

Advanced Placement Biology Syllabus
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Welcome to AP Biology! Along with the things that I have to offer you in this course, I want to make it clear that I will be holding you to some very high expectations. So that no one is beginning this venture under any illusions, let me spell out what is expected of you and what I will do to help you meet them. This course is equivalent to a full year (two semesters) Introductory Biology course taught at any major University. The design of the course assumes student having little to no previous experience with Biology. The content and curriculum of this course has been designed to meet or exceed those outlines by the Advance Placement College Board. These standards far exceed the Delaware State curriculum for high school Biology and students typically score a 5 on the DCAS with no problem. Upon completion of this course and the AP Exam, students can apply with most colleges to receive college credits. This course meets for a 90 minute period for the entire school year.

For this year, College Board has extensively reworked the required curriculum that will be tested on the AP Exam. I love the changes and I think you will too. There is MUCH less emphasis on knowing a billion facts. Previous year's student might want to kill me when they find out how much annoying material they had to learn is no longer being required. However, there is a price to pay for the reduction in content. The material we will cover needs to be understood forward, backward and possibly even in dimensions beyond the 3 you currently live in ☺.

Resources

- Textbook: Campbell, Neil, 1996. *Biology*, Sixth Edition, Addison-Wesley / Benjamin Cummings Pub. Co., Inc., Redwood City, CA.
- Recommended
 - *You may need to wait for publishers to put out updated versions of these*
 - An AP Review Book such as Cracking the AP Biology Test by the Princeton Review, Baron's AP Bio Review, 5 steps to a 5 or Cliff Notes. There are many versions. Look them over and select one whose format works for you.
 - Smartphone Study Applications - available from the app stores for your device

SUPPLIES NEEDED:

- 1 $\frac{1}{2}$ " Three-ring Binder (or larger). Used to maintain all your notes, labs, and materials.
- 2 Standard Composition Books.
- Scientific Calculator, Pens, No. 2 Pencils, colored pencils
- Recommended
 - USB pen drive or some means to take large files from the school computers. (Students will be getting access to a cloud based storage solution once I iron out the technical issues.)

Curriculum:

AP Biology Big Ideas - this is the "What you will need to understand" in terms of content. This is where the reduction in the absurd details has happened. It is now about understanding the interconnectedness of these big ideas for every living thing.

- Big Idea 1: The process of evolution drives the diversity and unity of life.
- Big Idea 2: Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.
- Big Idea 3: Living systems store, retrieve, transmit, and respond to information essential to life processes.
- Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties.

Science Practices for AP Biology

This is the "How you will be able to put the ideas into practice". This is where AP is now putting its emphasis and it is a VERY good thing. Here is how it is explained by College Board: *"The course merges rigor with creativity and offers students myriad opportunities for learning through scientific inquiry, development of laboratory skills, and assessment. Rather than simply presenting information, teachers use formative assessments to guide instruction and work with students, instilling in them a sense of pride and ownership in what they learn. Knowledge attained in the classroom is applied to real-world issues, including the impact of biotechnology on society and global ecological concerns."* Sounds good to me!

Science Practice 1: The student can use representations and models to communicate scientific phenomena and solve scientific problems.

- 1.1 The student can create representations and models of natural or man-made phenomena and systems in the domain.
- 1.2 The student can describe representations and models of natural or man-made phenomena and systems in the domain.
- 1.3 The student can refine representations and models of natural or man-made phenomena and systems in the domain.
- 1.4 The student can use representations and models to analyze situations or solve problems qualitatively and quantitatively.
- 1.5 The student can reexpress key elements of natural phenomena across multiple representations in the domain.

Science Practice 2: The student can use mathematics appropriately.

- 2.1 The student can justify the selection of a mathematical routine to solve problems.
- 2.2 The student can apply mathematical routines to quantities that describe natural phenomena.
- 2.3 The student can estimate numerically quantities that describe natural phenomena.

Science Practice 3: The student can engage in scientific questioning to extend thinking or to guide investigations within the context of the AP course.

- 3.1 The student can pose scientific questions.
- 3.2 The student can refine scientific questions.
- 3.3 The student can evaluate scientific questions.

Science Practice 4: The student can plan and implement data collection strategies appropriate to a particular scientific question.

