

**Syllabus**  
**CHEM 470 / BIOS 470X    CHEM 570 / BIOS 570X**  
**Summer 2012**

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**Office Hours:** Immediately after class M-Th.

**Text Book:** *Principles of Biochemistry*, 5<sup>th</sup> ed., Horton et al. (4<sup>th</sup> ed. will suffice).

**Companion web site** (provided by the publisher): <http://www.prenhall.com/horton>.

This course will tentatively survey the first nine chapters of the textbook (schedule provided below), which are primarily focused on molecular structure and properties, kinetics, and bioenergetics. All course materials will be distributed on Blackboard. These materials include learning objectives, PowerPoint slides, and modules. Modules are very important because they often include “bridge” activities that encourage higher level skills. Students should download and review all relevant materials before class sessions, as they provide the framework for most in-class lecture and activities.

**Responsibilities of all students:**

There are four exams. Question format for the exams is provided in the learning objectives and module files for each chapter. I am not much interested in your ability to memorize and regurgitate low-level responses, although some of this is necessary to develop the requisite language. Success will instead depend on your ability to develop and apply core concepts to various problems, including ones that you may have not seen before. Some exam questions may require a two or three sentence written response that must be technically accurate (and reflect reasonable proficiency with English grammar). Other exam questions may require a calculation that is logically presented, a graph with appropriate labels, or a clear structural formula showing correct valence and formal charge. Accordingly, discussion and practice of the objectives and module problems will be an important in-class emphasis. The level-500 students will be specifically responsible for building wikis on Blackboard (see next section) that provide correct responses to the objectives and module problems. Please be aware that timely review and completion of all materials (this includes the wikis) outside of class will be essential to success in this course, particularly given the rapid summer pace. Those of you that rely on memorization as your sole learning strategy will likely wait until two or three days before the exam to start studying. At that point, it will likely be too late to make the appropriate connections or to learn the concepts needed for success on the exams. Again, download and review relevant chapter resources before coming to class. Level-500 students must work diligently to construct the chapter wikis, as I want these to become essential support resources for all students and a foundation for in-class discussion. The Companion Web Site for the textbook (linked above) provides low-level online multiple-choice quizzes for each chapter that may prove helpful for developing some of the necessary language needed for this course, but your primary focus should be on mastering the learning objectives and module problems, as these define the higher level format of the exams.

**Responsibilities of level-500 students (those registered for CHEM 570 or BIOS 570X):**

To comply with university policy, students with a bachelor's degree (this includes both Students-At-Large and Graduate Students) will be required to demonstrate increased proficiency in the areas of general, organic, and biological chemistry. Therefore, in addition to the exam requirements for all students, level-500 students must also develop chapter wikis on Blackboard that are aligned with the posted learning objectives for each chapter. The objectives are aligned with the Horton et al.

textbook, and can be used as a resource to develop the wiki. Web links may be provided in the learning objective documents as additional resources. Participation of each level-500 student in the building of each wiki will be tracked by instructor tools that are part of Blackboard. Timely participation and final accuracy will be important criteria in deciding each student's score. To improve efficiency, it is recommended that students periodically meet as a group (or at least communicate regularly) to allocate workloads, such as objectives allocations for each chapter. Although the level-500 students are responsible for editing each wiki, I strongly encourage all students to check for overall accuracy and clarity, including the undergraduate students and to make any discovered issues part of class discussions. In particular, level-400 students are encouraged to add comments (but not edit) to identify areas on each wiki that require more clarity or that may have errors. The goal is for each chapter wiki to become a valuable whole-class resource that will increase the number of students that are able to achieve success.

**Tentative course schedule for the summer 2012 term:**

**For a detailed curriculum listing for each chapter, please review the respective learning objectives and module files posted on Blackboard.**

<p><b>Exam 1: Chapters 1 and 2 Thu, June 28</b></p> <ul style="list-style-type: none"> <li>• Introduction to Biochemistry</li> <li>• Water</li> </ul>	<p><b>Exam 3: Chapters 5, 6, 7 Thu, Jul 26</b></p> <ul style="list-style-type: none"> <li>• Properties of Enzymes</li> <li>• Mechanisms of Enzymes</li> <li>• Coenzymes and Vitamins</li> </ul>
<p><b>Exam 2: Chapters 3 and 4 Thu, Jul 12</b></p> <ul style="list-style-type: none"> <li>• Amino acids and Primary Structures of Proteins</li> <li>• Proteins: 3-Dimensional Structure and Function</li> </ul>	<p><b>Exam 4: Chapters 8 and 9 Thu, Aug 9</b></p> <ul style="list-style-type: none"> <li>• Carbohydrates</li> <li>• Lipids and Membranes</li> </ul>

**Grading Policy:**

- Level-400 students:  
Exams, which are primarily based on learning objectives and module problems, will be weighted as follows: The lowest exam score will weight 10% and the remaining three exams will each weight 30%. A pattern of thoughtful wiki comments (i.e. noting errors, or identifying areas that require clarity) throughout the semester can add as many as 5 points to each exam score. Comments must be substantive and informed, not simply "I don't understand this".
- Level-500 students:
- Each exam weights 17%; all wiki development weights 32%. There are no other weighting options. Timely, regular participation (monitored using posting times and percent contribution), and overall accuracy and clarity of posted responses, will determine the final wiki score.
- All students:  
Letter grades will be assigned according to the following scale: A: 88 –100, B: 77 – 87, C: 65 – 76, D: 54 – 64, F: < 54. **Makeup exams are not an option**, except in the event of a validated medical emergency or a professional conflict (e.g. job interview). Where possible, a student must notify the instructor of a legitimate scheduling conflict at least two weeks in advance of the exam date and provide proof of the conflict. *Summer vacation or personal plans are not valid reasons for missing an exam.* There will be no extra-credit, other than provisions stated in previous sections, to compensate for poor performance on the exams.

**Accommodations:**

Special accommodations are available through the CAAR office ([www.niu.edu/caar](http://www.niu.edu/caar)) for students with disabilities. Eligible students must present the instructor with the requisite CAAR forms, and in accordance with CAAR rules and policies, before any exam accommodation will be made.