AP Biology Summer Assignment

Welcome to AP Biology! This is both a challenging and rewarding class. We move at a fast pace and have a lot of content to cover. But I hope if you're taking AP Biology, that means you are excited to work hard, learn lots, and still have fun along the way! As an AP student, you will be required to complete independent work both over the summer and throughout the school year. Unfortunately, we just don't have enough time to do it all in class. For your summer assignment, there are 3 parts: Part I consists of some information to help me get to know you better. Part II is an Ecology poster covering most Ecology Topics. Part III is preparation for your Ecology Unit Test.

If you have any questions, please email me. I'll be checking it periodically throughout the summer. I am very excited to be working with you in the upcoming school year! I LOVE Biology and hope you do/will too!!

~Ms. Zydel

Part I: Personal Info – Please email* to azydel@lwsd.org by September 1, 2026

1. Why did you sign up to take AP Biology?
2. What are your personal strengths when it comes to learning new material?
3. What causes you to struggle in a course?
4. What is the most effective way for you to study for a test?
5. What are some thought you have about your major when you get to college? Why?
6. How many AP courses are you enrolled in?
7. Tell me something unique and fun about yourself!

***Please complete as an email and do NOT attach a document!**

Since we don't have time in class for all units. I assign Ecology as the one true "take-home" unit. It tends to be the easiest subject for students to grasp, given that they remember a lot of the vocab from middle school and freshman bio. It also includes much of what you find in APES, so many students have even had higher level exposure (though taking APES is NOT necessary to understand this unit). Consequently, your summer assignment includes the following:

Part II: Ecology Poster – Due the second week of school

You will be creating a visually interesting yet factual **poster** that shows a labeled food web that will include an invasive species in your ecosystem, a keystone species in your ecosystem, and an environmental issue in that ecosystem. There should be a number of pictures in your poster that may be either hand/computer drawn by you or taken from the internet (be sure to cite your sources if using online photos!)

You may include an additional **handout** that allows you to elaborate on topics from your poster, however the **MAJORITY** of your info should be on the poster. This needs to be POSTER-SIZED (minimum 20" x 30")!

Pick one ecosystem on earth – a biome, a national park, a state forest, etc.. that you would like to visit or have visited where there is an abundance of wildlife (don't forget you can use terrestrial OR aquatic ecosystems). Research this location and complete the following:

1. **Construct a food web – must be constructed by YOU and not just something snipped from the internet**
    a. Include individual pictures of organisms from your ecosystem.
    b. Label the organism names
    c. You must have **at least** 10 organisms representing a variety of different trophic levels (producers, primary consumers, secondary consumers, etc…)
    d. Arrows showing the interrelationships clearly identified.

2. **Label** the trophic level of each organism in your food web (Note: one organism may occupy multiple trophic levels).
3. Briefly **describe** the ecosystem in which this community is found. Include both biotic and abiotic features.
4. Pick one plant from your food web and **describe** its ecological niche in 3 different ways (This should NOT be your invasive species).
5. Pick one animal from your food web and **describe** its ecological niche in 3 different ways (This should NOT be your invasive species).
6. **Define** a population. Using the organism you chose in #5, **describe** density-dependent and density-independent factors that can affect its population size.
7. **Define** an invasive species. **Identify** one invasive species in the community you chose (must add in to your food web if not already included).
    a. **Describe** how it interferes with the natural community structure.
    b. **Label** it as an invasive species
8. **Define** a keystone species. **Identify** a keystone species in your community and **describe** its role.
    a. **Label** your chosen keystone species
9. **Describe** one environmental issue that affects your ecosystem in some significant way.
    a. Describe the source of this problem and how it affects the structure or stability of the ecosystem
    b. Include ideas on how the issue can be resolved or avoided.

10. Adaptations add-ons: Organisms need a variety of adaptations in order to survive and thrive in their environments. Adaptations may be structures, physiological processes, or behaviors.

    The Following are issues organisms must face:

    -**Desiccation**
    -Thermoregulation
    -Protection from predators
    -Nutrient procurement
    -Reproduction

    a. Going back to your food web. Pick one organism for each issue above (at least TWO must be plants and do NOT use the invasive species) and **describe** how it is adapted to solve the issue.
    b. These should be NOVEL adaptations (e.g. something unique, and not things like “This tree uses seeds for reproduction” or “This plants uses photosynthesis.”)

11. Include a list of citations in MLA format. This should include any research help you used and any online photos you included. Wikipedia doesn’t count! (But it can be a place to find sources)

The Rubric for this is on the last page of this assignment

Part III: Test Prep – While your poster covers a large portion of the Ecology unit, it doesn't hit on *everything*. The following videos will support your preparation for the test you will take during the second week of school. I've included video worksheets to help you focus, but I will not collect these.

Videos to Wach about Ecology

Video	Video Worksheet
https://www.bozemanscience.com/046-communities	Communities
https://www.bozemanscience.com/047-ecosystems	Ecosystems
https://www.bozemanscience.com/050-populations	Populations
https://www.bozemanscience.com/051-ecosystem-change	Ecosystem Changes
https://www.bozemanscience.com/054-population-variation	Population Variation
https://www.bozemanscience.com/055-biodiversity	Biodiversity
https://www.bozemanscience.com/ecological-succession	Ecological Succession
https://paul-andersen.squarespace.com/exponential-growth https://www.youtube.com/watch?v=rXlyYFXyfIM&t=6s	Exp vs. Logistic Growth
https://www.youtube.com/watch?v=mLbDbmmV6Qc https://www.youtube.com/watch?v=TZk6vcmLcKw	Eutrophication and Biomagnification
https://www.bozemanscience.com/biogeochemical-cycling	Biogeochemical Cycles Notes Sheet

RUBRIC FOR POSTER

Category	4	3	2	1	0
Food Web Construction	10+ species; clear arrows; invasive & keystone labeled	8–9 species; mostly accurate links	6–7 species; some unclear arrows	<6 species; links confusing	Not attempted
Trophic Levels	All labeled correctly; multiple levels noted	Most labeled correctly	Some labeled; some incorrect	Few labeled or incorrect	None labeled
Visual Communication	Clear, engaging visuals and layout	Organized; visuals used effectively	Some visuals; inconsistent layout	Disorganized; visuals confusing and/or not present	Not legible
Ecosystem Description	Biotic & abiotic components detailed	Most ecosystem parts described	Some parts unclear or missing	Vague, lacks accuracy	Missing
Ecological Niches	3 distinct traits for plant & animal	2 traits for each; mostly correct	1–2 total traits; vague	Vague or inaccurate traits	Missing
Population Ecology	Clear definition with accurate density-dependent and density-independent factors applied to an animal.	Mostly accurate definition and examples	One factor missing or unclear	Vague understanding	Missing
Invasive Species	Defined correctly with species impact explained thoroughly	Defined with species identified mostly correctly	Species listed, weak impact	Vague definition and/or incorrect identification	Missing
Keystone Species	Defined with specific role explained clearly	Defined; role mostly clear	Role vague or partially wrong	Incorrect definition/role	Missing
Environmental Issue	Described clearly and thoroughly with source, impact, solution	Accurate, solution mentioned	Limited detail or unclear impact	Vague or missing components	Missing
Adaptations (x2)	5 adaptations (2+ plants), clearly explained	5 total; mostly accurate	<5 or vague explanations	Weak or very limited	Missing
Citations (MLA)	All sources in MLA, pictures cited as well	Minor MLA errors, pictures not cited	Incomplete or inconsistent	Few/poor citations	None