

General Biochemistry I Syllabus
Chem 463/563-Biol 483/583
4 Credits

Instructor: Megan Erb

Course Meeting Time: 1:30-3:20 pm Tuesdays and Thursdays

Horizon Hall 2014

Please check the schedule and Blackboard for your group assignment and in person days.

Email: msikowit@gmu.edu

Office Hours: Wednesday 9-10 am, Thursday 11 am-12 noon, otherwise by appointment

Required Text: Lehninger Principles of Biochemistry, 8th Ed., D. Nelson and M. Cox

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

A “C” or better in this course is a prerequisite for several upper level CHEM courses. Please consult your course catalog for more details.

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:

The goals of this course are:

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 the modules reviewing the material, reading, 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.**

Grading and Examination Policy: There will be two midterm exams and one cumulative final exam. Exams will be multiple choice.

<u>Grading (463/483)</u>	
Exam 1	20%
Exam 2	20%
Final Exam	30%
<u>In class participation/problems</u>	<u>30%</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

Attendance: This class will be conducted in a “flipped” manner. You will be expected to watch videos one day a week and come to class the other. You will be assigned a group (A or B) and should only come on your assigned day. If you are ill or otherwise unable to complete assignments/exams, you must contact the instructor immediately. Pre-approval is required if you need to switch groups. All excused absences are at the discretion of the instructor.

Honor Code: GMU is an Honor Code university; please go to <https://oai.gmu.edu/mason-honor-code/> for a full description of the code and the honor committee process. You agreed to follow the honor code when you applied to GMU. Academic integrity is taken very seriously and violations are treated gravely. You may not have any electronic devices out during exams (no calculators, phones, smart watches, etc.). You must complete the exam in one sitting and cannot get up and leave the test before submitting it. A first-time sanction recommended for honor code violations will be an F in the course. The second-time sanction recommendation will be suspension.

No grade is important enough to justify academic misconduct!!!!

Students in CHEM 563/BIOL 583: You will be responsible for writing three paper summaries over the course of the semester. You will turn in one summary on each exam date (via Blackboard). 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 paper summary will be 5% of your grade, exams 1 and 2 will be 15% each, and the final will be 25%.

Email: Students must use their GMU email account to receive important University information, including messages related to this class. I will only respond to emails from official GMU email addresses. I try to be accessible to students but also believe in work/life balance. I will try to email you back as soon as I can. If you have not heard

back from me within 48 hours, assume I did not get your email (or it likely got accidentally marked as read) and please reach out again.

Blackboard: This class will be administered through Blackboard. You should become familiar with this platform and how to navigate it. 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.

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.

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking: As a faculty member, I am designated as a “Responsible Employee,” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing titleix@gmu.edu.

Diversity: The GMU Department of Chemistry and Biochemistry promotes and maintains an equitable and just work and learning environment. We welcome and value individuals and their differences including race, economic status, gender expression and identity, sex, sexual orientation, ethnicity, national origin, first language, religion, age, and disability.

In-class participation and problems: 30% of your grade will be based upon in-class participation and assigned problems. Some problems may be graded for correctness, while other will be graded on completion and participation.

Flexibility: As we navigate our way through a historic pandemic, the university may change requirements, policies, or instructional mode at any time. Some of us may be required to quarantine at some point in the semester or need to take care of a loved one. We will address each challenge and change as it comes. With open dialogue and working together, we will try to maximize learning while remaining as safe as possible.

General Biochemistry I Schedule for Fall 2021

Text: Lehninger Principles of Biochemistry, 8th Ed.

Group assignments can be found on Blackboard.

	Group A	Group B
Tuesday, 8/24	In Class: Introduction	
Thursday, 8/26	Watch: Module 1 & 2 videos	In Class: Introduction
Tuesday, 8/31	In Class: Mod 1 & 2	Watch: Module 1 & 2 videos
Thursday, 9/2	Watch: Module 3 & 4 videos	In Class: Mod 1 & 2
Tuesday, 9/7	In Class: Mod 3 & 4	Watch: Module 3 & 4 videos
Thursday, 9/9	Watch: Module 5 videos	In Class: Mod 3 & 4
Tuesday, 9/14	In Class: Module 5	Watch: Module 5 videos
Thursday, 9/16	Watch: Module 6 videos	In Class: Module 5
Tuesday, 9/21	In class: Module 6	Watch: Module 6 videos
Thursday, 9/23	Watch: Review: Modules 2-6	In class: Module 6
Tuesday, 9/28	Exam 1- Modules 2-6	Watch: Review: Modules 2-6
Thursday, 9/30	Watch: Modules 7 & 8 videos	Exam 1- Modules 2-6
Tuesday, 10/5	In Class: Modules 7 & 8	Watch: Modules 7 & 8 videos
Thursday, 10/7	Watch: Modules 9, 10, 11	In Class: Modules 7 & 8
Tuesday, 10/12	Fall Break- No Class	
Thursday, 10/14	In class: Modules 9, 10, 11	Watch: Modules 9, 10, 11
Tuesday, 10/19	Watch: Module 12	In class: Modules 9, 10, 11
Thursday, 10/21	In Class: Module 12	Watch: Module 12
Tuesday, 10/26	Watch: Review 7-12	In Class: Module 12
Thursday, 10/28	Exam 2- Modules 7-12	Watch: Review 7-12
Tuesday, 11/2	Watch: Modules 13-15	Exam 2- Modules 7-12
Thursday, 11/4	In Class: 13-15	Watch: Modules 13-15
Tuesday, 11/9	Watch: Module 16 & 19	In Class: 13-15
Thursday, 11/11	In Class: Modules 16 & 19	Watch: Module 16 & 19
Tuesday, 11/16	Watch: Modules 17 & 18	In Class: Modules 16 & 19
Thursday, 11/18	In Class: Modules 17 & 18	Watch: Modules 17 & 18
Tuesday, 11/23	Watch: Review All Modules	In Class: Modules 17 & 18
Thursday, 11/25	Thanksgiving- No Class	
Tuesday, 11/30	Final Exam	Watch: Review All Modules
Thursday, 12/2		Final Exam

Module #	Subject	Chapter Readings
1	Introduction	1.1-1.4
2	Water and Buffers	2.1-2.5
3	Amino Acids/Proteins	3.1-3.2
4	Protein Structure	4.1-4.3
5	Protein Function	5.1
6	Enzymes	6.1-6.5
7	Carbohydrates	7.1-7.3
8	Nucleic Acids	8.1-8.4
9	Lipids	10.1-10.3
10	Membranes and Transport	11.1-11.3
11	Biosignaling	12.1-12.4
12	Bioenergetics	13.1-13.4
13	Glycolysis	14.1-14.3
14	Gluconeogenesis	14.4-14.5
15	Regulation	15.1-15.5
16	Citric Acid Cycle	16.1-16.3
17	Fatty Acid Oxidation	17.1-17.3
18	Lipid Biosynthesis	21.1-21.4
19	Oxidative Phosphorylation	19.1-19.3