

AP Biology Syllabus 2023-2024

Course Title: Advanced Placement Biology
Length of Course: 2 semesters
Room 206



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Course Description: The Advanced Placement Biology course is designed to both prepare students for success on the AP Biology exam, (given at the beginning of May, 2024) and to provide students with an advanced biology course that expands on knowledge presented in first year Biology. The AP program is based on the premise that college-level material can be taught successfully to motivated, academically able and well-prepared secondary school students. Students enrolling in Advanced Placement Biology should have completed one year of high school biology and one year of high school chemistry. This course is designed to be the equivalent of a college introductory biology course, such as would be taken by biology majors during their first year. A college biology course differs significantly from the usual high school course in respect to the textbook used, the range and depth of topics covered, the laboratory work done by students, and the time and effort required. The curriculum for this course is dictated entirely by the College Board, the organization responsible for writing and administering the exam. It aims to provide students with the conceptual framework, factual knowledge and analytical skills necessary to deal critically with the rapidly changing science of biology. Although much of the content will be presented during class, students will be expected and required to cover additional materials on their own. The course will be structured around the four big ideas, enduring understandings and science practices as mandated by the College Board. What we know today about biology is a result of inquiry. Science is a way of knowing, therefore the process of inquiry and developing critical thinking skills is the most important part of this course.

MHCC Dual Credit Program: This course offers an opportunity to earn college credit through Mt. Hood Community College. AP Biology is the equivalent to the 200-level General Biology series. Please refer to our Schoology page for how to register. *If you decide to take the dual credit, you have to commit to BI 211 in order to complete the rest of the sequence.*

- BI 211: Intro to Cellular Biology is a survey course that introduces the discipline of cellular biology; exploring topics including the scientific method, parts of a cell, and how cells function. – 5 credits
- BI 212: Intro to Molecular Biology and Genetics is a survey course that introduces the discipline of molecular biology and genetics exploring topics including cell division, protein production, inheritance and gene regulation. – 5 credits
- BI 213: Intro into Ecology and Evolution is a survey course that introduces the discipline of ecology and evolution exploring topics such as the structure, function and evolution of organisms, populations and ecological communities. – 5 credits

Course Integration with First Year Biology Curriculum: Students in AP Biology have previously been introduced to many of the topics covered in the AP Biology course. The following topics will be quickly reviewed in this course with prior knowledge used as a basis for more complex topics:

- classes of organic molecules and properties of water
- structure of eukaryotic and prokaryotic cells
- passive and active cell transport
- basics of cell metabolism and energy transfer (how photosynthesis and respiration relate)
- cell reproduction
- classical genetics
- molecular genetics including DNA structure and function
- mechanism of natural selection and evidence for evolution
- characteristics of the six kingdoms of life

Course Goals:

1. To provide students with an interesting and rigorous college-level introductory biology course. Therefore, students are expected to perform on the level of first-year college students. Part of that is fulfilling the time commitment for studying/homework.
2. To prepare students well for the AP Exam by helping students acquire the necessary content information and training students in exam strategies and essay writing skills. Students are expected to take the AP Biology Exam in May.

Grading:

Since the purpose of the AP Biology course is to prepare for the national exam, calculation of grades will be predominantly based on the summative assessments given at the end of each unit AND the inquiry lab work completed throughout the course. Course grades will be weighted into two categories. Homework will not be graded in this course but it will be strongly suggested as it will help with textbook reading support and preparing for assessments. You are allowed to retake any test up to 80% credit. Please note that in college you will not be allowed to retake things in college, so I do not recommend making this a habit.

- Mastery assignments 70% of grade - Tests, Quizzes, and major projects or major labs
- Classwork assignments 30% of grade – Labs, homework, small activities, warm ups

Participation is mandatory and expected.

Tests:

We are "in training" for the national AP Biology exam. The tests used in the course will attempt to reflect the style and difficulty level of the actual AP Biology exam. Tests will be given after each unit (several chapters). You should also expect a large number of smaller quizzes and "practice" tests including essays.

