

Advanced Placement Biology (2021 - 22)

AP Biology at Stanwood High School is a course designed for students that have a strong interest in, or desire to pursue a career in, the sciences. The AP Biology course is designed to offer students topics that are covered in a freshman Biology course at the university level. Students accepting the challenge of an Advanced Placement course will be required to actively participate in all lectures and laboratory activities that are conducted during the year.

To succeed in AP Biology, students must be highly motivated to learn. Reading requirements for the course are rigorous and require a daily commitment in order to stay caught up in the class. Exams generally cover 2 chapters in the text and occur every week depending on the content being covered and the number of labs that are conducted during the unit. Laboratory activities suggested by the College Board are conducted to give the student a fair representation of a university-level Biology course.

With the amount of material needed to be covered before the May AP test dates, **it is imperative to have the introductory material completed by the time school starts in the fall.**

Summer Assignment

Textbook: On Line Textbook: Online Biology Book
<http://www.estrellamountain.edu/faculty/farabee/biobk/biobooktoc.html>

Log on to the above website.

1) **Read:** Introduction: "The Nature of Science and Biology"

a) **Make reading notes** on a Google Doc for a homework grade, to be turned in on the first day of class. (Sept.)

b) **On a separate Google Doc: Do review questions** at the bottom of the page. (1-15). Bring the first day of class completed to be graded. (Sept.)

2) **Read:** Chemistry I: "Atoms & Molecules"

a) On your **Reading notes** Google Doc - add a new subheading and make reading notes for a homework grade. Turned in on the first day of class. (Sept.)

b) **On Questions Google Doc** - Do the review questions at the bottom of the page. (1-11). Bring the first day of class complete and ready to grade. (Sept.)

3) **Read:** Chemistry II: "Water & Organic Molecules"

a) On your **Reading notes** Google Doc - add a new subheading and make reading notes for a homework grade.

Turned in on the first day of class. (Sept.)

b) **On Questions Google Doc** - Do the review questions at the bottom of the page. (1-12). Bring the first day of class ready to be graded. (Sept.)

c) Watch AP Bio Review w/ Paul Anderson - **Biological Molecules**

<http://www.bozemanscience.com/042-biological-molecules>

d) Watch HeyNowScience's **AP Biology Unit 1 Review Chemistry of Life**

<https://www.youtube.com/watch?v=z6i06FyibKc>

4) Answer the following free response Questions Covering Chapters 1, 2, & 3.

5) Prepare for a test on Chapters 1, 2, & 3 to be given 1st week of school.

FREE RESPONSE QUESTIONS COVERING CHAPTERS 1, 2 AND 3

DIRECTIONS:

Answer the questions below as completely and as thoroughly as possible.

- Answer the question in **essay form** (not outline form), using

complete sentences.

- You may use diagrams or pictures to supplement your answers, but a diagram or pictures alone without appropriate discussion is inadequate.

1. Explain the formation of the following bonds:

- a. hydrogen bond
- b. ionic bond
- c. covalent bond

2. a) Describe how the subatomic particles are arranged in an atom.

b) Explain when or why an atom is stable or not stable.

c) How can we predict which elements are stable under natural conditions and

d) which elements tend to undergo chemical reactions.

3. Describe the structure of both a water molecule and the compound water.

4. Design an experiment to test a hypothesis. (Be careful and complete!)

5. When you hard-boil an egg, the clear liquid part surrounding the yolk becomes white and solid. Discuss why this happens.

6. Describe why water is an ideal medium for living things.

7. Discuss the biological importance of each of the following organic compounds to living things **AND** discuss their structure.

- a. Carbohydrates (monosaccharides, disaccharides, and polysaccharides)
- b. Proteins (include the levels of protein structure)
- c. Lipids (phospholipids, waxes, and steroids)
- d. Nucleic acids (DNA and RNA)
- e. Alcohol
- f. ATP

8. The unique properties (characteristics) 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.

9. Compare and contrast a **condensation reaction (synthesis)** with a **hydrolysis reaction** and give an example of each.

10. a) Describe the dissociation of water.
- b) Describe and explain pH and the pH scale.
 - c) Explain what a buffer is, and
 - d) Why are buffers important to living things.