

BIOG 002

Ten Tips for Success in Biology

1. To do well in biology courses at Cornell, you must focus on understanding processes and relationships among facts, and on the logical analysis of experimental and observational data, as opposed to the mere memorizing of factual information (though, to be sure, you must also “know the facts”). As you study, ask yourself questions such as these: “How is X different from Y? How is it the same? What is the significance of the differences and similarities?” “If A increases, what will happen to B (and possibly C and)?”, and “How does process X occur? Why does it occur? How is it related to process Y that we studied six weeks ago?”
2. YOU MUST KNOW YOUR LECTURE NOTES COLD. Exams will be based primarily on lecture material. Therefore you should never miss a lecture if you can help it. If you do miss one, or even if you just want to review a particular concept or a whole lecture that you found unclear, then listen to the tape of the lecture -- and take notes. Many students find listening to lecture tapes to be an effective (if time-consuming) method of reviewing the material.
3. Absorbing and understanding the material in your lecture notes requires ACTIVE LEARNING. No amount of passive reading and re-reading can replace active methods of working with the subject matter. Good active learning techniques include: taking notes on your notes (i.e., outlining or summarizing them), writing review questions in the margins of your notes or on separate paper, collaborative learning with one or more study partners, and concept mapping. Testing yourself using old exams and other practice questions (e.g., from the textbook and its study guide) is particularly valuable. REHEARSAL (or practice) is as necessary for success on biology exams (and other exams) as it is for success in sports and the performing arts.
4. Always read the textbook with a specific learning objective in mind; that is, read to answer specific questions or to understand particular topics. Never read just to “check off” the assignment.
5. The figures in the textbook are at least as useful as the written text; study the figures very carefully and make sure you understand them. If possible, look at them before lecture as well as later on (see tip #9).
6. **Boldfaced terms** in the text are particularly important for you to understand. If you highlight the text, do it very selectively. Mechanical highlighting of nearly everything in the text is a waste of time.
7. The same active learning techniques that are valuable for studying your lecture notes are also useful for studying the textbook (e.g., writing questions in the margins of the pages).

8. Try integrating your reading of a particular section of a chapter of the text with your study of your lecture notes. Think of studying as a process of bringing all your resources (especially the lecture notes and the textbook) to bear on a particular topic you need to understand as opposed to a compartmentalized process in which you review your lecture notes at one time and read the text at another.
9. Keep current. Since almost no problem sets are assigned in biology (in contrast to most math and physical science courses), it is fatally easy to let the subject slip during the weeks between exams. You will be amazed at the amount of material you will need to master for each exam; it is nearly impossible to learn it all in a matter of a few days just before the test. Discipline yourself to review each lecture within 24 hours of attending it, and to return to each lecture frequently. If at all possible, at least skim the assigned reading (or read a summary in the study guide) and look at the figures in the text BEFORE the lecture. Reading in detail can be put off until after you've heard the lecture. Your claim that you don't have time to keep up is bogus, because keeping up is more efficient than cramming: you will learn and retain more from repeated exposure to the material (e.g., five 2-hour study periods) over many days and weeks than from a long session of cramming (e.g., one 10-hour period) the night before the exam.
10. Never be too ashamed or too proud to seek help. All of your instructors are here to help you learn, and none of them is going to think worse of you for asking questions, no matter how "dumb" you think the question is. The students whom instructors can't fathom are those who continue to do poorly but never come for help.

These suggestions for studying biology are simply a summary of the advice that most instructors would give to students. Not every instructor would agree totally with every point listed above, and each student has to discover the study methods that work most effectively for her or him. For additional good advice on study skills, time management, and test-taking, watch for workshops offered by the Learning Strategies Center. A good book with many useful tips on successful study of the sciences as well as other fields is *How to Study in College*, by Walter Pauk, who for many years was the Director of the Reading Research Center at Cornell University.

(Lindsay Goodloe, revised 1/22/08)