

AP BIOLOGY

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COURSE DESCRIPTION

The AP Biology course is designed to be the equivalent of a two-semester college introductory course taken by biology majors their first year of college. AP BIOLOGY differs significantly from the usual first high school course in biology with respect to TEXTBOOK, DEPTH OF KNOWLEDGE AND BREDTH OF CONTENT COVERED, LABS PERFORMED and STUDENT TIME AND EFFORT. The two main goals of AP Biology are to help students develop a conceptual framework for modern biology and to help students gain an appreciation of science as a process. The ongoing knowledge explosion in biology makes these goals even more challenging. **The course will culminate in taking the Advanced Placement Biology Examination, generally the 2nd week of MAY.**

COURSE EXPECTATION

Biology is dynamic, diverse, and full of unanswered questions. Every day new biological discoveries are made that inspire further research and learning. We can expect nothing less from a field that essentially encompasses how the world works. As an AP Biology student, you will learn how to look more critically at the world around you. Class, discussion, laboratory exercises, group work, and textbook readings will be highly interactive. You will be held to high expectations as you learn to balance the demands placed on you academically, athletically, and socially. Success in this course will depend on your study skills, reading and writing abilities, motivation and maturity.

COURSE OUTLINE

●The AP Biology Course has been redesigned to include 4 “BIG IDEAS” of biology and 7 essential “Science Practices.”

Big Idea #1: EVOLUTION

The process of evolution drives the **diversity** and **unity** of life.

Big Idea #2 ENERGY

Biological systems **utilize free energy** and molecular building blocks to **grow**, to **reproduce**, and to maintain dynamic **homeostasis**

Big Idea #3 INFORMATION

Living systems **store, retrieve, transmit, and respond to information** essential to life processes.

Big Idea #4 INTERACTIONS

Biological **systems interact** and these systems and their interactions possess **complex properties**.

Science Practices

1. The student can use representations and models to communicate scientific phenomena and solve scientific problems
2. The student can use mathematics appropriately
3. The student can engage in scientific questioning to extend thinking or to investigate within the context of the AP course
4. The student can plan and implement data collection strategies appropriate to a particular scientific question
5. The student can perform data analysis and evaluation of evidence
6. The student can work with scientific explanations and theories
7. The student is able to connect and relate knowledge across various scales, concepts and representations in and across domains

The following CONTENT will be embedded into these Big Ideas and Science Practices.

I. Molecules and Cells (25%)

A. Chemistry of Life

1. Water
2. Organic molecules in organisms
3. Free energy changes
4. Enzymes

B. Cells

1. Prokaryotic and eukaryotic cells
2. Membranes
3. Subcellular organization
4. Cell cycle and its regulation

C. Cellular Energetics

1. Coupled reactions
2. Fermentation and cellular respiration
3. Photosynthesis

II. Heredity and Evolution (25%)

A. Heredity

1. Meiosis and gametogenesis
2. Eukaryotic chromosomes
3. Inheritance patterns

B. Molecular Genetics

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

1. Early evolution of life
2. Evidence for evolution
3. Mechanisms of evolution

III. Organisms and Populations (50%)

A. Diversity of Organisms

1. Evolutionary patterns
2. Survey of the diversity of life
3. Phylogenetic classification
4. Evolutionary relationships

B. Structure and Function of Plants and Animals

1. Reproduction, growth, and development
2. Structural, physiological, and behavioral adaptations
3. Response to the environment

C. Ecology

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

In addition, students will conduct many of the following Collegeboard AP Investigative laboratories:

1. Artificial Selection
2. Mathematical Modeling
3. Comparing
4. Diffusion and Osmosis
5. Photosynthesis
6. Cell Respiration
7. Mitosis
8. Biotechnology: Bacterial Transformation
9. Biotechnology: DNA Restriction Enzyme Analysis
10. Energy Dynamics
11. Transpiration
12. Fruit Fly Behavior

REQUIRED MATERIALS

- Textbook: AP Edition Campbell Biology, 8th ed. (**PROVIDED**)
- 3 Ring binder with dividers
- Loose leaf paper or notebook for notes. Keep in 3 ring binder
- Lab Notebook (your choice...can be spiral bound, composition, carbon copy, or even personal iPad/Computer)
- Pen or Pencils
- Optional but highly suggested: 2013 Cliff's AP Biology Review Book (**you purchase on own**)

END OF COURSE ASSESSMENT (EOC)

Senate Bill One requires that students be given an End-of-Course exam in English II, U.S. History, Algebra II, and Biology, each counting as 10% of their grade. The End-of-Course exams are tests created by ACT and are part of their college-readiness program. In addition to the AP exam you will also be required to take this EOC because AP Biology suffices for your "biology experience" in high school if this is your first Biology class at North. Failing the end-of-course exam could cause you to fail the class if you have maintained a low average throughout the year.

