

BIBC 100: Structural Biochemistry

Instructor: Dr. Jayant B. Ghiara

COURSE SYLLABUS

Course Objectives:

This course focuses on fundamental concepts in Structural Biochemistry. We will take an integrated approach towards understanding the scientific principles that govern the structure and function of biological macromolecules, including protein conformation and function; enzymatic catalysis, and allosteric regulation, lipids and membranes, membrane channels, signal transduction, nucleic acids, DNA protein interactions, protein-protein interactions (mainly in the immune system) and structure-function relationships using examples from viruses. I wish you the best!

Text:

Lehninger Principles of Biochemistry, 5th edition
D. Nelson and M. Cox
W. H. Freeman and Company, 2008

Other book I highly recommended:

Biochemistry: A Short Course, First Edition
John L. Tymoczko, Jeremy M. Berg and Lubert Stryer
W. H. Freeman and Company, 2010

Websites:

1. Text website: <http://bcs.whfreeman.com/lehninger/>
2. Website for Tymoczko et al., <http://bcs.whfreeman.com/tymoczko1e>
3. Very useful website (a must read): <http://publications.nigms.nih.gov/structlife/>
4. Class Website (WebCT): For class related materials, access WebCT at <http://webct6web.ucsd.edu> using your University username and password. Please check it frequently for announcements. Please post all class related questions on the discussion board on WebCT. It will be divided into sections according to lecture numbers (Lecture-1, Lecture-2 etc.) so that the TAs can answer questions effectively and everyone can benefit from the discussion.

Lectures: Tu Th, 8:00-9:20 AM, in the Price Theatre as per the order of topics listed on page 5. Printable copies of PowerPoint slides will be posted in pdf format, on WebCT. I shall try to post these materials before each class whenever possible. These files serve only as a guide and often, the presentation in class will contain additional material (copyright issues may prohibit the posting of some slides). You may be tested on anything and everything presented in class. This will include topics and details not necessarily covered in your text and/or on the posted PowerPoint slides, so please plan on attending the lectures if you want to do well! *Your lecture notes are your study guides for the exams.*

TA Discussion Sections and Office Hours: For Fall 2010, we have some highly qualified TAs ready to help you ace this course. The TAs will lead 50 minute sections every week and also hold office hours

starting Sep 27. This should provide ample opportunity for you to seek help and get clarifications. Contact details, section times and TAs' office hours and locations will be posted on WebCT by Sep 25. Attendance at sections is required and all students enrolled in this class should sign up for a section at <http://sections.ucsd.edu> before 6 pm on Sunday, Sep 26. Please check WebCT for detailed instructions. The TAs will post their office hours and locations on WebCT. **IF YOU DO NOT SIGN UP FOR A SECTION YOU WILL LOSE TWO POINTS. NO EXCUSES. PLEASE DO NOT EMAIL ME OR BEG FOR THESE POINTS AFTERWARDS. JUST DO IT! ☺**

For Fall 2010, 5% of your grade depends on active and regular participation in sections, as determined by your TA. If you miss a section, you may make it up during your TA's office hours. Please arrange this directly with your TA.

The lectures focus on concepts. In sections you will not only review the concepts covered in class but also put in considerable effort in order to develop your problem solving skills. You are responsible for attempting all the questions at the ends of the textbook chapters we cover in class. These will be very important for your success in exams.

When attempting the end-of-chapter exercises and problem sets, use the Solutions and Problem-Solving Manual and any additional materials (animations!) on the text website *before* seeking clarifications during discussion sections. This way you will have a good idea of topics that need further explanation and could seek the help of your TA to fill in any gaps in understanding the material

Exams: The score distribution for exams is as follows:

Exam 1 and Finals Part-I (each accounting for 45% of your final score)	90%
Satisfactory section participation and attendance (greater than 75% attendance)	5%
Finals Part - II	<u>5%</u>
Total	100%

Exams will consist of multiple-choice, true/false questions and may also include questions that require short answers.

The Finals Part-II will be based on student group-presentations to take place on Tuesday, December 7. Each group will consist of 4 or 5 students, to keep the number of presentations manageable for our allotted time. **Attendance at the finals Part-II is mandatory** but doing group-presentations will be **optional** (but highly recommended) for students who have achieved an A or A+ grade and who wish to demonstrate their mastery of the subject by researching and presenting a topic of their choice, selected from an article in the news media or a magazine like Scientific American. The goal is to intelligently analyze (using what you have learned in class), discuss and critique whatever you have found for accuracy and present the gist of what you have learned to the class. You will be surprised at what you find out there! Careful analysis of both good and bad articles can be an educational experience (as long as you can tell which is which!). Imagine yourself sitting in class and listening to the presentations. It is good to hear something exciting and relevant to the class and discuss the implications to medicine and/or society when possible but you do not want to be bored with too many unnecessary details! We have only about 2 hours of presentation time before the quiz so each group will have only about 10 minutes to present. There should be NO experimental details like, "5mls of a 1 mM Sodium acetate buffer was then added and the mixture was

