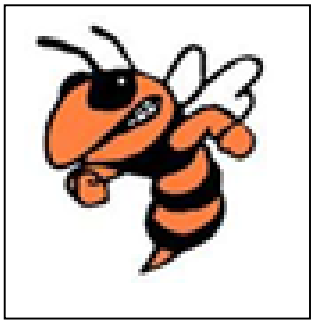
Advance Placement Biology Syllabus 2015-2016



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Website: http://www.meapbiology.weebly.com
Text book: Biology AP Edition - Campbell & Reece (8th Edition) *This should be checked out through the library and left at home for nightly use.*

Course Description

AP Biology is a yearlong course that is designed to be taken by students after the successful completion of high school biology. AP Biology includes those topics regularly covered in a college introductory biology course and differs significantly from the standards-based, high school biology course with respect to the kind of textbook used, the range and depth of topics covered, the kind of laboratory work performed by students, and the time and effort required of the students. The textbook used by AP Biology is also used by college biology majors and the kinds of labs done by AP students are equivalent to those done by college students. AP Biology is a course that aims to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of biology. This course is designed to prepare students for the Biology College Board Advanced Placement Exam which is graded on a 5 point scale and is based on the curriculum established by the College Board.

Course Expectations

Students will be provided the opportunity to experience laboratory skills comparable to introductory college level Biology courses, including inquiry based labs and computerized data acquisition and analysis. This class requires learning at an accelerated pace due to the amount and complexity of the required material. Material will be covered through daily class activities, lectures, discussions, laboratories, scientific lab reports, and independent projects. A student's success will depend on the time and effort that is invested into this course. AP Biology is a rigorous course that demands personal responsibility from the student. In order for students to plan effectively, they are provided with due dates for all major projects, labs and tests. They are strongly encouraged to complete nightly readings and study each day's lecture notes on their own time.

Commitment

AP biology students need to understand and accept the fact that AP biology will make unusually heavy demands on their time and energy. THIS IS A VERY FAST PACED, INTENSE COURSE. Students report spending and average of 7-10 hours of study time outside of class each week.

AP biology labs take at least 25% of the course hours. The lab times do not always conform to a ringing school bell. Please understand that some labs will require the students to prep between 7:00 to 7:25 A.M., continue unfinished labs at lunch, and sometimes stay after school between 3:00 to 3:30 pm on the day of longer labs.

Responsible conduct is a must. I cannot get through all of the material and lab content if I have to deal with problems. This is a college level class so I expect students to behave as a college student would. Follow all policies as outlined in Student Code of Conduct. They will be strictly enforced.

Online Course Materials

All course material and information will be available online on the course website www.meapbiology.weebly.com. If you would like text reminders for assignment info sent to your mobile phone please text **@meapbio** to **81010.** The messages will be sent through the confidential Remind101 server. We will not have access to your phone number.

Homework assignments may also be submitted online via email or website, depending on the assignment.

Summer Assignment

All students are required to complete a summer assignment even if they did not receive the assignment over the summer. The final day that summer assignments will be accepted is Friday, September 4, 2015.

Required Course Materials

All students will be **required** to bring binder, writing utensils, and paper to class **each day**.

1. A 2 or 3 inch 3-ring binder just for AP Biology (Avid students may use avid binder)
2. Dividers with 5 Tabs *(a tab for each of the 4 Big Ideas and assessments)*
3. 3x5 note cards (need 100+)
4. 2 or more different colored high lighters
5. Pens/Pencils
6. Sticky notes of various sizes and/or colors
7. Study Guide (Optional)**

*** I strongly encourage you to purchase an AP Biology study guide from your local bookstore or online through Amazon. I recommend **CliffsNotes AP Biology** or **5 Steps to a 5 AP Biology**. Be sure to get the most recent edition. If you have any questions about this please do not hesitate to ask! I do have some for classroom use.*

Key Concepts

The key concepts and related content that define the revised AP Biology course and exam are organized around a few underlying principles called the big ideas, which encompass the core scientific principles, theories and processes governing living organisms and biological systems. These Big Ideas will be introduced in Chapter 1 during the first week of school and as the class progresses, the themes will be more specifically discussed. Understanding how and where each of the above themes are integrated throughout the course will enable the student to be successful in this challenging course. Below is an outline of the AP Biology Curriculum Big Ideas and the Enduring Understandings topics covered in this course.

Big Idea 1: Evolution
The process of evolution drives the diversity and unity of life.

Big Idea 2: Cellular Processes: Energy and Communication
Biological systems utilize free energy and molecular building blocks to grow, to reproduce, and to maintain dynamic homeostasis.

Big Idea 3: Genetics and Information Transfer
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.

