

## **Chemistry 464: General Biochemistry II; Fall Semester, 2009**

Instructor: Timothy L. Born

Meeting times: MW 3:00 – 4:15

Class room: Thompson Hall, Room 116

Office Hours: MW 1:30 – 2:30 (Fairfax), others by appointment

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Required Text: Lehninger, Principles of Biochemistry, 5<sup>th</sup> Edition, by Nelson and Cox

Additional course material will come from handouts posted on Blackboard

### ***Course Description***

This is the second semester of a two-semester general biochemistry sequence which will introduce the student to the rapidly growing subject area of biochemistry. Students must have completed CHEM 463 or BIOL 483 with a minimum grade of C before they will be allowed to take CHEM 464. We will begin by discussing transport across membranes and then move into a detailed look at the complex signaling systems used by cells, including hormones, heterotrimeric G-proteins, and kinase systems. This will be followed by an examination of the biological roles and mechanisms of a number of historically and clinically pertinent enzymes. This section will rely on handouts as well as the required text. We will then consider three of life's most important processes: DNA replication, transcription, and translation. The semester will finish with a study of antibiotics and resistance, a topic of current interest in biochemistry. In the final four lectures of the class we will rely less on the required textbook and more on assigned readings drawn from the current research literature. A major goal of this class is to introduce students to the important biochemistry research topics of today.

Biochemistry is a large and complicated subject with a unique language that makes it even more difficult. It takes time and dedication to earn a good grade in this class. We will have occasional "pop" quizzes on the material assigned for the day's lecture as an incentive to read ahead of class. The take home message is that you should not expect to earn a "C" in this class simply by showing up every day, and you should not expect to pass the class if you do not show up every day. It is important that each student commit to spending significant hours outside of lecture reviewing the material and working through problems. **If you are unable to make this commitment you are unlikely to perform well in the class and may want to consider taking it at another time.**

That being said, I expect this to be a very enjoyable class for everyone involved. It's an opportunity to learn about some of the most interesting aspects of life and I hope you'll gain a greater appreciation for how complex human beings, and simpler organisms, really are. It's easy to lose perspective when looking at molecular details, but throughout this class I hope to put in context just what a wonder life really is.

If you wish to get the most out of the class and earn a grade you can be proud of you should consider the following study tips:

1. Read the assigned chapters or handouts before coming to class. You might be surprised how much easier it is to follow and understand the material if you are at least somewhat familiar with it from the beginning.
2. Work through problems early and often, and solve them before looking up the answers in the back of the book. You will quickly find out what you do and do not know when you begin answering problems. You might even find a similar problem on an exam.
3. Study with fellow students. Get together with your classmates regularly to go over what was covered in class that day or week and make sure everyone understands the material.
4. Ask questions. Don't be afraid to raise your hand in class and ask for clarification of something just covered. Don't be afraid to talk to your instructor after class about something you don't understand. I like nothing better than helping a student learn to love biochemistry (except for mint chocolate chip ice cream).

If you find yourself having trouble with the material covered in class please come and talk to me as soon as possible. If these issues are addressed right away it is often possible to make appropriate changes that result in significant improvement. It is the responsibility of the student to initiate this conversation, however, so don't be shy.

The goals of this course are:

1. Expand on the material covered in the first semester of general biochemistry.
2. Illustrate how the chemical principles learned in general and organic chemistry apply to biological situations.
3. Bring each student to a general understanding of and appreciation for the complexities of life and the ingenious ways that are used to solve intricate problems.
4. Introduce the student to a major area of current research in biochemistry.

If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 993-2474. All academic accommodations must be arranged through that office.

### ***Grading and Examination Policy***

The grading for this course will be based primarily upon the three in-class exams and one final exam. The final exam will not be cumulative. The exams will cover the material discussed in lecture as well as the assigned reading and will be overwhelmingly, although not necessarily exclusively, short answer/essay. Each exam will be worth 100 points toward your final grade. I reserve the right to ask questions on material assigned in the reading but not covered in lecture. Students will be expected to memorize pertinent information and be able to apply concepts learned in class to hypothetical situations. Quizzes will also count toward the final grade, but the total number of points they contribute will be determined by the number of quizzes given.

A grade of 0 (zero) will be assigned if an exam or quiz is missed or a homework assignment is not turned in on time. All points will be combined and the percentage determined by dividing the number of points received by the total number of points available. No extra credit will be given apart from designated exam questions.

An absolute grading scale cannot be determined until all scores have been compiled and evaluated. As a general rule, however, the following scale will be closely followed:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
<60%	F

A plus (+) or minus (-) may be added to a grade at the instructor's discretion.

### ***Honor Code***

All students are expected to adhere to the University Honor Code: "Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work." If you are caught cheating on an exam you will have your exam taken away and you will be escorted from the room. The violation will be reported to the Honor Committee and you will be prosecuted to the fullest extent possible.

**Note:** Cell phones and beepers are not allowed in this class. If they go off, you go out the door.

### ***Important Dates***

- First day of classes: August 31
- Last day to drop with no tuition liability: September 15
- Last day to add classes: September 15
- Last day to drop with no academic liability: October 2
- Columbus Day Recess: October 12 (we meet on the 13<sup>th</sup>)
- Thanksgiving Recess: November 25-29
- Last day of classes: December 12
- Final Exam: Monday, December 14, 1:30 – 4:15