

## AP Biology Summer Assignment 2021

Welcome to AP Biology! This is a college level course; it will be rigorous and demand your time and attention in and out of the classroom. Your work for this course will begin during the summer to ensure that everyone starts the class with the same prerequisite knowledge and will include two separate assignments. Both assignments are required and must be turned in on Day 1 in the Fall. Do not wait until the end of the summer to start this assignment. Start early, work a little bit every day, enjoy your summer, and look forward to an exciting year in AP Biology.

### Assignment 1 – 21 Questions & Notes

The first assignment is based entirely on your textbook. It requires reading certain sections of the textbook and taking notes as well as answering specific questions. This will help familiarize you with your textbook. These notes will be referenced throughout the rest of the school year. Many former students report that this is the most important assignment they complete for AP Biology! Please start early and take your time. **Notes MUST be handwritten.\*\***

### Assignment 2 – Plagiarism Certificate

Complete the plagiarism tutorial and take the certification test from Indiana University. Save and record your unique test ID number for verification. This should take 1 hour. <https://www.indiana.edu/~academy/firstPrinciples/index.html>

### Assignment 3 – Mastering Biology\* (Optional)

Use the attached instructions to register for Mastering Biology and complete the optional summer assignment. The estimated time to complete this assignment is 5 hours. Choose a username and password you will remember. If you lose your login information, email me for login recovery. DO NOT make a new account or re-register for the course.

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### Assignment 1 Details

#### **Required text:**

Campbell's Biology in Focus. Check it out from the front office to work on this assignment over the summer.\*

#### **General procedures for taking notes on the text:**

1. Read the Key Concepts at the beginning of each chapter. The list of Key Concepts introduces the big ideas covered in the chapter.
2. Leaf through the chapter slowly looking at headings and sub-headings, as well as bolded terms. Look up and define unknown vocabulary terms in your notebook by using the glossary.
3. Look carefully at illustrations and read their captions.
4. Read the section. Take notes as you read. Be sure to organize your notes by subtopic and include diagrams.
5. After each concept, answer Concept Check questions. They are good examples of the kinds of questions that will be on the AP Exam. Check your answers in Appendix A.
6. Optional: Test your understanding of the chapter by completing the Test Your Understanding questions at the end of the chapter. Check your answers in Appendix A.

#### **Key terms for answering free response questions:**

Compare - Discuss similarities between two or more things.

Contrast - Discuss points of difference or divergence between two or more things.

Describe - Provide relevant characteristics of a specified topic.

Draw - Create a diagram, graph, representation, or model that illustrates or explains relationships or phenomena. Labels may or may not be required.

Explain - Provide information about how or why a relationship, process, pattern, position, situation, or outcome occurs, using evidence and/or reasoning to support or qualify a claim. Explain "how" typically requires analyzing the relationship, process, pattern, position, situation, or outcome; whereas explain "why" typically requires analysis of motivations or reasons for the relationship, process, pattern, position, situation, or outcome.

## Day 1 Test for AP Biology:

It is not a placement test. It will cover the concepts in the table below. You will not be removed from the class if you do poorly, but this will be your first test grade. Be prepared to take the test on the first day of class.

- Read each of the stated sections thoroughly for understanding.
- Take notes per the general procedures listed on the front page
- Answer the questions below.
- *This assignment is due the first day of class and it needs to be done well.*
- **Notes must be done by hand and in your own handwriting. \*\***

| Read and take notes on these sections | Topic                                  | Answer These Specific Prompts in Complete Sentences ( <u>in addition to taking notes on the listed sections</u> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.1                                   | Themes                                 | 1. For each theme, <b>describe</b> an example not provided in the text.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1.2                                   | Evolution                              | 2. Evolution is considered the “unifying theory of biology”. <b>Explain</b> this statement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1.3                                   | Inquiry                                | 3. <b>Compare and contrast</b> inductive and deductive reasoning.<br>4. <b>Pose one question</b> that can be addressed by science and one that cannot.<br>5. <b>Compare and contrast</b> “scientific theory”, “theory” in everyday use, and “hypothesis”.                                                                                                                                                                                                                                                                                                                                        |
| 2.1-2.4                               | Chemical Bonding                       | 6. <b>Explain</b> how the structure of an atom relates to the properties of the element.<br>7. <b>Define</b> electronegativity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2.5                                   | Properties of Water                    | 8. <b>Explain</b> how electronegativity affects interactions between water molecules.<br>9. <b>Identify</b> the four emergent properties of water that contribute to Earth’s suitability for life.<br>10. <b>Describe</b> how different types of solutes dissolve in water.                                                                                                                                                                                                                                                                                                                      |
| 3.2-3.6                               | Structure and function of biomolecules | 11. <b>Describe</b> the fundamental basis for the differences between carbohydrates, proteins, and nucleic acids.<br>12. <b>Compare</b> the composition, structure, and function of starch and cellulose. <b>Describe</b> the role starch and cellulose play in the human body.<br>13. <b>Explain</b> why lipids are not considered polymers.<br>14. Proteins are the most structurally and functionally diverse class of biological molecules. <b>Explain</b> the basis for this diversity.<br>15. <b>Describe</b> the role complementary base pairing plays in the functions of nucleic acids. |
| 4.2-4.7                               | Parts of the cell and their functions  | 16. <b>Draw</b> two eukaryotic cells (one plant and one animal) and one prokaryotic cell, labeling and <b>describing</b> the function of each structure.                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 6.1-6.5                               | Biochemical reactions                  | 17. <b>Compare and contrast</b> endergonic and exergonic reactions.<br>18. <b>Explain</b> the meaning of each component in the equation for the change in free energy of a spontaneous chemical reaction. <b>Explain</b> the importance of spontaneous reactions in the metabolism of a cell.<br>19. <b>Describe</b> how ATP transfer energy from exergonic to endergonic reactions in the cell.<br>20. <b>Compare and contrast</b> an exergonic reaction with and without an enzyme.                                                                                                            |
| 7.1 & 8.1                             | Catabolic pathways and redox reactions | 21. <b>Explain</b> how photosynthesis and respiration are redox reactions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

Turn in notes and answers to questions on first day of class. **Expect to take a test on this material on the same day.**

**\*\*Students with a handwriting accommodation may type notes and print them.**

**\*IMPORTANT NOTE FOR SUMMER 2021:**

PLEASE READ these before beginning your Summer Assignment.

1. Textbook access: There should be enough textbooks for everyone, and the textbooks should be checked out on 6/16 when you return your laptop. If you require access to a digital copy of the textbook you will need to register with Mastering Biology.
2. Mastering Biology access note: Pearson has recently changed their protocols for accessing Mastering Labs. I am waiting on access codes from the district. Access instructions will be sent to your school email address as soon as they are available.
3. Further questions: I will be checking my email throughout the summer. If you have any questions about the course or the summer assignment please do not hesitate to contact me: [kdanaee@lwsd.org](mailto:kdanaee@lwsd.org)