- 4.1 The student can justify the selection of the kind of data needed to answer a particular scientific question.
- 4.2 The student can design a plan for collecting data to answer a particular scientific question.
- 4.3 The student can collect data to answer a particular scientific question.
- 4.4 The student can evaluate sources of data to answer a particular scientific question.

Science Practice 5: The student can perform data analysis and evaluation of evidence.

- 5.1 The student can analyze data to identify patterns or relationships.
- 5.2 The student can refine observations and measurements based on data analysis.
- 5.3 The student can evaluate the evidence provided by data sets in relation to a particular scientific question.

Science Practice 6: The student can work with scientific explanations and theories.

- 6.1 The student can justify claims with evidence.
- 6.2 The student can construct explanations of phenomena based on evidence produced through scientific practices.
- 6.3 The student can articulate the reasons that scientific explanations and theories are refined or replaced.
- 6.4 The student can make claims and predictions about natural phenomena based on scientific theories and models.
- 6.5 The student can evaluate alternative scientific explanations.

Science Practice 7: The student is able to connect and relate knowledge across various scales, concepts, and representations in and across domains.

- 7.1 The student can connect phenomena and models across spatial and temporal scales.
- 7.2 The student can connect concepts in and across domain(s) to generalize or extrapolate in and/or across enduring understandings and/or big ideas.

AP Exam - Monday May 14th 8:00 AM

Section I			
Question Type	Number of Questions		Timing
Part A: Multiple Choice	63	multiple-choice questions on knowledge and science practices	90 minutes
Part B: Grid-In	6	integration of science and mathematical skills, requires calculation (a 4 function calculator is permitted)	
Section II			
Question Type	Number of Questions		Timing
Long Free Response	2	Multipart, multiparagraph essays that require understanding of a topic from multiple angles	80 minutes + 10-minute reading period
Short Free Response	6	New to the exam. Similar to long response but with a more limited scope	

Coursework:

Students are expected to complete all coursework and progress as scheduled with reading and written assignments. Many assignments will not be checked for completion by the instructor but are designed to prepare the student for class discussions and activities. These assignments are critical to students gaining an understanding of the course concepts. In short, do what I ask you to because it will help you succeed.

Course Grading:

Course grades will be based on the following approximate percentages:

- ~40% Tests / Quizzes
- ~35% Labs / Activities
- ~15% Free Response Writings
- ~10% Written Research Reports

Tests & Quizzes -

3 - 5 quizzes per unit depending on length, 1 - 2 Unit Tests

- Quizzes are usually computer based but may at times be written.
- Vocabulary will make up a large number of the quizzes throughout the year.
- Tests are a combination of Multiple Choice, Matching, Completion, Short and Long Free Response questions, depending on the material.

Retake Policy:

- **All tests can be retaken** if you believe you can do better. They are never 1 and done. However, the ability to a retake is earned.
 - All assignments (homework) from the unit must be completed and organized in your class notebook (binder) and must be presented at the time of the retest.
 - You must have all of the necessary study materials (notes, labs, handouts) organized in your notebook.
 - You will need to conference with me to review your previous errors. Only when I believe that you now understand the material well enough, will you get to retest. All conferences and retakes must be done after school.
 - You get 5 retakes in a marking period. You can use them at any time, but use them judiciously because when you are out, that's it!
 - You may not be guilty of any cheating or academic dishonesty (copying of any graded work) within that unit or you will forfeit your right to retake all related assessments. **Get caught cheating on any assessment** (test, quiz) you will forfeit your retakes for the entire marking period on top of a zero on the assessment.
- **Retakes are never the same test as the original, but they test the same material.**

Journals:

You will be keeping three (3) different Journals in the course and they must be with you EVERY DAY.

1. Your Class Journal: This is where you will answer daily starter questions, write post-reading concerns and complete class activities. This Journal is not graded; it is for your personal use for learning, study and review.
2. Your Writing Journal is where you will develop your scientific writing skills that will be essential on the AP test. You will be assigned a variety of written assignments of varying length and complexity. Some will be actual released questions from past AP Exams; others will be shorter summaries of content that we are working on. Most of these writings will be graded and will contribute to your grade in the class.
3. Your Lab Journal is where you will design your labs, record data, and analyze and record your results. The contents of this journal ARE graded (at least parts)

General Composition Book Rules:

- All writing must be in Black or blue ink or only. All drawing or sketching must be in pencil only.
- Only write on the right side pages of the notebooks. The left side will be used to make corrections or to add additional information later.
- Keep your table of contents current! Make sure you skip lines in case you have to add a correction on one of those left hand pages and need to add it to your table of contents later.
- Be as neat and organized as possible. Neatness and readability counts!!!

