Chem. 430  Introduction to Biological Chemistry

Spring 2015
Genome Sciences Building (GSB) room 100
T,R 9:30 am

Prerequisites:
Chemistry credit for all courses and labs including: chem101, 101L, 102, 102L, 261, 241, 241L, 262 (262L is NOT a prerequisite for this course)

Instructor:
Brian P. Hogan, Ph.D.
Office: Kenan Labs room B830
Email: hoganb@email.unc.edu ****note: email is the best way to contact me****

Office hours:
Monday: 9:30am-11:30am; Wednesday 2-3pm or by appointment. Email me if you cannot make my scheduled office hours. Note: I will always make up office hours if I have to cancel for illness and I will add open hours to the set schedule as the semester progresses.

Recommended Text: Principles of biochemistry, Lehninger, Nelson, Cox, (5th ed). Any previous edition of this text will suffice and can be used, but it is your responsibility to know the differences in the chapter order, end of chapter questions, etc. These are great texts and can be purchased online inexpensively (Voet, Voet, and Pratt, “concepts of biochemistry”, or Lehninger, et. al. “principles of biochemistry” 4th or 5th ed.”. Lehninger is in its 6th edition and the Custom 5th simply omits chapters we don’t cover in this class. Hence, the “old” 4th or 5th edition are great substitutes and will save you $.

Online course access: I will be posting “skeleton notes” and powerpoint slides using SAKAI this semester. You can access this site by visiting “sakai.unc.edu” and logging in with your ONYEN. If you are not a UNC student you will need to see me to make arrangements to get access to this site. Please check this site daily.

Evaluation: Dates are subject to change at instructor’s discretion.

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<tr>
<th>Exam 1</th>
<th>February 3rd</th>
<th>(30%)</th>
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<tr>
<td>Exam 2</td>
<td>March 5th</td>
<td>(30%)</td>
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<td>Exam 3</td>
<td>April 9th</td>
<td>(30%)</td>
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<td>Final Exam</td>
<td>See registrar’s exam calendar</td>
<td>(40%)</td>
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*Your grade:* All students must take the cumulative final exam. The final exam score will count towards 40% of your final grade. I will drop your lowest grade for Exam 1, 2, or 3, and the remaining two scores will each account for 30% of final grade. If you miss a semester exam for any reason, I will drop that score and automatically use the remaining two in the final grade calculation. Hence, there will be no early or make-up exams. You need to pass the final with a grade of 55% or higher to pass chem 430.

**Permanent grades are defined as follows** (from undergraduate course bulletin):

A: (90-100%) Mastery of course content at the highest level of attainment that can reasonably be expected of students at a given stage of development. The A grade states clearly that the student has shown such outstanding promise in the aspect of the discipline under study that he/she may be strongly encouraged to continue.

B: (80-89%) Strong performance demonstrating a high level of attainment for a student at a given stage of development. The B grade states that the student has shown solid promise in the aspect of the discipline under study.

C: (70-79) A totally acceptable performance demonstrating an adequate level of attainment for a student at a given stage of development. The C grade states that while not yet showing any unusual promise, the student may continue to study in the discipline with reasonable hope of intellectual development.

D: (60-69) A marginal performance in the required exercises demonstrating a minimal passing level of attainment for a student at a given stage of development. The D grade states that the student has given no evidence of prospective growth in the discipline; an accumulation of D grades should be taken to mean that the student would be well advised not to continue in the academic field.

F (below 60%) For whatever reasons, an unacceptable performance. The F grade indicates that the student’s performance in the required exercises has revealed almost no understanding of the course content. A grade of F should warrant questioning whether the student may suitably register for further study in the discipline before remedial work is undertaken.

• Responsibilities of Students and Teachers. Just as students ought to expect instructors who are knowledgeable and well prepared, *so should teachers expect their students to be motivated, eager to learn, and actively engaged in class. It is the responsibility of teachers to make their courses serious intellectual experiences for themselves and for their students. It is the responsibility of students to take seriously the courses in which they enroll. Good teachers need good learners.*

  *Students should understand that they are members of a community of scholars, and membership in such a community is not a passive activity.* To be full participants in the educational community and to maximize the educational value of a class, preclass preparation is necessary. Proper class preparation involves obtaining course materials as they are needed and completing assignments as they are due. Full
participation in a class requires regular attendance, arriving on time and remaining until class conclusion, and active involvement in the work of the class. Students should also consider the extent of their own involvement in a class in assessing the educational value of a class.

**Integrity**

Lying, cheating or stealing will not be tolerated. During examinations, the only electronic device that might be allowed is a calculator. All other electronics must be stowed. During class, texting, twittering, Facebooking… is disrespectful, please refrain from e-communicating.

You are bound by the University Honor Code. The following statement was provided by the office of the Vice Chancellor and Provost and applies and is the policy for this course:

“All work done in this class must be carried out within the letter and spirit of the UNC Honor Code. You must sign a pledge on all graded work certifying that no unauthorized assistance has been given or received. You are expected to maintain the confidentiality of examinations by divulging no information about any examination to a student who has not yet taken that exam. You are also responsible for consulting with your professors if you are unclear about the meaning of plagiarism or about whether any particular act on your part constitutes plagiarism. Please talk with the professor or your T.A. if you have any questions about how the Honor Code pertains to this course.”

**Special Needs**

Please contact an instructor as soon as possible to discuss any documented special needs. We will do everything possible to make accommodations for your success in this class. The website for the Academic Success Program for Students with Learning Disabilities can be found at [http://www.unc.edu/depts/lds/](http://www.unc.edu/depts/lds/).
Goals/Objectives of the Course:
1) You will learn to think beyond memorization by using higher order thinking skills to solve genetic/molecular biology problems given to you inside and outside of class. This is not high school; we know any UNC Chapel Hill information! Let’s only acquire to use this ways (such as application and This is the beginning of thinking like a scientist. You will plenty of practice lecture, recitation, and homework to hone these higher thinking skills.

2) Despite not having a lab, you think about laboratory techniques and practice scientific techniques on paper. For example: 1) you should be able to theoretically design an experiment to determine the tertiary structure of a protein or 2) hypothesize the major control points in a metabolic pathway.

Important dates to remember:
Visit the registrar’s website for a complete list of important dates (i.e. drop/add deadlines, final exam schedules, etc). registrar.unc.edu → calendars → exam schedule.

Policy adopted by the faculty of the Department of Chemistry on September 9, 1977:

"Since all graded work (including homework to be collected, quizzes, papers, mid-term examinations, final examinations, research proposals, laboratory results and reports, etc.) may be used in the determination of academic progress, no collaboration on this work is permitted unless the instructor explicitly indicates that some specific degree of collaboration is allowed. This statement is not intended to discourage students from studying together or working together on assignments which are not to be collected."
Chem 430 Topics: **note:** if you are using the 4th edition, consult one of my old syllabi for topics and chapters (online at: www.chem.unc.edu)

**TOPIC**

Biochem. Intro/ Water

- Amino Acids/Peptide bond
- Protein Architecture
- Protein purification
- Structure/function of proteins
- Enzymes: catalysis and kinetics
- Carbohydrates
- Lipids and membranes
- Metabolism – Glycolysis
- Glycogen metabolism
- TCA cycle
- Oxidative Phosphorylation
- Nucleic Acids
- DNA replication
- Transcription and Translation

**Note:** We will cover these topics in a much detail as possible. Be aware that I expect you to read the sections/chapters in your text that correspond to the material we cover in class. You will be held responsible for this material.