

**STUDY STRATEGIES for BCH 3033**  
**or**  
**Who Wants a Good Grade in Biochemistry?**

The short and simple is KNOW EVERYTHING and HOW to APPLY CHEMISTRY to BIOLOGY. So, how do you get there? Biochemistry is a challenging course, the exams involve solving problems from data or chemical structures. Not only do you have to know it, you have to know how to use it. This requires constant attention and study way BEFORE the exams.

A note on cramming. Cramming before an exam is NOT LEARNING; the hours spent cramming possess lots of anxiety because the ability to learn at the depth necessary to pass this course can not come from cramming. Students who cram for exams get the lowest grades, it is almost guaranteed.

General Biochemistry uses many concepts and techniques of General Chemistry I and II and Organic Chemistry I and II. If you think you can take Biochem without a grade of C or better in Organic I and II, that is one of the dumbest thoughts you have ever made. Biochemistry uses much of the knowledge you gained in the four semesters of chemistry.

You have to not just gotten by with C's in chemistry courses, you will need to work extra hard to pass Biochem. A good way to get a feel for this is to take the **PreTest**...you have to know how to solve chemical problems. What you learned in General Chemistry and Organic are the tools used in Biochemistry, you need this essential knowledge at your finger tips. If you are weak here, get the ability to use the tools of chemistry BEFORE the biochem course. These tools are easily converting amounts to moles and amounts per volume to molar, ease of knowing how to do and calculate acid-base titrations. What is an equivalent, knowing how to calculate and use  $\Delta G$ ,  $\Delta G^\circ$ ,  $\Delta E$ , and  $\Delta E^\circ$ . You certainly should be able to graph data, we will be doing all sorts of plots when we do enzyme kinetics.

The **PreTest** you can take from the BCH3033 website. There is a file of the answers you can use to check how you did. One of the most important things you can do to become a focused and effective student is to work on your weaknesses....if you just don't understand something, fix it until you thoroughly understand it enough to teach it. You have to be honest with yourself!

This course of General Biochemistry is 33% to 50% more material than you have ever had in one course. The key idea here is to know all this material with the book closed. A general rule is that reading results in about 10% knowledge retention; so reading and rereading is an unintelligent way to study. Simply listening to lectures gets about the same amount of retention, and that alone will result is a terrible grade. So, how can you really get to effective studying? **START** by coming to **LECTURES** as a **SMART** student...read the chapter before lecture so that you know what is there and already have an understanding that can easily be built upon. Not reading the chapters before lecture is coming to lectures stupid. Please don't be stupid.

An old observation is helpful: the simple act of teaching results in highest amount of knowledge retention. Teaching is learning. So, to get to 'the teaching level you have not only have to know the material but also explain it. That is why teaching is such a powerful learning process. To get teaching knowledge you have to continually ask what is the most important concepts, then identify the main concepts of amino acid structure and what are the supporting facts that makes these main concepts. Then, attempt to teach them, at least to yourself. If you do this with clarity, it is because you have thought about them and know they play pivotal roles in establishing the main concepts. Everything the prof has pointed out in lecture as "important" is a central concept that you should know well enough to teach! So, how do you get there? .

Strategy used by "A" students for each lecture:

1. After each lecture make sure you thoroughly understand each and every important concept from that lecture.

a. You can prime yourself by looking through the chapter, particularly the figures before lecture so that when you come to them in lecture they are not foreign.

b. Then the same day of the lecture make a list of the things you don't understand from that lecture. NOW go and get understanding of that *before* the next lecture by going back to the text and reading these areas intelligently not just "reading chapters" but RATHER focused reading to convert material you have questions about to that which you NOW understand and could teach. **THIS IS THE MOST IMPORTANT STUDY AID.** You have to be able to admit to yourself that you don't know about some of those concepts from lecture. There is nothing wrong with not knowing because RIGHT NOW you can work to *know it and know it EARLY.* And by knowing it, you know it with the book and lecture notes closed...you will develop confidence in what you know.

2. Next do the End of Chapter Problems without looking at the answers. If you have difficulty get it resolved NOW, by doing this you are building upon your knowledge. And making problem solving so much easier.

3. Next take out a piece of paper and review the material with the book, notes, etc. CLOSED. To some students this is paper lectures (but this may be the most important you will do), then when finished, check what you did in the lecture with your notes and book to see if you have everything correct. This is a great learning experience. Now you are almost ready for the next lecture.

4. Before the Exam, calmly review the material, do some of the practice problems and tests at the textbook website. Now you don't have to cram and be anxious or get into some psychological frenzy about Biochem. This is because at this point you know you have obtained a good understanding and facility with biochemistry. Further you will most likely observe your classmates who are next to throwing a fit trying to cram. Here is your opportunity to tutor them, because you know it you can now teach it to your fellow students...which is in a real solid way, developing confidence in what you know.

Getting a Good Grade comes directly from effective Learning. The major expense in doing this is *your time*, it is one of the most valuable possessions you have and if you have done 1-4 above it will pay off! Your grade equals time well spent.

**Comments from Students Who Got Good Grades** - comments from student course evaluations.

1. Take a light load with Biochem. This is a heavy duty course, much more than you expect. Be honest with yourself in what you can handle. If you are, it will save you much anxiety and having to repeat the course.
2. Tape record the class - Listen carefully to what the Prof. says - this is what WILL BE TESTED.
3. Go through the notes and figures, make up questions for yourself, when preparing for the test, take your own test. This is the absolute best way to make sure you understand the concepts it will sharpen your attention to details not paid close attention to before.
4. Start reviewing for a test 7 days before the test.
5. Attitude: try not to learn the material just for the tests, it never works. Go in with the desire to get a solid understanding...it will make your life easier when prepping for the MCAT, and in medical school, etc.
6. If you ever have a question or you have missed something in lecture go ASK THE PROF, he taught the stuff - he should know the answer.

**Here's How to get a Low Grade.** See if this is what your strategy is. I hope not!!

1. Come to all lectures unprepared.....it is so much fun to see things you never thought of before and get no understanding of in lectures. Very little of these lectures will be retained and almost no learning will occur. This is the best way to make lectures totally useless.
2. Put off studying to the last minute, say the day before the exam. It is impressive how much material there is! So at this time it is too late to do any critical reading in the text. Just try to memorize and memorize facts, facts you can know much about and facts that won't help you at all in problem solving. Stay up late doing this wonderfully non-productive studying, do it overnight so you will really be messy...it could get some degree of sympathy from your friends. But, then when you flunk and have to repeat the course, you will even get more sympathy.
3. Don't read the Course Policies and later, when you are just about to flunk, see if the Prof is an easy grader...come to the Prof's office to ask for extra credit make sure you say you studied very hard. This will nicely waste more of your time, the Prof give no special deals to individual students.