

**General Biochemistry I Syllabus**  
**Chem463/563, Biol483/583**  
**4 Credits**

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Required Text: Lehninger Principles of Biochemistry, 6<sup>th</sup> Ed., D. Nelson and M. Cox  
You must also buy an access code for Sapling Learning Homework Portal and enroll in Biochemistry I.

**Prerequisites: Completion of BIOL 213 and CHEM 313 with a C or better**

Course Description: This is the first semester of a two-semester general biochemistry sequence that will introduce the student to the rapidly changing subject area of biochemistry. We will begin with a brief introduction to biochemistry, followed by an in-depth look at the structure, function, kinetics, and regulation of enzymes. After developing an appreciation for these molecular machines, we will begin to explore complex cellular metabolic processes. We will then later discuss the biochemical basis of cellular signaling and transport.

Course Goals:

1. Introduce the student to the language of biochemistry.
2. Illustrate how the chemical principles learned in general and organic chemistry apply to biological situations, thus marrying together chemistry and biology.
3. Bring each student to a general understanding of and appreciation for the major biomolecules.
4. Have an understanding of the major metabolic pathways and their regulation and interaction.
5. Develop an awareness of how biochemical principles apply to various cross-disciplinary areas of research.

Biochemistry is a broad and complicated subject with a unique language, which adds to the difficulty. You should be forewarned that it takes time and dedication to earn a good grade in this class. You should not expect to pass 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.**

Sapling Learning Homework: We will be using the Sapling Learning website for homework submission (saplinglearning.com). There will be a homework assignment associated with each chapter. Please note and pay attention to due dates. No late assignments will be accepted. Each homework assignment should take about an hour if you have read and understand the assigned material. Any changes to due dates will be announced in class and via Blackboard.

Grading and Examination Policy: There will be four in-class exams. The in-class exams will utilize both multiple choice and short answer questions. The exams will cover the material discussed in lecture as well as the assigned reading. Each exam will be worth 100 points. I reserve the right to ask questions on material assigned in the reading but not covered in lecture.

Quizzes or in-class problems may be given. They will not always be announced in advanced. Make-up quizzes will not be given and a grade of “0” will be assigned if a quiz is missed.

Grading (463/483)

Exam 1	21.25%
Exam 2	21.25%
Exam 3	21.25%
Exam 4	21.25%
Sapling Learning Homework	10%
<u>Quizzes/problems</u>	<u>5%</u>
	100%

Plus and minus grades are assigned (A+, A, A-), however, an absolute grading scale will not be determined until all scores have been compiled and evaluated. As a general rule, the following scale will be followed: 97-100= A+, 93-96.5=A, 90-92.5=A-, 87-89.5=B+, 83-86.5=B, 80-82.5=B-, 77-80=C+, 73-76.5=C, 70-72.5=C-, 60-69=D, below 60=F

Students in CHEM 563/BIOL 583: You will be responsible for writing four paper summaries over the course of the semester. You will turn in one summary on each exam date. A grading rubric and the paper you are responsible for reporting on will be posted on Blackboard. Your overall grading scheme will differ from 463/483. Each exam will account for 17% of your overall grade and the paper summaries will count for the final 17%.

Attendance: 5 percent of the course grade is derived from in-class quizzes/problems. There will be no make up opportunities if you miss these exercises. Students with an excused absence (sick with a doctors note, death in the family, religious observance) should contact me before missing class/exams to discuss your options. In the event of an illness, you must also present a doctors note **explicitly stating** that you were too ill to take the exam. **Car/transportation trouble, traffic, routine doctors appointments, vacations, and any avoidable conflicts are not considered excused absences.** Excused absences are at the discretion of the instructor.

Snow days: In the event of University wide class cancellation, we will follow instructions from the administration for make-up days. If the cancellation falls on an exam date, the exam will be given at the next scheduled meeting.

Honor Code: GMU is an Honor Code university; please see the University Catalog for a full description of the code and the honor committee process. Academic integrity is taken very seriously and violations are treated gravely. You may not have any electronic

devices other than a non-graphing calculator (if necessary) during exams and you also may also not change or check your exam after leaving the room. **No grade is important enough to justify academic misconduct!!!!**

Email: Students must use their MasonLive email account to receive important University information, including messages related to this class. See <http://masonlive.gmu.edu> for more information.

Blackboard: Lecture slides in draft form will be posted to Blackboard prior to class. You may want to print them out to take notes on detailed figures and diagrams. After lecture, I will post an updated copy. Grades will also be posted to Blackboard in Grade Center. Please make sure your grades are up to date and accurate. Notify me immediately if you notice any discrepancy or missing grades.

Electronic Device Etiquette: Electronic devices (laptops, tablets, phones, etc.) should not be out during class. I reserve the right to ask you to leave if you do not comply with this policy. If you choose to voice record lecture, you may do so, but you do not have permission to distribute or share your recordings. They are for personal use only.

Students with Disabilities: Students with physical or learning disabilities should contact the Office of Disability Services for specific information and assistance regarding their needs. If you have a documented disability that requires accommodation, you must meet with me in the first week of class to discuss your accommodations and their implementation. Chemistry faculty and staff work cooperatively to assist students with disabilities with their educational objectives.

Office hours/email tips: You are encouraged to visit office hours and I am always willing to help students who seek out assistance. However, please do not come to my office without well thought out questions. Be prepared to show me the work you have already done so we can identify where you are having problems.

Your learning assistant will hold office hours for help with Sapling Learning. His office hours will be announced in class and via Blackboard.

# General Biochemistry I

Text: Lehninger Principles of Biochemistry, 6<sup>th</sup> Ed.

Lecture		Reading
1	Biochemistry Introduction	1.1-1.4, 13.2
2	Water and Buffers, Amino Acids	2.1-2.5
3	Amino Acids, Peptides, and Proteins	3.1 & 3.2
4	Protein Structure	4.1-4.3
5	Protein Function	5.1
6	Enzyme Kinetics	6.1-6.3
7	Enzyme Kinetics (continued)	6.4-6.5
	<b>Exam 1</b>	
8	Carbohydrates	
9	Nucleotides and Nucleic Acids	7.1-7.3
10	Lipids	8.1-8.4
11	Membranes	10.1-10.3
12	Transport	11.1-11.2
13	Biosignaling	11.3
14	Biosignaling	12.1-12.4, 12.6, 12.8
	<b>Exam 2</b>	
15	Bioenergetics, Intro to Metabolism	13.1-13.4
16	Glycolysis	14.1-14.3
17	Gluconeogenesis	14.4-14.5
18	Regulation	15.1-15.3
19	Regulation Continued	15.4-15.5
	<b>Exam 3</b>	
20	Citric Acid Cycle	16.1-16.3
21	Fatty Acid Oxidation	17.1-17.3
22	Lipid Biosynthesis	21.1-21.4
23	Amino Acid Degradation	Chapter 18
24	Oxidative Phosphorylation	19.1-19.3
25	Hormone Signaling and Integration of Metabolism	Chapter 23
	<b>*Exam 4- Final Exam Period</b>	