The AP Biology Examination: *MONDAY, MAY 9, 2016 @ 8:00 A.M.*

The exam is three hours in length and is designed to measure a student's knowledge and understanding of modern biology. On a 5 point scale, a score of 3 or better is passing. The following format will be used:

Section I: Multiple-Choice

Part A consists of 63 multiple-choice questions that represent the knowledge and science practices that you should understand and be able to apply. Part B includes 6 grid-in questions that require the integration of science and mathematical skills. For the grid-in responses, you will need to calculate the correct answer for each question and enter it in a grid on that section of the answer sheet. This section is 90 minutes long and 50% of the exam score.

Section II: Free-Response

You should use the mandatory 10-minute reading period to read and review the questions and begin planning your responses. This section contains two types of free-response questions (short and long), and you will have a total of 80 minutes to complete all of the questions. There are 2 long free response and 6 short free response questions which accounts for 50 % of the exam score.

Testing Materials:

Formula Sheet (provided) & Basic 4-Function Calculator (with square root)

AP Exam Grades:

5 = Extremely Well Qualified
4 = Well Qualified
3 = Qualified
2 = Possibly Qualified
1 = No Recommendation

The AP Exam does not have an effect on your course grade. The exam is based on a 1-5 point scale and most colleges give credit for 3, 4, or 5. Keep in mind that even if you score high on the exam, you may elect not to exempt introductory biology in college.

Student Assessment/Grades

Within each category, assignments will be given a point value (unique to this class) based on their length, complexity, involvement, and importance. Grades are calculated on a percentage basis. The value of each individual assignment varies. Students earn a grade based on the quality and accuracy of the work they complete. Overall class grades are based on a straight percentage, not a curve.

Grading Scale:

A	100% -90%
B	89%-80%
C	79%-70%
D	69%-60%
F	59%-below

Unit Tests (200 points):

Tests are given at the end of most units. These will always follow the AP format (however, they will be shortened to be administered during 1-2 periods). In order to prepare students for the AP exam in May, tests will be formatted similar to the AP Biology Exam (# and type of questions based on time available). A typical test will consist of 16 multiple-choice (6 points each), 1 grid-in (6 points), 1 long free-response (70 points), and 1 short free-response (28 points) in one period. When possible, AP Scoring Guides are used to grade long free-response questions. These scoring guides have been used to grade previous AP Exams. This includes 2-3 full length practice exams which will be given on Saturdays before the AP Exam.

Quizzes (20 - 30 points):

Quizzes are given to ensure that students are keeping up with their homework and reading assignments. Quizzes consist of 5-15 multiple-choice questions.

Laboratories & Laboratory Quizzes (25-100 points):

Lab protocols are taken from the AP Laboratory Manual or alternate sources. Labs are designed to allow the students to apply their knowledge of the biological concepts discussed in class. Students are expected to prepare for laboratories by reading the handouts prior to lab. An assessment will be assigned for the lab (due dates depend on the difficulty/length of the assignment). Lab behavior and technique are also sometimes factored into the laboratory grade. Due to the large amount of time required for laboratory set-up, it is essential that you are always present on lab days. You will be given advance notice for those days. There will be one formal lab write-up during each semester. These reports will be written in paragraph form reflecting the scientific method using APA format.

After each of the AP labs and many times before a lab, a laboratory quiz will be assigned allowing students to practice for the lab-related questions on the AP Biology Exam.

Classwork and Participation (10-100 points):

Both individual and group work will be assigned to apply what is learned in class.

Homework (10-50 points):

In order to progress at an accelerated pace, students must prepare for each class prior to the next class meeting. This preparation includes both reading assignments and chapter reading guides. Additional assignments may be given to reinforce and explore material covered in class. Written work will not always be graded. Homework assignments for each unit include, but are not necessarily limited to, the following; completion of Major Themes Concept Maps, justify why the answers to the “self-quiz” multiple-choice section at the end of each assigned chapter are correct, answering the “evolution connection” question at the end of each assigned chapter, completing questions associated with online videos, and answering free-response questions, which are related to the unit.

Projects (50 - 200 points):

Students will be required to complete at least one major project per term. These projects will be long-term and will require a great deal of effort. Students will also have the opportunity to do many small group work projects through the year.

Mid-Year Exam (200 points) and Final Project (200 points):

A Mid-Year Exam will be given at the end of Term 2 and will be half an AP Exam (32 multiple-choice, 3 grid-in, 1 long free-response, and 3 short free-response). The Final Project usually changes every year and will be presented according to the senior final exam schedule.

Extra Credit:

Extra Credit is not offered for this class. Please keep up with the regular assignments! Students will be allowed, however, to make test corrections to boost their exam scores.

