsibility for your learning belongs to YOU!**

Honesty in Learning Policy:

Students are expected to do and submit their own work and act in an academically honest and responsible manner. Acts of cheating and/or plagiarism will not be tolerated. These can include, but are not limited to: copying, or submitting work done by someone else, not giving proper credit (citation) when using an outside source of information, giving or receiving information about exams & quizzes; possessing and/or using unauthorized study aids during exams & quizzes, or changing and/or modifying answers during a post-exam review. *All cases of academic dishonesty will be brought to the attention of the school administration, parents will be notified, and the assignment(s) in question will receive a 0%.*

Animal Dissection Policy:

Animal dissections are an important part of the laboratory component of both General and AP Biology. It is Neshannock High School policy that students have the right to abstain from any or all dissection labs. *Students wishing to abstain from dissection labs will have an alternate assignment that will meet the same educational objectives and will still be required to master and be tested on the same content, concepts, and objectives, as the other students who perform the dissection labs.*

Evolutionary Theory Statement:

The theory of evolution by natural selection is a fundamental area of study in the biological sciences and will be encountered in this class. As a part of the General and AP Biology curricula, it is important for all students to be exposed to and develop a general understanding of the basic elements of evolutionary theory and natural selection. It is not the intent of this course to propose that students should either adopt, or accept a completely and entirely naturalistic view of the origins of life on Earth, but instead should consider all the evidence offered from both science and their religious faith.

From a scientific perspective, this class will hold that the great diversity observable in modern living organisms within species is the result of the process of natural selection working on genetic variation over time. Additionally, this class will hold to the accepted "Old-Earth" model of geologic time and accept the current systems of phylogenetics and evolutionary systematics in describing and explaining biological relationships among living organisms. Issues relating to human origins and human evolution will not be covered, or addressed in this class.

AP Classroom Rules and Courtesy:

AP Students are expected to behave and act like responsible young adults. When everyone is listening, paying attention, and focused while they are in class, biology becomes more enjoyable and easier to learn. Good listening and working habits in class always pay off when you take an exam or quiz. Below are the posted class rules for students in the Biology room:

1. Treat the teacher and your classmates with respect; no putdowns.
2. No talking with your neighbor, speak only when recognized by the teacher.
3. Keep hands and materials to yourself.
4. Leave your seat only when given permission by the teacher.
5. Treat our books, classroom, desks, and equipment with care and respect.
6. No eating, drinking, or chewing gum in the classroom or lab.
7. No cell phones or other electronic devices are permitted in class or lab.
8. No horseplay in lab and always follow all safety rules during labs.

Rewards For Following Class Rules ☺

Students will benefit from a positive classroom environment and have an easier time learning the detailed and complex concepts of biology.

Consequences For Not Following Class Rules ☹

1. Warning.
2. Name in discipline book and one 9th period detention.
3. Same consequences as 2, + call to parents.
4. Same consequences as 3, + office referral.

Miscellaneous Information:

To provide extra help and review time, several 9th periods during the week will be set aside just for AP Biology students; these are tentatively scheduled for Wednesday and the night before a scheduled exam throughout the year.

There is also an AP Biology award for the student with the highest average in the class at the end of the year.

Important AP Biology class numbers, web page URL, and web access codes for The Biology Place are listed below:

- Mr. Thompson's Voice Mail: (724) 658 - 5513 ext. 1213
- Biology Class Homework Hotline: (724) 652 - 0368 ext. 7213
- Mr. Thompson's School Email: jthompson@neshannock.k12.pa.us
- Our Neshannock biology web page URL is: <http://users.nowonline.net/jwthompson/>
- The Campbell Gateway web page URL is: <http://www.aw-bc.com/campbell/>

AP Biology Topic Outline: (percentage of total course)

The following is a general guideline of our AP Biology course and is offered to help you to focus on unifying themes and key concepts throughout the course and the approximate amount of class time we will spend on each topic. These are the exact percentages of these topics covered on the AP Biology exam.

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. Theory of 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 & development
2. Structural & physiological adaptations
3. Response to the environment

C. Ecology (10%)

1. Population dynamics
2. Communities and ecosystems
3. Global issues

* The subject of evolution as taught in this class is limited to its basic theory, natural selection, and adaptive change. Issues and debate on human origins will not be addressed.