Attendance:

Since this will be a MUCH faster paced course, a record of excellent attendance is a must. Missing class will put you at a huge disadvantage. If you should be absent due to illness, please contact me so we can deal with the situation as efficiently as possible.

Laboratory Exercises:

The AP Biology course requires that students spend a minimum of 25% of instructional time in a lab setting and perform at least 2 inquiry based labs within each big idea. Each lab conducted in class will allow students to apply and practice some if not all of the seven science practices. These formal labs are part of the national AP Biology exam – you will be tested on interpretation of results from similar or identical lab procedures. All labs will be inquiry based – some will be guided while others will be open inquiry. All will require a formal lab write up along with some form of communication of your results to the class. **Students will maintain a lab notebook throughout the course that documents all laboratory investigations.** Many of these labs are lengthy – completing them within a class period will be challenging and sometimes impossible. You may be requested to come in before school, at lunch or to remain after school to complete some of these activities. I will give you plenty of warning as we approach those exceptionally long labs. Additional lab activities beyond required AP Biology labs will also be conducted. These will be designed to supplement the lecture coverage of various topics and will not require the time or length of lab write up seen in the required labs.

Making up lab work is difficult and in some cases impossible. If you have an excused absence and it is possible for you to make up the lab, it must be made up within a week. If, because of the nature of the lab, you are not able to make up the lab, you will be given sample lab data to interpret or an alternative related assignment to complete.

Expectations of AP Biology Students:

As stated above, this course is designed to cover the same material you would encounter in a yearlong college level introductory biology course. This amount of material corresponds with the 55 chapters in our textbook – an intimidating task to complete in less than a school year. In preparing the curriculum, these were some of the goals which I considered important for you to develop in order to succeed in this course:

1. **RESPONSIBILITY** for learning and thinking about the subject. **Students are expected to be actively responsible for their own learning.**
2. **ABILITY TO UNDERSTAND RELATIONSHIPS AND MAKE CONCEPT CONNECTIONS** – You have to be able to look at the overall picture while understanding specific ideas. I provided the above themes ("big ideas") for a reason – we will periodically look at them and think about how all of the material covered so far relates to each theme.
3. **PACING YOURSELF** – promptness in completing assignments is important. The pace of this course is at the very least challenging. Don't procrastinate. I've tried to provide you with an outline of events so that you can budget your time and balance all of your academic courses.
4. **SELF-RELIANCE** – there will be a lot of independent work required in this course and in college courses. You are in total control of your own performance.
5. **GOOD ORGANIZATION** – you shouldn't be wasting study or lab time trying to locate materials or notes – those binders just might come in handy.
6. **GOOD STUDY HABITS** – taking copious notes and studying material at least twenty to thirty minutes every evening

AP Biology Summer Assignment 2023



Students enrolled in AP Biology are required to complete a summer assignment that covers the course enduring understandings related to Ecology. As they are covering this material, students will become familiar with the textbook and available online resources that will be utilized throughout the course.

Enduring Understandings Covered in Summer Assignment:

- 2D: Growth and dynamic homeostasis of a biological system are influenced by changes in the system's environment
- 2E: Many biological processes involved in growth, reproduction and dynamic homeostasis include temporal regulation and coordination
- 3E: Transmission of information results in changes within and between biological systems.
- 4A: Interactions within biological systems lead to complex properties
- 4B: Competition and cooperation are important aspects of biological systems
- 4C: Naturally occurring diversity among and between components within biological systems affects interactions with the environment.

