PCB BIO 4 ASSIGNMENT SHEET 2: AUGUST 31-SEPTEMBER 4 2009

Reading, Preparation, Study Questions, Practice Essays, Labs.

ASSIGNMENT	DESCRIPTION
MONDAY	This week, you will learn a little bit about ecology and the scientific method. There will be an exam on Friday in class that will test your knowledge of all of the information since the start of school up until Thursday in class. The lecture notes that were passed out in class list and explain these topics in detail. Tonight, make a study sheet that organinzes your knowledge of evolution and natural selection into some thing that you can use to study for the exam. You do not have to turn it in. If you like drawing, or concept maps, etc., then that is fine. By now you really should be an expert on evolution and natural selection. You should be able to to explain what natural selection is, examples of it, and the way in which it leads to evolution. In addition, you should be able to explain the evidence for evolution. You should study before Thursday night if you plan on doing well on the exam.
TUESDAY	Do this if you have not done it already: Read pp. 746-747, and 752-755. Complete the following study questions: 1. Define trophic level, and describe at least three trophic levels in a typical ecosystem. 2. Compare/contrast a food chain with a food web. 3. What are the three main ecosystem process involved in energy transfer and chemical cycling? 4. What is primary productivity? 5. Define biomass. How is it usually measured? 6. What is the 10% rule? 7. What is ecological efficiency? Why is it so low? 8. Describe the carbon cycle.
WEDNESDAY	The scientific method is the process that scientists use to find answers to their questions. It usually goes like this: 1. Observation – observe something that needs an explanation 2. Question – What is making that thing I just observed happen? 3. Hypothesis – a proposed answer to the question. 4. Experiment – a test to see if the hypothesis is the answer . 5. Analysis- what happened in the experiment 6. Conclusion – did the experiment inform us of anything. Read pp. 4-5 so that you understand a good example of a controlled experiment. How many variables can be tested at one time in a controlled experiment? Why? Design a controlled experiment: Use the following scenario to design you a controlled experiment. Describe the experiment in detail and explicitly define the question, the experimental set up, possible results and their meaning. About 15 years ago, a small group of scientists formed a hypothesis that trans-fat in food leads to heart disease despite the fact that it has no cholesterol. Tran- fat is formed by chemical reactions to make unsaturated fat like corn oil into saturated solid fat at room temperature. Animal fat is naturally saturated, but it contains cholesterol,which is known to cause heart disease. The scientists wanted to run an experiment on rats (common laboratory animals) to see if a diet of trans fat led to significantly more heart disease than a diet of unsaturated fats. The scientists wanted to use corn oil in their experiment because it was the oil most often hydrogenated and turned into margarine; (use regular corn oil, and partially hydrogenated corn oil in your experiment).
THURSDAY	Study for the exam.