

AP Biology Contact Information 2017-2018

Instructor Contact Information

Mrs. Christine Villanti

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Web Site: See Canvas

Textbook: Biology AP Edition~ Campbell & Reece (9th Edition)

Course Expectations

This is a course designed to prepare students for the College Board Advanced Placement Biology Examination and is based on the curriculum provided by College Board. Students will be provided the opportunity to experience laboratory investigations comparable to an introductory college level biology course, including inquiry based labs, and computerized data acquisition and analysis. The class requires learning at an accelerated pace due to the amount and complexity of required material. Material will be covered through class activities, lectures, discussions and laboratories. A student's success will depend on the time and effort invested into this course.

We will be using Canvas exclusively this year in class, be sure that you are able to receive canvas announcements on your cell phone, as I will be sending you messages regularly next year.

Thank you,
Ms V

AP Biology Summer Assignment~

Mandatory Assignment 1

Establish contact and join the online forum ~Via canvas

Mandatory Assignment 1

Below there are 3 AP Biology Essay questions. These questions must be answered throughout the summer and posted to Canvas (under discussion tab) on or before the due date indicated for each question.

These essays may require some research on your part but are an important part of the AP curriculum.

QUESTION 1 Due 07/8/2017

Please log into WWW.Bozemanscience.com, choose AP Biology from the menu and watch the video titled~ The new AP Biology Exam~ A Users Guide once you have viewed the video-

Please provide an explanation of the AP Biology Exam, including a description of the 4 Big Ideas in AP Bio.

QUESTION 2 Due 07/22/2017

The unique properties of water make life possible on Earth.

Select **three** properties of water and:

- a) For each property, identify and define the property and explain it in terms of the physical/chemical nature of water.
- b) For each property, describe one example of how the property affects the functioning of living organisms.

QUESTION 3 Due 8/5/2017

Carbon is a very important element in living systems

- a) Describe the various characteristics of the carbon atom that make possible the building of a variety of biological molecules
- b) Explain how reactions involving carbon containing compounds can contribute to the greenhouse effect

Mandatory Assignment 2

Complete attached assignment this assignment is due on the first day of class.

Mandatory Assignment 3

Read textbook chapter 1 and complete Active Reading Guide, Chapter 1. This outline is due the first day of class.

OPTIONAL ASSIGNMENT~ Extracurricular activity scavenger hunt. Complete the task listed, and provide the appropriate documentation (indicated in parentheses). For every 5 you complete and document successfully, you will get 5 bonus points on your first course exam.

SCAVENGER HUNT

1. See a movie in a theater. Make sure it's good. (stub)
2. Feed ducks on three separate occasions. (pictures)
3. Grow a plant. (living plant must be brought to class on the first day)
4. Go to 2 state parks and take a walk. (photos AND maps)
5. Go see the Blue Whale and the American Museum of Natural History. (photo and stub)
6. Go to a water based amusement park. (photo and stub)
7. Go to a beach on the north shore AND one on the south shore. Collect sand from each in glass jars. (jars of sand and photo)
8. Catch a Cicada. (molt)
9. Sleep outside, under the stars. (photo)
10. Find a wild fox somewhere on Long Island, or maybe a deer. (photo of animal AND photo of you standing where the animal was)
11. Play the board game Risk or Apples to Apples. (photo)
12. Build your own website. (URL)
13. Make your own clothing. (wear it to school)
14. Identify three species of tree in your neighborhood. (leaves and the genus/species)
15. Hold five earthworms OR two slugs. (photo)

Chapter 1

1. Why is biology so exciting?
2. List and explain the 3 main domains of life
3. Why is evolution considered the unifying theme of every AP Biology class?
4. Compare and contrast inquiry based (hypothesis) and discovery science methods.
5. How is a theory in science different than the common definition of theory?

Chapter 2

1. Which elements make up the majority of your body?
2. What are trace elements? Define and then name several.
3. Draw an atom of sodium and correctly place all subatomic particles.
4. Define "isotope" and give some examples.
5. How are isotopes used in biology?
6. What happens, in terms of energy, as electrons change levels in an atom?
7. What is the significance of valence numbers?
8. What conditions would cause atoms to form covalent bonds?
9. What conditions would cause atoms to form ionic bonds?

Chapter 3

1. What is polarity? Explain the difference between non-polar and polar covalent bonds.
2. What is a hydrogen bond?
3. Sketch a few molecules of water, indicate their polarity, and show where hydrogen bonds form and where covalent bonds form.
4. What is the pH of a solution with a hydrogen ion concentration $[H^+]$ of 10^{-7} ? _____
 $[H^+] 10^{-4}$ _____ an $[OH^-] 10^{-10}$ _____. If something has a pH of 2, what is the $[H^+]$ _____
5. Why is hydrogen bonding so important to water's properties?
6. List at least 4 "special" properties of water, explain them, and give an example of how they are important to living things.

Chapter 4

1. In chemistry, what does the term "organic" mean?
2. Describe some of the shapes of carbon skeletons.

3. Define the following:

a. isomers

b. structural isomers

c. geometric isomers

d. enantiomers

4. Why are enantiomers of biological interest?

5. What is the significance of functional groups?

Complete the chart below:

Group	Structure	Name	Example	Properties
Hydroxyl				
Carbonyl				
Carboxyl				
Amino				

Sulfhydryl				
Phosphate				

Chapter 5

1. Define the following:

a. monomer

b. polymer

c. condensation reaction (dehydration synthesis)

d. hydrolysis

2. What is an enzyme?

3. Complete the chart below:

	Monomer	Polymer	Example	Function in your body
Carbohydrate				
Lipid				

Protein				
Nucleic Acid				

4. List 3 monosaccharides with their molecular formulas.

5. Double sugars are called

What makes up maltose?

Sucrose?

Lactose?

6. Polymers of sugars are called

7. How does alpha glucose differ from beta glucose and why is that significant to animals?

8. Describe the STRUCTURE and FUNCTION of the following polysaccharides.

a. starch

b. glycogen

c. cellulose

d. chitin

9. What is the characteristic common to lipids?

10. Lipids are synthesized by the chemical reaction _____
and broken down by the reaction called _____

11. What makes fats hydrophobic?

12. Explain 2 ways that saturated fats are different than unsaturated fats.

13. How do phospholipids interact in an aqueous solution, and how does this apply to cell membrane structure?

14. Draw a phospholipid bilayer.

15. Sketch cholesterol.

16. What are 3 different properties that side chains of amino acids have?

17. Sketch 2 amino acids, side by side, joined by a peptide bond. Label all important parts.

18. What determines the primary structure of protein?

19. Describe the 4 levels of protein structure.

a. primary

b. secondary

c. tertiary

d. quaternary

20. What is DENATURATION?

21. What are the 2 nucleic acids and what do they do?

22. Describe the 3-d structure of DNA.