GRADING:

Purpose:

The primary purpose of grades in any science class is to reflect a student's achievement level in relation to course standards. A secondary purpose is to communicate a student's progress toward mastery of the course standards to the student and parents.

There will be two categories of grades: **academic grade** (consisting of Tests, Quizzes and Labs as well as some homework) and **supplemental grade** (effort, participation, classwork and some homework).

FINAL GRADES

- * Academic Grade cumulative through year= 90%
- * EOC= 10% (for those taking AP Biology as their high school Biology credit)

GRADING SCALE	
A	90-100
B	80-89
C	70-79
F	below 70

EXAMS

Exams are composed of AP exam questions and AP-style exam questions as well as AP style essays. Exam questions will be based on chapter readings, class notes, and labs. The structure of each exam is as follows:

- Section I: Multiple Choice
 - 35 minutes to answer ~25-35 multiple choice questions
- Section II: 1 Free Response question and a few short answer/math questions
 - 3 minutes to review and take notes & 15 minutes to answer 1 of the 2 questions

AP COLLEGE CREDIT

If one of your goals is to obtain credit for an introductory college biology course, you should contact the colleges you are likely to attend. Find out if they accept AP scores for credit (most, but not all colleges do). The webpage has a link to the College Board website that allows students to search for AP credit policies at different universities.
<http://collegesearch.collegeboard.com/apcreditpolicy/index.jsp>

Policies & Procedures

NOTEBOOK

Students will be required to keep a 3-ring binder notebook for only AP Biology. Notebooks should be kept sequential and divided into UNITS. (see AP schedule for units headers)

HOMEWORK

KEEPING UP WITH THE READING IS VERY IMPORTANT! Read your textbook, review book, and/or notes nightly. Homework, usually, will be assigned nightly. *This is not a class where cramming the day before a test will work! Students should expect to complete a MINIMUM of 5-10 hours of study/homework OUTSIDE of class each week.* Self-discipline is very important. The most successful students are those who make a daily commitment to their studies.

ABSENCES & ATTENDANCE

Attendance and punctuality are very important. Students are expected to be on time and prepared for class every day. It is the student's responsibility to get missed work from the day they were absent. In class labs cannot be made up; however, the student will be required to perform an alternative lab online. **It is essential that you are present for all in class labs as they are recorded in your academic grade. Remember: Content from the labs are embedded on your UNIT exams.**

TARDY

We will follow the NOHS policy on tardies (see handbook). If a student is tardy you should come into class, sign the tardy clipboard hanging next to the door, find your seat, and begin working. ***Please, do not interrupt the class to explain.***

LATE WORK

No late work will be accepted. AP Biology students will be held to a higher standard and will be expected to turn in work on the designated day/due date. The student will not receive any points for work that this not turned in on time. I understand that there will be some extenuating circumstances; therefore, it is the student's responsibility to let me know in advance so that alternative plans can be made.

FOOD AND DRINK IN CLASS

I believe that you are old enough and responsible enough to have eating and drinking privileges in this classroom. However if this privilege is abused it will be taken away. Please clean up after yourself and make sure that your neighbor does the same thing. If I notice that the room is being trashed you will not be allowed to have food or drinks in class for the rest of the week. In addition, there are **NO FOOD OR DRINKS ALLOWED ON LAB DAYS...NO EXCEPTIONS!**

AP DAY AFTER SCHOOL HELP

I will be available for extra help after school from 3:45-4:30 (Days-TBA). Please do not wait until you are swamped and overwhelmed to ask for help. Before your appointment have specific questions in mind or topics in mind or written down that you would like to discuss.

ACADEMIC HONESTY

All student's work, tests, papers, quizzes, etc should reflect your own work. Cheating and plagiarism will not be tolerated. You will receive zero points for any assignment found to be plagiarized or the result of cheating. **NO QUESTIONS ASKED.**

PLEASE KEEP SYLLABUS IN THE FRONT OF YOUR NOTEBOOK AT ALL TIMES!

AP Bio Commitment

We are going to respect each other, have some fun and learn some neat things along the way. If you have any problems or issues please feel free to come and talk with me. I will be more than happy to meet you in the middle; as long as I see that you are trying, I will do whatever I can to help you in any way that I can. I look forward to this year and I hope that you do too! After reading through the SYLLABUS please sign and return **just this page. DUE BY AUGUST 19.**

NAME: _____

PERIOD: _____

I have read and agree to follow the rules and/or help enforce the rules stated in the 2016-2017 syllabus.

Parent Signature

Student Signature