incubated at 72 degrees for 12 minutes”. Your goal is to present something big and worthy of consideration for smart UCSD students near the end of their Structural Biochemistry course! I will be much more likely to consider requests for recommendation letters from students who have done presentations as exam grades are not always enough to evaluate a student’s abilities. The Final Quiz will be based on these presentations, which will bring together concepts learned throughout the quarter. **The Finals Part-II is mandatory for everyone enrolled in the class.**

Exams and Grading policies:

1. Please note that exams will end promptly at the end of the allotted time. You should plan on arriving on time. No time extensions can be granted for late arrivals. Further, in order to preserve the integrity of testing, no one will be admitted to the classroom for an exam 30 minutes after it has begun, **or** after the first student has finished the exam and left the classroom, *whichever occurs earlier*, no matter what the excuse for showing up late. Failure to take the exam at the assigned time and place will result in a grade of zero. If you are not admitted to the exam, please refer to #2 below for requesting an oral exam.
2. Extraordinary circumstances (hospitalization) preventing you from taking an exam at the scheduled time must be submitted to Dr. Ghiara in writing and must include official documentation in support of the excuse (doctor’s note). *If the excuse is accepted*, the make-up will most likely be an ORAL exam given by Dr. Ghiara (but the exact format will be at his discretion).
3. Your pens and an ID card (student or driver's license) are the only personal items you may have with you during the exam (**Please remember to turn cell phones off!**).
4. All questions must be answered in ink. Absolutely no re-grading requests can be accepted if you write your exams with pencils.
5. Cheating will not be tolerated and will result in a failing grade for this course. Further, the full extent of disciplinary actions as stated in UCSD's policy on Academic integrity will be implemented. Please review the policy at: <http://www-senate.ucsd.edu/manual/Appendices/app2.htm> . Actions may be taken for looking at your neighbors' answers, talking or using your cell phone in any way during the exam, failure to establish your ID when turning in your exam, or altering your exam prior to submission for re-grading.
6. Requests to reconsider any grading must be submitted **in writing** along with your exam to one of the TAs *within five days of the exam return date*. Absolutely no requests for re-grading will be accepted after five days *from the time graded exams are available for pickup* (not after you pick them up, if that is later than when the exams were first handed back). Please do not request personal meetings to “discuss grades” as these meetings cannot be granted. Please be advised that exams will be photocopied, front and back, before they are returned to you. Thus, do not alter ANYTHING on an exam you are submitting for re-grading. Any inconsistencies will be considered a breach in academic honesty and will be grounds for failure of the course.
7. Final grades will be determined at the end of the course, based on exam scores, section-attendance scores awarded by the TAs and the final quiz. Letter grades will be assigned as follows:

A = 90-100	90-92 = A-	93-97 = A	98 and above = A+
B = 80-89	80-82 = B-	83-87 = B	88 and 89 = B+
C = 70-79	70-72 = C-	73-77 = C	78 and 79 = C+
D = 60-69			
F = 0-59			

Classroom Etiquette: You are encouraged to ask questions and participate in class discussions but all your comments must be directed to the class. Please turn off your cell phones and do not engage in conversations with other students when the instructor or any other student is addressing the class. Given

the large class size and the short duration of the class, please be considerate towards other students by not walking in and out of the classroom for water/restroom breaks while the class is in session, unless a medical condition warrants it. If you must leave early, please situate yourself in an aisle seat at the back of the class so that any disruption is kept to a minimum.

How to do well in this course:

1. Read the assigned pages in the text before class. Diagrams and figures are not just “pictures”. Carefully study figures and figure legends to make sure you understand what is presented.
2. There is no substitute for attending lectures as I may draw from many different sources and knowledge built over a very long time for the presentation.
3. Participate in class. Teaching and learning go hand-in-hand and your active participation will ensure optimal learning. I will not know what clarifications you need if you don’t ask!
4. Attend discussion sections. Go thoroughly prepared to discussion sections and to exam review sessions. The better prepared you are for these sessions, the more you will get out of them.
5. Be aware that the Structural Biochemistry you are learning is not just in the books but actually “happening” in and around all of us. It is exciting to note that these sometimes elegant, sometimes complex processes are at work making us who we are! Welcome to the course. Learn as much as you can from your TAs and me, and GOOD LUCK!