

Summer Work – AP/IB Biology 2008-2009

1. Check out a textbook (Campbell). They are available in the IB office (room 200).
2. Obtain a spiral notebook. In the notebook, answer all questions in the objectives from Unit 1 (Ecology). These answers will be due the first week of class. Leave space in the notebook as you answer the questions to add notes after lecture/class activities.
3. **Cite all sources used, even if you are only using the textbook.**

FAQS about Reading Objectives

- What are these? Do I answer these for homework?
 - These are the objectives to the unit on which we are working. You are given the approximate range of pages that include the information in your textbook.
 - We suggest the following:
 - Read the objectives and bold print items.
 - Write down each objective and the answer in your spiral notebook. This notebook will be collected with each unit test.
 - Search for more information on these topics in class and in your Biozone book. Some topics are featured more or less prominently in the Campbell text, but it always a good source of information.
 - What are the strange numbers and letters listed before each objective?
 - They connect to the IB curriculum and are mainly an organizing tool.
 - What are the “1, 2, or 3” listed after each objective statement?
 - They refer to the type of knowledge required. A sample “1” objective is being able to state a fact. A “2” requires application of knowledge. A “3” requires students to synthesize and evaluate information.
 - What are the terms in bold print?
 - These are important terms in the chapter that may not have been mentioned in other objectives that are important to know. THERE MAY BE OTHER IMPORTANT TERMS IN THE CHAPTER THAT ARE NOT SPECIFICALLY LISTED. YOU NEED TO DEVELOP SKILLS IN DETERMINING WHAT IS IMPORTANT!
 - What are questions that are marked with a “→” at the end of each section?
 - These are questions that connect to the AP curriculum. Think of them as check points – if you have learned the material in the section, you should be able to answer an essay question based on that material.
 - You need to include a brief summary of the terms and concepts and identify them as AP objectives.
4. Use the college board website to do the following: (<http://www.collegeboard.com/student/testing/ap/subjects.html>)
 - a. Familiarize yourself with the AP Biology requirements.
 - b. Locate other AP websites which have excellent animation, lab simulations, etc.

Ecology

Readings and objectives

1. Energy flow and Productivity in Ecosystems (Ch. 50, 54)

5.1.1	Define <i>species, habitat, population, community, ecosystem</i> and <i>ecology</i> .	1
5.1.2	Distinguish between <i>autotroph</i> and <i>heterotroph</i> .	2
5.1.3	Distinguish between <i>consumers, detritivores</i> and <i>saprotrophs</i> .	2
5.1.4	Describe what is meant by a food chain, giving three examples, each with at least three linkages (four organisms).	2
5.1.5	Describe what is meant by a food web and food chain.	2
5.1.6	Define <i>trophic level</i> .	1
5.1.7	Deduce the trophic level of organisms in a food chain and a food web.	3
5.1.8	Construct a food web containing up to 10 organisms, using appropriate information.	3
5.1.9	State that light is the initial energy source for almost all communities.	1
F.5.2	State one example of a photoautotroph, photoheterotroph, chemoautotroph and chemoheterotroph.	1
F.5.3	Compare photoautotrophs with photoheterotrophs in	3

	terms of energy sources and carbon sources.	
F.5.4	Compare chemoautotrophs with chemoheterotrophs in terms of energy sources and carbon sources.	3
F.5.5	Draw and label a diagram of a filamentous cyanobacterium.	1
F.5.6	Explain the use of bacteria in the bioremediation of soil and water.	3
5.1.10	Explain the energy flow in a food chain.	3
5.1.11	State that energy transformations are never 100% efficient.	1
5.1.12	Explain reasons for the shape of pyramids of energy.	3
5.1.13	Explain that energy enters and leaves ecosystems, but nutrients must be recycled.	3
5.1.14	State that saprotrophic bacteria and fungi (decomposers) recycle nutrients.	1
G.2.1	Define <i>gross production</i> , <i>net production</i> and <i>biomass</i> .	1
G.1.9	Define <i>biomass</i> .	1
G.2.2	Calculate values for gross production and net production using the equation: gross production – respiration = net production.	2
G.1.10	Describe one method for the measurement of biomass of different trophic levels in an ecosystem. <i>Ethical issues of returning the species and destructive techniques should be considered.</i>	2
G.2.4	Discuss the difficulties of classifying organisms into trophic levels.	3
G.2.5	Explain the small biomass and low numbers of organisms in higher trophic levels.	3
G.2.6	Construct a pyramid of energy given appropriate information (Units are $\text{kJm}^{-2}\text{yr}^{-1}$)	3

→ Productivity (gross, net, primary); biomass (standing crop); ecological efficiency
→ How is energy flow through an ecosystem related to trophic structure?

II. Community Ecology Ch. 53

G.1.1	Outline the factors that affect the distribution of plant species, including temperature, water, light, soil pH, salinity and mineral nutrients.	2
G.1.2	Explain the factors that affect the distribution of animal species, including temperature, water, breeding sites, food supply and territory.	3

→ How do biotic and abiotic factors affect community structure and ecosystems?