Course Schedule

1. **Introduction and Scientific Method: (Chapter 1)** *1 WEEK*
2. Cell Processes and Structure: *4 WEEKS*
    - **a. Biochemistry (Chapters 2-5)**
        - Skills Taught: Chemical bonding, properties of water, functional groups, macromolecules, enzymes
        - Themes Addressed: Structure and function
        - Big Idea(s): #2, #4
        - Lab(s): Enzymes
    - **b. Cell Structure (Chapters 6-7)**
        - Skills Taught: cell theory, cell types, organelles structure and function, membrane structure, cell transport
        - Themes Addressed: Structure and function, Evolution, Regulation
        - Big Idea(s): #1, #2, #4
        - Lab(s): Diffusion/Osmosis
3. Cell Processes and Energy: *6 WEEKS*
    - **a. Respiration (Chapters 8-9)**
        - Skills Taught: organelle structure, aerobic vs. anaerobic respiration, fermentation ATP
        - Themes Addressed: Structure and function, energy transfer, evolution, regulation
        - Big Idea(s): #1, #2, #4
        - Lab(s): Cellular Respiration
    - **b. Photosynthesis (Chapters 8 and 10)**
        - Skills Taught: organelle structure, aerobic vs. anaerobic respiration, fermentation ATP
        - Themes Addressed: Structure and function, energy transfer, evolution, regulation
        - Big Idea(s): #1, #2, #4
        - Lab(s): Cellular Respiration, Plant Pigments and Photosynthesis
    - **c. Plant Physiology (Chapters 35-39)**
        - Skills Taught: land plant, evolution, growth, reproduction, anatomy, revisit classification
        - Themes Addressed: Structure and function, energy transfer, evolution, regulation
        - Big Idea(s): #1, #2, #3, #4
        - Lab(s): Transpiration, Monocot/Dicot comparison
4. Making Cells and Organisms: *5 WEEKS*
    - **a. Mitosis and Meiosis (Chapters 11-13)**
        - Skills Taught: cell communication, cell cycle, cancer
        - Themes Addressed: Structure and function, energy transfer, evolution, regulation, biotech
        - Big Idea(s): #1, #2, #3, #4
        - Lab(s): Mitosis and meiosis microscope
    - **b. Genetics (Chapters 14-16)**
        - Skills Taught: Mendel, punnett squares, sex-linkage, DNA replication, and DNA technology

Themes Addressed: Structure and function, energy transfer, evolution, regulation
Big Idea(s): #1, #2, #3
Lab(s): Family tree, Chi Square M &Ms, Genetics of Drosophila

5. Proteins: *3 WEEKS*

a. Protein Synthesis, Gene Regulation, Biotechnology (Chapters 16-20)

Skills Taught: protein synthesis, RNA structure, viral/bacterial genetics, and regulation of gene expression
Themes Addressed: Structure and function, energy transfer, evolution, regulation
Big Idea(s): #1, #2, #3, #4
Lab(s): stem cell/gene therapy research, gel electrophoresis, transformation

6. Biological Interactions: *6-7 WEEKS*

b. Evolution (Chapters 22-25)

Skills Taught: Evidence, natural selection, mechanisms of evolution, population genetics, micro/macro evolution, speciation, patterns of evolution
Themes Addressed: Structure and function, evolution, continuity and change, biotech
Big Idea(s): #1, #3
Lab(s): Population Genetics and Evolution (including the Hardy-Wienberg problem section)

c. Classification/Diversity (Chapters 26-31)

Skills Taught: classification system, cladistics, kingdoms, and systematics
Themes Addressed: Evolution, interdependence, science technology
Big Idea(s): #1, #3, #4
Lab(s): Survey of Organisms and Classification Systems

a. Ecology (Chapters 50-56)

Skills Taught: Animal behavior, ecosystems, conservation, and behavioral/population/community ecology
Themes Addressed: Interdependence, evolution, continuity and change, biotech
Big Idea(s): #2, #3, #4
Lab(s): Dissolved oxygen, Earth Worms

7. Animals: *4 WEEKS*

a. Diversity and Physiology (Chapters 40-49)

Skills Taught: body systems, movement, digestion, circulation, immunity, nervous system, endocrine, excretion, gas exchange, fertilization and embryonic development
Themes Addressed: Structure and function, energy transfer, evolution
Big Idea(s): #1, #2, #3, #4
Lab(s): Circulatory System

8. Course Review: *5-6 WEEKS*

Classroom Expectations and Policies

INTEGRITY: I expect complete honesty and integrity from each student. There will be occasions when you will be allowed to share information with other students, and I will tell you this clearly in advance. While you may work together on certain assignments, you are not allowed to copy another student's work. Students that copy work and students that allow their work to be copied are both at fault. Cheating will not be tolerated in any form. **If you are caught cheating, a zero will be the grade result and you will be referred to the office. Academic dishonesty is not tolerated at any upper level academic institution. Be responsible and honor your work as your own.** Please see your handbook for a more complete discussion of the honor code of the school.