Summer Assignment

- CHECK OUT A BOOK!!!! Before you leave for the summer, please check out the textbook Campbell, Neil A. and J. Reece, *Biology*, 10th Edition
- Read Chapters 51-55 and access necessary supportive materials
- Complete Community Ecology Project (instructions to follow)

Supportive Material (HIGHLY RECOMMENDED!!! DO NOT IGNORE!!!):

- Refer to power point presentations that have been uploaded to the AP Biology Lecture folder on Schoology
- Watch the following Bozeman Biology videos by Paul Anderson. Found in Bozeman Video folder on Schoology

Community Ecology Project:

You will need to complete the reading before doing this project!!! Students will analyze a local community of their choice. They will communicate the results of their analysis using an electronic presentation such as a power point, a Prezi or a website. Students should use pictures to collect and present information about their chosen community. The community you choose could be a place you have visited this summer or in a previous summer, a place you would like to go to, or a local community such as your backyard or a local park. You can access an example Community Ecology Project in the Summer Assignment folder on Schoology. This project should be turned in through Schoology by the due date of the summer assignment. The following information should be included in the final presentation:

- Specific location of chosen community
- Abiotic and biotic factors in community – for biotic members, split into plants, fungi, animals.
- Climate and effects of climate on diversity of community
- Identify a member of the community who might exhibit exponential growth
- Identify a member of the community who might exhibit logistical growth. What factors may contribute to the carrying capacity of your community?
- How are the populations in your community regulated? Make sure you identify those factors that are density dependent and density independent.
- Identify examples in your community of intraspecific and interspecific competition.
- Identify 3 specific niches in your community.
- Identify instances in your community of predation, parasitism, mutualism, commensalism and herbivory
- Identify two food chains in your community – make sure you indicate the trophic level for each member of your food chain.
- Identify a keystone species found in your community. Make sure you explain why you choose this organism as a keystone species.

Due Date and Assessment:

This assignment will be due Monday October 3rd, at the beginning of the class period. In the first week of school there will be an informal assessment given on this unit to show your understanding of the material. Make sure that you are prepared! If you have any questions about the material or the required assignments, please contact me through Schoology or my summer email:

reichlescience@gmail.com.

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Required Materials:

- Fully-charged Chromebook
- Notebook with dividers
- Pens/pencils
- Textbook: Campbell, Neil A. and J. Reece, *Biology*, 10th Edition (This can stay at home)

Course Description:

Welcome! This course has been developed as an introduction to basic Biology concepts. Below is an outline of the topics that we will cover throughout the year:

Dates	Topic
September	Animal Behavior and Ecology
October	Biochemistry
November	Cellular Biology and Cell Communication
December	Cellular Energy and Metabolism
January	Molecular Genetics and Biotechnology
February	Cellular Reproduction
March	Mendelian Genetics
April	Natural Selection and Biological Evolution
May/June	Exam Prep and Post Exam Projects

Grading Policy Description

- Mastery assignments 70% of grade - Tests, Quizzes, and major projects or major labs
- Classwork assignments 30% of grade – Labs, homework, small activities, warm ups

Absences and Late Work

- You will be required to make up any work from being absent. You may need to come in after school at times to make up lab work or do a test or quiz retake.
- Please access The Week Ahead on Schoology to plan appropriately.
- Many of your materials will be available on Schoology so you can access them outside of class if needed.
- Assignments that are late cannot receive full credit. An assignment that is a week or less late will receive a maximum of 80% credit. An assignment that is over two weeks late will only receive a maximum of 50% credit.

Letter Grade Description & Percentage Breakdown

Grade Percentage	Letter Grade	Description
100% - 90%	AH	Exceptional mastery
89% - 80%	BH	Above average proficiency
79% - 70%	CH	Proficient
69% - 60%	D	Almost proficient
59% - 40%	F	Not proficient or complete
0%	F	Assignment is missing

Raider Expectations



All Raiders are....

- **P**repared and Punctual
 - Raiders come to class **on time** and with all required materials
- **O**rganized
 - Raiders keep their science materials in the science section of their binder.
 - Raiders will write down the daily agenda and important dates in their planner.
- **W**riters
 - Raiders write and put forth their best authentic work daily.
 - Raiders do not plagiarize and copy. Copied work will not receive credit for all parties involved.
- **E**ngaged
 - Raiders are focused in class 100% of the time.
 - Raiders put **away all electronics** and other distracting items during class time.
- **R**espectful
 - Raiders respect each other as well as the space and property they occupy
 - Raiders are always respectful and safe during laboratory work.
 - Raiders will respect the room by helping to keep it clean. **No food or open drink** during labwork.

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