Composition Book Layout Guidelines

Do the following to the pages in your notebooks before doing anything else:

- A. Outer Covers: Write your name in permanent ink, preferably something bold like a Sharpie. Write the name of each Journal (Class Journal / Lab Journal / Writing Journal) as well.
- B. Page 1: Create a cover page for your notebook in ink. It should be neat and include the following: Name, School Year (2012-Fall Semester), Teacher Name (Eroh), and Journal Name (from cover)
- C. Page 2: (front side of next sheet in book) Title this page: "Table of Contents". It is here you will be listing you labs/activities/writings and be giving page numbers. So, you will want to neatly add columns like below:

Lab Journal

Lab #	Lab Date	Lab Title	Page Number
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Class Journal

Entry #	Date	Activity Topic	Page Number
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Writing Journal

Writing #	Date	Writing Topic	Page Number
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Page 3: (front side of next sheet in book) Leave Blank. This is so if you need more room for table of contents you will have it.

Page 4: (front side of next sheet in book) Pay attention! Here is where you will start numbering EVERY page in your book. You will start with 1 on the front side, 2 on the back side, 3 on next page, 4 on backside, and so on until you reach the very last page. All page numbers are put in the lower right hand corner of the page in ink!

Labs:

This is where one of the biggest changes in the curriculum has occurred. In the past, there were 12 mandatory labs, some of which were dry and boring. This year you will be developing your own research skills through labs that you get to design, carry out and analyze. You will learn how to answer your own questions. Material covered in lab will be on unit tests and quizzes, as well as the AP test in May. All Labs are graded and contribute to your grade in the class. Some lab components will be a group score so you will have to depend on and support your classmates.

Lab Report Format

Unless told otherwise, use the following format when writing up all lab experiments. ***Each lab report consists of five clearly labeled and easily identified sections written directly into your lab notebook:***

- I. Introduction/Purpose/Question

- II. Methods/Procedure
- III. Data and Observations
 - Present the experimental data and/or observations in ruled data table(s).
- IV. Analysis of Results
 - Calculations (if applicable)
 - Graphs (if applicable)
 - Discussion of results
 - Answers to assigned questions (if applicable)
- V. Conclusion / Error / Next Steps

Homework:

Even with the reduction in the volume of information, there is still a large amount of material which must be covered outside of the classroom. Homework is currently estimated at six hour of week and consists mostly of reading and outlining the text and mastering vocabulary that will be essential to your survival. Students are expected to complete homework assignments on or before the designated date to prepare them for classroom activities. Assignments will be reviewed in class as needed. Homework gets you **NO points** and has **no bearing on your grade**. The exception to this will be written entries in your Writing Journal and any lab reports you complete for homework.

Notebook -

This is where your entire year will be recorded. You will have to keep a detailed, organized and coherent notebook. I will do my best to make it easier for you by giving the notes in standard outline format. I will be giving you the sheets that contain the majority of the factual information. This will allow us to spend class time discussing the material, not frantically copying notes. Most times, I will be presenting the material on the overhead screen using an LCD projector. While we discuss the notes, you will be making notations and comments that help you understand the content. I will never grade notebooks but they must be in order to qualify for a retest.

Screencasts- Because my presentations are all digital, I have the ability to record all of the writing and notations from class lectures along with the audio. Basically, you can replay an entire lecture from my website as if you were in the class. This is great if you were absent or if you just want to hear what we said again for a better understanding. **** You need to remind me to RECORD****

Mreroh.com

My website is the central hub of all the materials you will need for the course. You will find:

- Access to Student Access to monitor your grades.
- Digital copies of all materials distributed in class (Notes, diagrams, lab handouts)
- Online copy of your Campbell Biology Textbook with all related materials.
- Links to additional materials on the web
- Screencasts of class lectures and discussions