ABSENCES / ATTENDANCE: Regular attendance is ***vitally important!*** Laboratories, lectures, note taking, demonstrations, cooperative-learning activities, and classroom discussions are a few examples of activities which are always difficult and frequently impossible to "make-up". Please make every effort to attend school every day. Lake County Policy states that if you are absents 4 or more days your grade for that course will be an **automatic 59% F.**

If you are absent, it is your responsibility to check with the AP *Biology class website* and *absence folder/bin* regarding your missing assignments **the day you return**. You have the same number of days that you were absent to make-up the work. If the work is not turned in by then, it will be considered late.

The expectation is that you are here for all announced exams/quizzes. If you are absent the day of a quiz or exam, be prepared to make it up afterschool ***the day you return***. Be aware that the exam you will be taking when you get back will not be the same one that was given on the regular exam day…it will be more difficult. An unexcused absence the day of an exam will result in a score of **zero.**

Assignments/papers/projects must be turned in on the due date even ***if you are absent***. These types of assignments are always completed in an electronic format (*Microsoft Word, PowerPoint, etc.*) and therefore can easily be e-mailed to me.

If there are extenuating circumstances, make sure that I am aware through either a written note or an e-mail from a parent or guardian. I am willing to work with you if you have a problem.

Class will run smoothly if you…

1. **Get to class on time** - It is essential that you get to class on time because the scope of this course necessitates covering a lot of material in the time allotted. Students will be considered tardy if they are not in their seats with their materials when the bell rings.
2. **Bring all necessary materials** – Necessary materials include paper, pens, pencils, folders, and completed assignments. Loaned materials will only be given the first few weeks of school. If you need materials during that time period ask your instructor. After the third week of school if you do not have your necessary materials you will receive a zero for that day's assignment.

3. **Hand in homework on time** - To receive full credit, homework must be completed and handed in by the due date. All work should be turned in on time. Late work will be penalized 10% for each day it is late. After four days, the maximum a student may receive for an assignment is a 60%. All work should be **CLASSY**: Complete, legible, accurate, sincere effort, shows organization, yes- on time.

4. **Leave it in the bag** – Cell phones, mp3 players, and other non-topic related items must be kept in your book bag, locker, or at home. If I hear or see a cell phone, it will be confiscated immediately and the student will have to see their administrator to obtain it.

5. **Be respectful and stay positive** – Be courteous and respectful of the opinions and property of others at all times. You are accountable for your own actions. In appropriate language/behavior towards the teacher, others, or yourself will not be tolerated. This will result in *immediate phone calls home and/or detentions/referrals.*

4. **Visit the restroom, drinking fountain, or locker *during passing time*** – plan ahead. If you do need to go to the restroom during class, your behavior will be used as a guideline. You will not be able to go if you are being disruptive, not working, or if you ask to go too frequently. I will also give out 3 bathroom/Homework passes per nine weeks. If you use them or lose them you will not receive any more so use wisely.

5. **Get involved** - Topics discussed in class deal with current, real-world issues. Asking questions about, and developing an interest in these topics are significant steps toward meaningful learning and will affect your grade.

Steps to Modify Negative Behaviors:

- 1st Offense: Verbal Warning
- 2nd Offense: Parent notification and student/teacher conference
- 3rd Offense: Parent notification and detention
- 4th Offense: Parent notification and loss of class privileges/ office referral

Please sign, remove this page from the packet, and return it to your instructor.

AP Biology ~ 2015-2016

STATEMENT OF UNDERSTANDING

By signing this contract, the parent and the student acknowledge that they have read the preceding documentation (AP Biology Syllabus) for Ms. Emery's AP Biology class and that they understand and agree to the commitment necessary to be successful in this course.

_____

Printed student name

_____ /_____

Signature of student / date

_____

Printed parent name

_____ /_____

Signature of parent or guardian

Student Contact information

Email: _____

Parent Contact information

Phone: _____ Email: _____

Does your child have access to a computer with internet access at home? YES or NO

There is a $5.00 lab fee donation for all students. This will go to help pay for lab materials needed throughout the year. The Lab Fee will be due by Friday September 25, 2015.

Would you like to make a $5.00 donation to our lab activity fund? YES or NO

(Make checks payable to Leesburg High School)

Please return completed <u>STATEMENT OF UNDERSTANDING</u> to your instructor by

Friday, August 28, 2015.